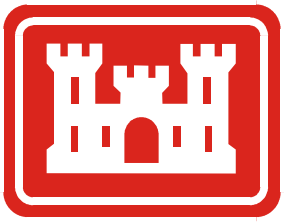
Final

2017 Annual Report
Long-Term Monitoring – Main Post
Former Fort Devens Army Installation BRAC Legacy Sites

Devens, Massachusetts

Contract W912WJ-15-C-0002

Prepared for



U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742

July 2019

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2017 ANNUAL REPORT

LONG-TERM MONITORING – MAIN POST

FORMER FORT DEVENS ARMY INSTALLATION

DEVENS, MASSACHUSETTS

JULY 2019

CERTIFICATION:

I hereby certify that the enclosed Report, shown and marked in this submittal, is that proposed to be incorporated with Contract Number W912WJ-15-C-0002. This document was prepared in accordance with the U.S. Army Corps of Engineers (USACE) Scope of Work and is hereby submitted for Government Approval.

Reviewed By:



7/5/19

KGS Project Manager **Date**

Received By:

Penelope Reddy

07/09/19

USACE Project Manager **Date**

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ACRONYMS AND ABBREVIATIONS

%	Percent
1,2-DCB	1,2-dichlorobenzene
1,3-DCB	1,3-dichlorobenzene
1,4-DCB	1,4-dichlorobenzene
AAFES	Army Air Force Exchange Service
AOC	Area of Concern
AST	Above-ground Storage Tank
BRAC	Base Realignment and Closure
Building 215	Fort Devens Elementary School
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMR	Code of Massachusetts Regulations
COC	Contaminant of Concern
COD	Chemical Oxygen Demand
DCB	Dichlorobenzene
DCL	Devens Consolidation Landfill
Devens	Main Post of the former Fort Devens Army Installation
DO	Dissolved Oxygen
DOD	Department of Defense
DPW	Department of Public Works
DRFTA	Devens Reserve Forces Training Area
DRMO	Defense Reutilization and Marketing
DRO	Diesel Range Organic
ECSM	Expanded Conceptual Site Model
ELAP	Environmental Laboratory Accreditation Program
EPH	Extractable Petroleum Hydrocarbons
ESD	Explanation of Significant Differences
ESMA	Excavated Soils Management Area
FFS	Focused Feasibility Study
FOST	Finding of Suitability to Transfer
ft/ft	Feet per Foot
HA	Housing Area
Harding	Harding Environmental, Science & Engineering
HGL	HydroGeoLogic, Inc.
HLA	Harding Lawson Associates
H&S	H&S Environmental, Inc.
IC	Institutional Control
ID	Identification
IDW	Investigation Derived Waste
KGS	KOMAN Government Solutions, LLC
LCRS	Leachate Collection and Recovery System
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LEL	Lower Explosive Limit

LIFOC	Lease in Furtherance of Conveyance
LTM	Long-Term Monitoring
LTMMP	Long Term Monitoring and Maintenance Plan
LUC	Land Use Control
LUCIP	Land Use Control Implementation Plan
MassDEP	Massachusetts Department of Environmental Protection
MassDevelopment	Massachusetts Development and Finance Agency
MEC	Munitions and Explosives of Concern
MCL	Maximum Contaminant Level
MCP	Massachusetts Contingency Plan
mg/L	milligrams per liter
mm	millimeter
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NAE	New England District
NELAP	National Environmental Laboratory Accreditation Program
NOAA	National Oceanic and Atmospheric Administration
OER	Ordnance and Explosive Remediation, Inc.
O&M	Operations and Maintenance
ORP	Oxidation Reduction Potential
PAH	Polycyclic Aromatic Hydrocarbon
PARCCS	Precision, Accuracy, Representativeness, Completeness, Comparability, and Sensitivity
PASI/SSI	Preliminary Assessment/Site Inspection and Supplemental Site Investigation Comprehensive Report
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
POL	Petroleum, Oils, and Lubricants
ppm	parts per million
QAPP	Quality Assurance Project Plan
QC	Quality Control
QSM	Quality Systems Manual
RAO	Remedial Action Objective
RI	Remedial Investigation
ROD	Record of Decision
Shaw	Shaw Environmental, Inc.
SPIA	South Post Impact Area
SVOC	Semi-Volatile Organic Compounds
TAL	Target Analyte List
TCE	Trichloroethene
TDS	Total Dissolved Solids
TestAmerica	TestAmerica Laboratories, Inc.
TPH	Total Petroleum Hydrocarbon
TSS	Total Suspended Solids
TTO	Total Toxic Organics
USEPA	United States Environmental Protection Agency

USACE	United States Army Corps of Engineers
UST	Underground Storage Tank
UXO	Unexploded Ordnance
µg/L	Micrograms per Liter
VOC	Volatile Organic Compound
VPH	Volatile Petroleum Hydrocarbon
Weston	Weston Solutions, Inc.

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EXECUTIVE SUMMARY

KOMAN Government Solutions, LLC (KGS) has prepared this 2017 Annual Report on behalf of the United States Army Corps of Engineers (USACE)-North Atlantic Division, New England District (NAE) to document the ongoing Long-Term Monitoring (LTM) activities in several areas of concern (AOC) at the Main Post of the former Fort Devens Army Installation (Devens), located in Devens, Massachusetts. The LTM activities described within this report were performed to fulfill requirements of site-specific Records of Decision (ROD) and were performed in accordance with the 2015 *Long Term Monitoring and Maintenance Plan* (LTMMP) (Sovereign/ HydroGeoLogic, Inc. [HGL], 2015).

The scope of this document details the 2017 LTM activities conducted at AOC 57, AOC 69W, AOC 43G, AOCs 32 and 43A, the Devens Consolidation Landfill (DCL), and the Grant Housing and 37-mm Impact Area (**Figure 1-1**).

The Army conducted the spring LTM event in June/August 2017 at AOC 57, AOCs 32/43A, and the DCL. Ten monitoring wells and one surface water location were sampled in the spring. The fall LTM event was conducted between October and December 2017 at AOC 43G, AOC 69W, and the DCL, and included samples from nineteen groundwater monitoring wells. Samples that contained contaminants of concern (COCs) at concentrations exceeding the criteria set forth in the respective RODs are summarized below.

- AOC 57 (Area 3) – During the spring 2017 LTM event, groundwater samples were collected from two monitoring wells and one surface water location. Total and dissolved arsenic in both groundwater wells exceeded the 10 micrograms per liter (µg/L) cleanup goal established by the 2001 ROD (**Table ES-1**).
- AOC 69W – Groundwater was sampled at eight monitoring wells and two well points during the fall LTM event. Arsenic exceeded the 10 µg/L cleanup goal in four wells and iron (one well) and manganese (three wells) exceeded the site-specific monitoring criteria (**Table ES-2**).
- AOC 43G – Five wells were sampled during the fall LTM event. Concentrations of benzene, ethylbenzene, and xylenes were below the cleanup goals. Iron (two wells) and manganese (five wells) exceeded the site-specific cleanup goals and volatile petroleum hydrocarbons (VPH) (three wells) exceeded the monitoring criteria (**Table ES-3**).
- AOCs 32 and 43A – Groundwater was sampled at four monitoring wells during the spring LTM event. Arsenic (one well) and 1,4-dichlorobenzene (1,4-DCB) (one well) exceeded the site-specific cleanup goals. VPH and chlorobenzene exceeded the site-specific monitoring criteria in one well (**Table ES-4**).
- DCL – Four monitoring wells were sampled during the spring and fall LTM events. There were no exceedances of the site-specific monitoring criteria, which is consistent with all previous monitoring, which was started in 2003. Additionally, the October 2017 leachate sample results were either non-detect or below discharge permit limits for all parameters analyzed.

The following sections summarize the 2017 LTM program.

AOC 57 Conclusions

- Total and dissolved arsenic were detected at concentrations above the MCL in shallow monitoring wells 57M-95-03X and 57M-96-11X. The 2017 groundwater sampling results for arsenic remain consistent with previous events. Graphical and statistical analysis of the data trends over time indicate that the total arsenic concentrations in wells 57M-95-03X and 57M-96-11X are remaining relatively stable. The presence of arsenic in shallow groundwater at concentrations above the MCL appears to be due to reducing conditions in the aquifer resulting from hydrocarbon degradation.
- Land Use Controls (LUCs) remain effective at AOC 57.

AOC 69W Conclusions

- Arsenic remains above the cleanup goal in 69W-94-13, ZWM-95-15X, ZWM-99-22X, and ZWM-99-23X. The arsenic concentrations continue to fluctuate. Manganese was detected in 69W-94-13 ZWM-99-22X, ZWM-99-23X, ZWM-01-25X above the 291 µg/L monitoring criteria. Manganese concentrations continued to fluctuate with no apparent trend from 2000 to 2017, except for well ZWM-99-23X, which even with an increased detected concentration value in 2017, had a statistically significant downward trend ($p = 0.004$). Elevated dissolved metals concentrations in groundwater, including arsenic and manganese, are due to reducing conditions in the aquifer resulting from hydrocarbon degradation.
- EPH concentrations decreased in 2017 with the results either non-detect or below benchmark levels in 2017.
- LUCs remain effective at AOC 69W.

AOC 43G Conclusions

- Concentrations of benzene, ethylbenzene, and xylenes at AOC43G were below the cleanup goals established in the ROD. Total iron concentrations exceed the cleanup goal at wells AAFES-2 (with a downward trend) and XGM-97-12X (with no apparent trend). Total manganese concentrations exceed the cleanup goal at AAFES-2 (downward trend), XGM-93-02X (downward trend), XGM-94-04X (no trend), and XGM-97-12X (downward trend). The presence of elevated iron and manganese concentrations may be due to a reducing groundwater environment that is low in dissolved oxygen (DO) resulting from hydrocarbon degradation, thereby generating more soluble and mobile iron and manganese. Downward concentrations trends for iron and manganese in groundwater may indicate depletion of the carbon source.
- VPH C_5-C_8 aliphatics and C_9-C_{10} aromatics were detected slightly above the benchmark in three wells: AAFES-2, XGM-94-04X, and XGM-97-12X. These wells are located downgradient of the former UST tanks. VPH concentrations are evaluated against Massachusetts Contingency Plan (MCP) standards for comparison purposes, but the standards are not considered cleanup goals under the ROD. For VPH C_5-C_8 aliphatics, statistically significant downward data trends were noted for wells AAFES-2, XGM-93-02X, and XGM-97-12X. An upward trend was noted for well XGM-94-04X; this well will continue to be monitored for trends over time during 2018. For VPH C_9-C_{10} aromatics,

concentrations were above the monitoring criteria and increased in three wells from 2016 to 2017. However, overall, three of the wells have statistically significant decreasing trends and one well does not have a statistically significant trend. In 2017, the VPH C_9-C_{12} aliphatics concentrations in the sampled AOC 43G wells were below the 700 µg/L benchmark. The data trends reflect the overall degradation of the hydrocarbon source, with the concentrations of the lighter compounds (e.g., benzene, ethylbenzene, xylenes) decreasing at a faster rate than the more persistent aliphatic and aromatic compounds, as expected.

- LUCs remain effective at AOC 43G.

AOCs 32 and 43A Conclusions

- COCs at AOC 32 and 43A include arsenic, VPH and volatile organic compounds (VOC); in particular, the dichlorobenzene (DCB) isomers. Dissolved arsenic exceeded the cleanup goal in monitoring well 32M-01-14XOB. The presence of arsenic above the maximum contaminant level (MCL) appears to be due to reducing conditions resulting from hydrocarbon degradation. 1,4-DCB exceeded the cleanup goal in the source area well 32M-01-18XBR. VPH C_9-C_{10} aromatics also exceeded monitoring criteria in the source area well 32M-01-18XBR. The 1,4-DCB and VPH C_9-C_{10} aromatics concentrations at 32M-01-18XBR show overall downward, although not statistically significant trends. VPH concentrations are evaluated against MCP standards for comparison purposes, but the standards are not considered cleanup goals under the ROD. Chlorobenzene was detected above the monitoring criteria (100 µg/L) at 170 µg/L in 32M-01-18XBR.
- LUCs remain effective at AOCs 32 and 43A.

DCL Conclusions

- The groundwater sampling results from the DCL monitoring wells have maintained non-detections or low-level detections below the monitoring benchmarks since monitoring began in 2003.
- The DCL leachate sample results were within the discharge permit limits for all parameters.
- Inspection of the landfill indicates it is in good condition. A few minor repairs and maintenance activities need to be made, including replacing the access gate, landfill vent screens, removal of woody vegetation from the landfill cap, re-seeding and fertilizing of the cap, and removal of vegetation from drainage channels.
- The Army is preparing a soil gas monitoring plan to address Massachusetts Department of Environmental Protection's (MassDEP) concern that landfill gas migrating from the landfill through soil and/or in groundwater could create hazardous conditions in the area of the new structure.
- LUCs remain effective at DCL.
- The LUC inspections of the DCL contributor sites (AOC 9, AOC 40, and Study Area 13) revealed no changes in land use at the individual contributor sites. Per the requirements of the 2006 transfer deed, these contributor sites are not being used or are intended to be used for residential purposes.

Grant, Oak, Maple Housing Areas, and 37-mm Impact Area Conclusions

- Results of the annual compliance monitoring indicate that no deviations or deficiencies to the LUCs were evident and corrective action(s) were not necessary.

Table ES-1
AOC 57 Area 3 Contaminant of Concern Cleanup Goal Exceedances, June 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

Well Identification	Analyte	Cleanup Goal (µg/L) [1]	Benchmark (µg/L)	Detected Result (µg/L)
Groundwater				
57M-95-03X [2]	Arsenic (total)	10	--	27
	Arsenic (dissolved)	10	--	30
57M-96-11X [3]	Arsenic (total)	10	--	180
	Arsenic (dissolved)	10	--	120

Notes:

[1] The Cleanup Goal for arsenic is the MCL standard.

[2] Sentry Well

[3] Source Area Well

Table ES-2
AOC 69W Cleanup Goal and Monitoring Criteria Exceedances, October/November 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

Well Identification	Analyte	Cleanup Goal (µg/L) [1]	Benchmark (µg/L)	Detected Result (µg/L)
69W-94-13[2]	Arsenic (dissolved)	10	--	24
	Manganese (dissolved)	--	291	320
ZWM-95-15X[3]	Arsenic (dissolved)	10	--	10
ZWM-99-22X[2]	Arsenic (dissolved)	10	--	190
	Iron (dissolved)	--	9,100	24,000
	Manganese (dissolved)	--	291	1,200
ZWM-99-23X[3]	Arsenic (dissolved)	10		17
	Manganese (dissolved)	--	291	1,800

Notes:

1 Cleanup Goal for arsenic is the MCL standard.

[2] Source Area Well

[3] Sentry Well

Table ES-3
AOC 43G Contaminant of Concern Cleanup Goal Exceedances, October 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

Well Identification	Analyte	Cleanup Goal (µg/L) [1]	Benchmark (µg/L)[4]	Detected Result (µg/L)
AAFES-2[2]	Iron (total)	9,100	--	10,000
	Manganese (total)	375	--	2,800
	VPH C_5-C_8 Aliphatics	--	300	890
	VPH C_9-C_{10} Aromatics	--	200	1,100 J
AAFES-7	Manganese (total)	375	--	330
XGM-93-02X[2]	Manganese (total)	375	--	1,400
XGM-94-04X[3]	Manganese (total)	375	--	1,700
	VPH C_5-C_8 Aliphatics	--	300	360
	VPH C_9-C_{10} Aromatics	--	200	410 J
XGM-97-12X[2]	Iron (total)	9,100	--	18,000
	Manganese (total)	375	--	1,200
	VPH C_5-C_8 Aliphatics	--	300	350
	VPH C_9-C_{10} Aromatics	--	200	430 J

Notes:

[1] Cleanup goals for iron is the background level. The cleanup goal for manganese is a site-specific goal based on a AOC 43G risk evaluation (HGL, 2008).

[2] Source Area Well

[3] Sentry Well

[4] VPH concentrations are evaluated against MCP standards for comparison purposes, but the standards are not considered cleanup goals under the ROD.

Table ES-4
AOCs 32 and 43A Contaminant of Concern Cleanup Goal Exceedances, June 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

Well Identification	Analyte	Cleanup Goal (µg/L) [1]	Benchmark (µg/L)[4]	Detected Result (µg/L)
32M-01-14XOB[2]	Arsenic (dissolved)	10	--	30
32M-01-18XBR[3]	1,4-dichlorobenzene	5.0	--	46
	Chlorobenzene	--	100	170
	VPH[4] C_9-C_{10} aromatics	--	200	410

Notes:

[1] Cleanup Goals for arsenic and 1,4-DCB are the MCL standards.

[2] Downgradient Well

[3] Source Area Well

[4] VPH concentrations are evaluated against MassDEP GW-1 standards for comparison purposes, but are not considered cleanup goals under the ROD.

1.0 INTRODUCTION

KOMAN Government Solutions, LLC (KGS) prepared this 2017 Annual Long-Term Monitoring (LTM) Report to detail the performance of ongoing LTM activities required at the former Fort Devens Army Installation (Devens) site, located in Devens, Massachusetts (**Figure 1-1**). LTM activities were performed in accordance with the Final Long-Term Monitoring and Maintenance Plan (LTMMP) (Sovereign/ HydroGeoLogic, Inc. [HGL], 2015).

1.1 Long-Term Monitoring Program Background

The overall LTM program instituted at Devens is a result of the individual Records of Decision (RODs) issued for each AOC referenced in this report. These AOCs include:

- AOC 57 – Building 3713 Fuel Oil Spill [Harding Environmental, Science & Engineering (Harding), 2001]
- AOC 69W – Fort Devens Elementary School (Building 215) Fuel Oil Spill Site (Harding Lawson Associates [HLA], 1999a)
- AOC 43G – Historical Gas Station G (United States Environmental Protection Agency [USEPA], 1996)
- AOCs 32 and 43A – Defense Reutilization and Marketing Office (DRMO) Yard and former Petroleum, Oils, and Lubricants (POL) Storage Area (Horne Environmental Services, Inc. 2001);
- The Devens Consolidation Landfill (DCL) (HLA, 1999b)
- Grant Housing Area (HA) and 37-millimeter (mm) Impact Area (Weston Solutions, Inc. [Weston], 2009)

The RODs established site-specific Remedial Actions for each AOC, as well as the LTM program, Land Use Controls (LUCs), and, in some cases, removal actions. The Army and USEPA evaluate the effectiveness of the Remedial Actions as part of the Five-Year Review reports [HLA, 2000a; Nobis Engineering, 2005; HGL, 2010; and H&S Environmental, Inc. (H&S), 2015].

Since the inception of the LTM program, the monitoring requirements at some of the AOCs have been modified or removed. Sampling at AOC 57, AOC 69W, AOC 43G, AOCs 32 and 43A, and the DCL in 2017 was conducted per the Final LTMMP (Sovereign/HGL, 2015), as follows:

- AOC 57 LTMMP activities include hydraulic monitoring at 19 locations and groundwater sampling for metals at two monitoring wells and one surface water location every five years. While sampling is to be conducted every five years per the LTMMP, samples have inadvertently been collected annually. The LTMMP includes decommissioning of sumps at Area 2.
- AOC 69W LTMMP activities include annual hydraulic monitoring at 17 locations and groundwater sampling at 12 wells. Samples from eight wells are analyzed for extractable petroleum hydrocarbons (EPH), samples from 10 wells are analyzed for metals, and water quality is measured at two wells.

- AOC 43G LTMMP activities include annual hydraulic monitoring at 10 wells and groundwater sampling at five wells. Samples from four of the wells are analyzed for volatile petroleum hydrocarbons (VPH), alkalinity, and metals. The sample from one well is analyzed for metals.
- AOCs 32 and 43A LTMMP activities include annual hydraulic monitoring at 26 locations and groundwater sampling at four wells for volatile organic compounds (VOC), VPH, EPH, and metals.
- The DCL LTM and operations and maintenance (O&M) activities consist of annual landfill gas vent monitoring, monthly O&M of the leachate pump station, annual sampling of the leachate, annul landfill cap inspection, semiannual hydraulic monitoring at seven locations, and semiannual groundwater sampling at four locations for VPH, EPH, pesticides, metals, total dissolved solids, anions, nitrate/nitrite, alkalinity, cyanide, and chemical oxygen demand. Samples are analyzed for polychlorinated biphenyls every five years. The DCL leachate sampling consists of one sample collected and analyzed for VOCs, SVOCs, organochlorine pesticides/polychlorinated biphenyls (PCB), total petroleum hydrocarbons (TPH), total metals (select metals), and wet chemistry parameters (total suspended solids [TSS], pH, total phenolics, and total cyanide). The LTMMP also calls for an evaluation of the feasibility of modifying the leachate collection and recovery system (LCRS) to allow discharge on-site to groundwater instead of to the Massachusetts Development and Finance Agency (MassDevelopment) sewer system via a technical memo. If deemed feasible, obtain state regulatory approval for the modification per the appropriate state regulatory procedures [310 Code of Massachusetts Regulations (CMR) 19.000 and 314 CMR 5.000]. Discharge of leachate to groundwater on site would, per 40 Code of Federal Regulations 261.4 (b) (15) (iv), be subject to federal regulation under sections 307 (b) or 402 of the Clean Water Act. Once approved, perform an engineering redesign of the LCRS to allow for on-site discharge. An Explanation of Significant Differences (ESD) would be prepared following the approval of the modification to the LCRS.
- Per the Final LTMPP, sampling using HydraSleeve™ technology was utilized at AOC 57, AOCs 32 and 43A sites along with low-low flow sampling methods in 2016 to determine if it was a viable alternative to low-flow sampling. However, as discussed in the 2016 annual report, due to the large discrepancies between results and the limited volume of sample obtained from the HydraSleeve™ sampler; it appears that the use of HydraSleeve™ technology is not a viable alternative to established low-flow sampling procedures. The Army continues to sample using the low-flow sampling procedures.

1.2 Site Description and History

The former Fort Devens is located in the towns of Ayer and Shirley in Middlesex County, and Harvard and Lancaster in Worcester County, Massachusetts, approximately 35 miles northwest of Boston, Massachusetts. The installation occupied approximately 9,260 acres and was comprised of the North Post, the Main Post, and the South Post (**Figure 1-1**). Route 2 divides the South Post from the Main Post. The Nashua River runs through the North, Main, and South Posts. The area surrounding Devens is largely residential property.

Camp Devens was established in 1917 as a temporary training area for soldiers during World War I. Prior to 1917, the area was occupied by residential homes and farmland. In 1932, the site was named Fort Devens and made a permanent installation with the primary mission of commanding, training, and providing logistical support for non-divisional troop units. The installation also supported the Army Readiness Regional and National Guard units in the New England area. Devens was used for a variety of training missions between 1917 and 1990. Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, Devens was placed on the National Priorities List on November 21, 1989, due to environmental contamination at several sites.

Devens was identified for cessation of operations and closure under Public Law 101-510, the Defense Base Realignment and Closure (BRAC) Act of 1990, and officially closed in March 1996. As part of the Devens BRAC program, portions of the property formerly occupied by Fort Devens were retained by the Army for reserve forces training and renamed the Devens Reserve Forces Training Area (DRFTA). Areas not retained as part of DRFTA have been either transferred or are in the process of being transferred to MassDevelopment for reuse and redevelopment in addition to other federal agencies as noted below.

A total of 5,181.64 acres (344.94 acres of the Main Post enclave and 4,836.70 acres of the South Post) were retained for DRFTA. From 1996 through present, the Army has transferred 2,712 acres to the MassDevelopment. A total of 1,079.62 acres was transferred to other federal agencies, including 836 acres to the Department of the Interior, United States Fish and Wildlife Agency, 221.62 acres to the Department of Justice Bureau of Prisons and 22 acres to the Department of Labor Job Corps Center.

1.3 Groundwater Hydrology

Devens is located in eastern Massachusetts, approximately 35 miles northwest of Boston, Massachusetts. The proximity of the Atlantic Ocean, Long Island Sound, and the Berkshire Hills plays an important role in determining the weather and climate of the Devens area.

The depth to groundwater was recorded within a 24-hour period at monitoring wells within each AOC as part of the 2017 LTM Program. Plotting the collected groundwater elevation data allows a determination of groundwater flow directions, which is essential in understanding contaminant migration pathways and evaluating the effectiveness of the monitoring well network. Groundwater elevations at monitoring wells were determined by subtracting the depth to water from the elevation of a reference point on the top of the well riser. The surface water elevation at staff gauges was determined by adding the observed water level to the elevation of a reference point on the staff gauge. Potentiometric surfaces were constructed using Surfer® software and refined using professional judgement. **Table 1-1** shows water level elevations for the spring 2017 event. **Table 1-2** shows water level elevations for the fall 2017 event. Groundwater gradients present at each AOC, as determined from the available groundwater elevation data, are expressed as feet per foot (ft/ft) of change in water table elevation, and are presented in the section specific to each AOC.

Annual precipitation data for 2004 through 2017, as reported from the Fitchburg, Massachusetts, weather station, is presented in **Table 1-3**. The precipitation data reveals more precipitation across the Devens area in May prior to the June (spring) 2017 LTM event compared to the amount of

precipitation in September prior to the October (fall) 2017 LTM event. The lower precipitation was reflected in the generally lower groundwater elevations encountered across the site during the fall 2017 LTM event. In 2017, precipitation over the Northeast reduced the drought area to zero percent by May 9th (National Oceanic and Atmospheric Administration [NOAA], 2018). Dryness returned during September increasing the area of drought to 12.3 percent of the Northeast by October 24 (NOAA, 2018).

1.4 Groundwater Sampling

The LTM program was conducted in accordance with the LTMMP (Sovereign/HGL, 2015) to monitor COC trends over time for the respective AOCs. During 2017, the LTM program included:

- semi-annual groundwater LTM events at the DCL in June/August and October/December 2017;
- annual groundwater LTM event at AOCs 32/43A in June 2017;
- annual groundwater and surface water LTM event in June 2017 at AOC 57;
- annual groundwater LTM event in October/November 2017 at AOC 69W;
- annual groundwater LTM event in October 2017 at AOC 43G; and
- annual DCL leachate sampling in November 2017.

1.4.1 Preparation for Sampling

Sampling activities were coordinated with the United States Army Corps of Engineers (USACE)-New England District (NAE), BRAC Environmental Coordinator office, and the contracted analytical laboratory. The laboratory provided the sampling supplies (sample containers, packing material, custody seals, and coolers) to the sampling team per the specific sample requirements identified in **Table 1-4**.

During the groundwater sampling activities, the sampling team used YSI water quality meters, LaMotte turbidity meters, MP10 pump controllers, QED Sample Pro Bladder pumps, Geopump peristaltic pumps, and Solinst water level indicators that were rented from Pine Environmental, Inc. of Woburn, Massachusetts. Dedicated submersible bladder pumps were used in select wells. Sampling equipment was tested to ensure that it was functional prior to sampling. The well construction details for each groundwater monitoring well were reviewed prior to the sampling events for determination of non-dedicated well pump placement. The well construction diagrams were maintained on site during the sample events to confirm well screen interval information as needed.

Well construction details and other pertinent information are presented in **Table 1-5**. AOC-specific actions levels are summarized in **Table 1-6**. DCL leachate discharge limits are summarized in **Table 1-7**.

1.4.2 Sampling

Groundwater monitoring wells were purged and sampled in accordance with the USEPA Region 1 guidance document "Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells" (USEPA Region 1, 2017b). Low-flow bladder or peristaltic pumps were used, as described in the LTMMP (Sovereign/HGL, 2015). Samples

submitted for dissolved metals analyses were field filtered through 0.45-micron filters directly into preserved sample bottles.

Sample preparation and analysis methods, containers, holding times, and preservatives for each AOC site parameter are summarized in **Table 1-4**. Location and construction details for each groundwater monitoring well, well point, sump, and surface water location are summarized in **Table 1-5**.

The groundwater elevation data for the spring and fall 2017 sampling events are summarized in **Table 1-1** and **Table 1-2**. The field sampling logs and photolog are presented in **Appendix A**.

1.4.3 Equipment Decontamination

Non-dedicated sampling and monitoring equipment was decontaminated between sampling locations in accordance with the Annual LTMMP Quality Assurance Project Plan (QAPP) (KOMAN Government Solutions, LLC [KGS], 2016a) to prevent cross-contamination.

1.4.4 Investigation Derived Waste

Investigation-derived waste (IDW) was not generated during the 2017 LTM activities. Purge water collected during the 2017 LTM did not have total headspace VOC readings conducted based on 2015 purge water results. Purge water from wells was returned to the ground in proximity to the sample collection area following low flow sampling.

1.4.5 Monitoring Well Network Inspection and Repairs

The condition of the monitoring well network at each LTM site was inspected during the 2017 sampling events. Observations, if noted, are contained within the field sampling logs provided in **Appendix A**. Monitoring wells were found to be in good overall condition, except for DCL well LMF-03-07 (Figure 6-1), which was inaccessible during the initial spring 2017 event due to construction activities covering the well in spring 2017. MassDevelopment uncovered the monitoring well in July 2017 and the well was then sampled both in August 2017 for the spring event and December 2017 for the fall event.

1.5 Laboratory Testing

TestAmerica Laboratories, Inc. of Savannah, Georgia was the primary contract laboratory used for the analysis of water samples for the spring and fall 2017 LTM events. TestAmerica is compliant with the Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, version 5.0 (DoD, 2013) under the DoD Environmental Laboratory Accreditation Program (ELAP) and holds current National Environmental Laboratory Accreditation Program (NELAP) accreditation for all applicable analytical methods. TestAmerica subcontracted to Katahdin Analytical Services of Scarborough, Maine to perform the required VPH and EPH analyses, using the MassDEP analytical methods. Katahdin holds MassDEP certification for these analyses.

1.5.1 Analyses

Samples were analyzed for the following AOC-specific sets of COCs:

- AOC 57 – total and dissolved metals in groundwater and surface water (for the COC arsenic, plus iron and manganese);
- AOC 69W – EPH and dissolved metals (arsenic, iron, and manganese);
- AOC 43G – VPH (including target compounds), total alkalinity, and total Target Analyte List (TAL) metals;
- AOC 32/43A – VOCs, VPH, and total and dissolved metals (arsenic and manganese);
- DCL monitoring wells – VPH, EPH, organochlorine pesticides, total select metals (including mercury), and the following general chemistry parameters: total dissolved solids (TDS), chloride, sulfate, nitrate/nitrite-as-N, total alkalinity, total cyanide, and chemical oxygen demand (COD);
- DCL leachate – VOCs, SVOCs, organochlorine pesticides/PCBs, TPH, total metals (select metals), and wet chemistry parameters (TSS, pH, total phenolics, and total cyanide).

Metals analyses were performed for total or dissolved metals on an AOC-specific basis as described above. The laboratory methods used to analyze groundwater samples from each AOC and the DCL leachate are listed in **Table 1-4**.

1.5.2 Analytical Results

The analytical results for each AOC were compared to the respective monitoring criteria or cleanup goals established in the ROD. Arsenic results in groundwater were compared to the 10 µg/L MCL that was promulgated in 2006, which is lower than the cleanup standard that was previously established in the site-specific RODs. Site-specific COCs and the associated cleanup goals or comparison criteria for the AOCs, as identified in each site-specific ROD, are presented in **Table 1-6.** The DCL leachate discharge limits are presented in **Table 1-7**. Laboratory analytical results for water samples collected during the 2017 LTM events are discussed in **Sections 2.0** through **6.0**. Laboratory analytical reports are present in **Appendix B**. The effects of contamination in laboratory and field blanks, as well as the effects of other quality control (QC) issues associated with the analytical results, are discussed in the data validation reports presented in **Appendix C**.

1.6 Quality Control

Analytical data were provided by a properly accredited laboratory (TestAmerica) and the data analyses, collection, and validation were performed per the approved LTMMP Quality Assurance Project Plan (KGS, 2016a). There were no outstanding quality control issues identified with the analytical results for any of the 2017 LTM samples.

1.6.1 Field Quality Control

Field duplicate samples were collected during sampling events at each AOC, at the rate of 10 percent (%) (1 per 10 samples), to evaluate field precision. Matrix spike (MS)/matrix spike duplicate (MSD) pairs (one set per AOC) were also submitted to evaluate matrix effects on field and analytical precision and accuracy.

The field instruments used to measure water quality parameters (temperature, DO, pH, oxidation-reduction potential (ORP), specific conductance, and turbidity) were calibrated twice daily (prior to, and following field use) in accordance with the manufacturer's instructions and in accordance with USEPA's *Calibration of Field Instruments Standard Operating Procedure* (USEPA Region 1, 2017). Calibration log forms are presented in **Appendix A**. Field instrument drift was not noted during the spring 2017 LTM event. There was some minor instrument drift noted during post-calibration of the turbidimeter during the fall 2017 LTM event. The turbidimeter was calibrated using four standards and during instrument checks at the end of each day. There was up to a 9 % drift in comparison of one or two of the standards. Due to the low percentage of drift in comparison to one or two of the four standards used, the drift did not have a significant effect on measurement of turbidity during purging. No instrument error was noted during the spring or fall LTM events.

1.6.2 Data Evaluation for 2017 Long-Term Monitoring Events

The analytical results from the 2017 sampling events were evaluated for data acceptability in accordance with the USEPA Region 1 data validation guidelines (USEPA Region 1, 2013), the DoD QSM version 5.0 (DoD, 2013), and the laboratory's defined acceptance limits. The method requirements for the USEPA SW-846 QC guidance and the MassDEP VPH and EPH methods were also used as supplemental information. The data validation reports for the spring and fall 2017 sampling events are presented in **Appendix C**, and the general findings are summarized below.

1.6.3 Chemical Analytical Quality Assurance/Quality Control

Data qualification was primarily the result of one or more of the following: blank contamination, including laboratory method blanks, and trip blanks (for VOC analysis only); laboratory control sample (LCS) and/or laboratory control sample duplicate (LCSD) recovery and precision exceedances; low MS/MSD recovery exceedances; surrogate recovery exceedances; and field duplicate precision exceedances. Specific QC deviations requiring qualification in the 2017 data sets included:

- Field duplicate precision for select metals analyses;
- Low level method blank contamination; and,
- MS and MSD recovery and precision results outside the acceptance criteria.

Appropriate qualifiers have been added to the 2017 analytical data.

Analyses were performed in general compliance with the precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) requirements listed in the QAPP (KGS, 2016a). Good analytical practices and method requirements were followed and the laboratory was determined to be performing properly. No significant QC deficiencies were noted. With required qualifications based on the issues listed above; analytical results reported for the 2017 LTM events samples were deemed usable.

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2.0 AREA OF CONTAMINATION 57

2.1 Site Background

AOC 57 is located between Barnum Road and Cold Spring Brook on the northeast side of what was formerly the Main Post of Devens in the town of Harvard, Massachusetts (**Figure 1-1**). AOC 57 is located within a Zone II aquifer protection area[1]. The portion of the former Devens site that includes AOC 57 was used primarily as a storage and maintenance area for military vehicles. AOC 57 consists of three sub-areas (Area 1, Area 2, and Area 3) that are located south to southeast of Building 3713 and former Buildings 3756, 3757, and 3758 (**Figure 2-1**). The sub-areas received storm water runoff and waste from vehicle maintenance at former vehicle storage yards related to former Building 3713 and former Buildings 3757 and 3758. A "No Further Action" ROD was completed for Area 1 (Harding, 2001) following the removal of polycyclic aromatic hydrocarbon (PAH)-contaminated soil in 1997.

Each sub-area includes an upland area that slopes downward to a delineated wetland area bordering Cold Spring Brook. Areas 2 and 3 are depicted on **Figure 2-2** and **Figure 2-3**, respectively.

In September 1992, an investigation was performed to determine the presence or absence of environmental contamination at AOC 57 that may have occurred following a February 1977 fuel oil spill. The investigation revealed the presence of groundwater, soil, and sediment contaminated with oil, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, metals, and PCBs.

Based on the results of the investigation, the Army proposed that a limited soil removal action be conducted at Area 2. A removal action began at Area 2 in August 1994 and continued until September 1994, when it was discovered that contamination extended beyond the limits originally estimated. Approximately 1,300 cubic yards of soil were removed and the site was transferred to the RI/FS process. In the spring of 1999, a soil removal action focusing on PCBs and EPH in soil was performed at Area 3 based on data obtained from the remedial investigation (RI). A total of 1,860 cubic yards of soil was removed from Area 3.

In June 2000, the Army completed an RI at AOC 57 Areas 2 and 3 that revealed the presence of residual contamination at both sites. A ROD for Areas 2 and 3 was issued in September 2001. The ROD selected Alternative II-3, Excavation (For Possible Future Use) and LUCs for Area 2 and Alternative III-2a, Excavation (To Accelerate Groundwater Cleanup) and LUCs for Area 3. Data obtained and observations made at Area 2 between 2002 and 2003 (during the soil excavation activities and subsequent investigations) prompted the submittal of an ESD in March 2004. The ESD expanded the Area 2 LTM activities to include EPH C_{11}-C_{22} aromatics and PCB Aroclors. Based on evaluation of long-term monitoring data through 2014, sampling at AOC 57 Area 2 was discontinued in 2015 and monitoring was reduced at Area 3.

Construction of a solar panel manufacturing facility between Areas 2 and 3 and Barnum Road (112 Barnum Road, **Figure 2-1**) began in 2008 and was completed in 2009. The solar panel manufacturing facility has since been closed but the building has been taken over by another

[1] MassDEP establishes public water supply protection areas in accordance with the Drinking Water Regulations at 310 CMR 22.02. In part, a Zone II groundwater protection area is defined as the area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated.

company, Nypro, a plastics manufacturer. The same building footprint and infrastructure remain in place.

The next monitoring event is planned for 2019. A monitoring event was inadvertently conducted at AOC 57 in 2017 and the results are reported below.

2.2 Groundwater Hydrology

Measured water levels at AOC 57 Areas 2 and 3 for the June 2017 LTM event are presented in **Table 1-1**. Interpretive water-table elevations for the June 2017 LTM event at AOC 57 Areas 2 and 3 are presented on **Figure 2-4** and **Figure 2-5**. Data from the spring 2017 LTM event at AOC 57 indicates shallow groundwater flowing in a south/southeast direction, toward Cold Spring Brook, which is consistent with historical observations of groundwater flow patterns in this area. A groundwater gradient of 0.009 ft/ft was calculated in Area 2 (57M-03-01X to 57WP-06-02) and 0.017 ft/ft in Area 3 (57M-95-03X to 57M-96-11X) during the 2017 LTM event. Although the groundwater gradient typically varies across each site based on topography and seasonal variations in groundwater elevations, the selected flow paths are deemed as generally representative of site conditions and indicate that shallow groundwater flows to the south-southeast and discharges to Cold Spring Brook.

2.3 Groundwater Sampling

Beginning in 2008, groundwater at AOC 57 Area 3 has been sampled in the spring on an annual basis. As described in **Section 1.1**, the sampling program was modified in 2015 to suspend sampling at Area 2 but continue gauging wells as part of the sampling event at Area 3. Wells sampled as part of the LTM program in June 2017 include Area 3 wells 57M-95-03X and 57M-96-11X.

2.4 Surface Water Sampling

During the spring 2017 LTM sample event, a surface water sample was collected from location 57-AREA3-SW1 within Area 3. A discrete grab sample was collected as close to the bottom of the water column as possible, without allowing bottom sediment to enter the sample container.

2.5 Analytical Results

Groundwater analytical results for Area 3 from the spring 2017 LTM event are summarized in **Table 2-1**. Surface water analytical results from the spring 2017 LTM event are summarized in **Table 2-2**. Samples were submitted for total and dissolved arsenic, iron, and manganese analyses. Results are presented on **Figure 2-6**.

2.5.1 June 2017 Data Summary

- Metals – The following total arsenic concentrations exceeded the MCL of 10 µg/L: 27 µg/L in well 57M-95-03X and 180 µg/L in well 57M-96-11X. The results for dissolved arsenic in these wells also exceeded the MCL: 30 µg/L in well 57M-95-03X and 120 µg/L in well 57M-96-11X. Arsenic concentrations did not exceed the monitoring benchmark in surface water (150 µg/L) at sample location 57-AREA3-SW1 (total arsenic of 31 µg/L and dissolved arsenic of 17 µg/L).

- Source area well 57M-96-11X had a total iron concentration of 31,000 µg/L and a dissolved iron concentration of 29,000 µg/L, which exceeded the 9,100 µg/L background level. The total iron concentration in surface water sample 57M-AREA3-SW-1 (21,000 µg/L) was above the USEPA Water Quality Criterion of 1,000 µg/L. Dissolved iron was detected above the USEPA Water Quality Criterion of 1,000 µg/L in the surface water sample from 57-SW-SW1 at 15,000 µg/L. Total manganese was detected in each of the samples and exceeded the 291 µg/L background concentration in the source area well 57M-96-11X (2,900 µg/L).

2.5.2 AOC 57 Data Trends

The results of the 2017 LTM event at AOC 57 were compared to results from previous sampling events. Historical exceedances of the cleanup goals for AOC 57 Area 3 from 2003 through 2017 are summarized in **Table 2-3**. Graphical and statistical analyses are presented in **Appendix D**.

Total arsenic concentrations in Area 3 remained above the MCL (10 µg/L) in groundwater monitoring wells 57M-96-11X (180 µg/L) and 57M-95-03X (27 µg/L). Graphical and statistical analysis of the data trends over time (**Appendix D**) indicate that the total arsenic concentrations in well 57M-95-03X have been relatively stable since 2005. Arsenic concentrations at 57M-96-11X have varied from slightly higher concentrations in 2003 and 2004 of 240 µg/L to 270 µg/L, to slightly lower concentrations from 2004 to 2014 of 148 µg/L to 192 µg/L and 180 µg/L in 2017, to slightly higher concentrations in 2015 and 2016 of 284 µg/L to 290 µg/L. No statistically significant trends were noted in wells 57M-96-11X ($p = 0.363$) and 57M-95-03X ($p = 0.299$) at the selected 95% confidence level. Field monitoring data indicates a reducing environment is present in the aquifer (low DO and ORP), which tend to promote the mobilization of metals such as arsenic from native soils.

2.5.3 Water Quality Parameters

General water quality chemistry parameters (pH, temperature, specific conductivity, ORP, DO, and turbidity) were measured at each of the sampled wells during the 2017 sampling event. These parameters are measured concurrently with low-flow sampling and are used to determine groundwater stabilization within each well prior to sampling. Final field readings taken prior to collection of each groundwater sample are presented in **Table 2-1**. The ORP and DO data are used to determine whether reducing or oxidizing conditions are present at a specific well. Low ORP values (below 50 millivolts) and DO concentrations below 1 mg/L are generally associated with elevated arsenic, iron, and manganese concentrations. While reductive conditions may facilitate the breakdown of petroleum hydrocarbons, they can also cause naturally occurring arsenic in the soils to mobilize by reducing the relatively insoluble arsenic (V) oxidation state to soluble arsenic (III). Such reducing conditions also yield higher concentrations of iron and manganese. The ORP levels at 57M-95-03X and 57M-96-11X are indicative of reducing conditions and the DO levels are also very low (less than 1.5 mg/L).

2.6 Data Quality Evaluation for 2017 Long-Term Monitoring Events

Groundwater samples were collected from two AOC 57 wells and one surface water location in June 2017. Samples were submitted to TestAmerica for total and dissolved metals analyses.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, LCS/LCSD recoveries, and MS/MSD recoveries), the total and dissolved metals results for all AOC 57 groundwater and surface water samples were acceptable as reported, with the exception of dissolved iron in 57M-95-03X. Dissolved iron in 57M-95-03X was qualified as an estimated result ("J") due to a low recovery from the MSD sample that was slightly below the control limit.

2.7 Land-Use Controls

AOC 57 is owned by the Army but leased to MassDevelopment per a Lease in Furtherance of Conveyance (LIFOC) agreement. Under the lease agreement, MassDevelopment must comply with the LUCs included within the LIFOC. Per the ROD signed in September 2001, LUCs were established to limit the potential exposure to the residual contaminated soil and groundwater under both the existing and future site conditions. The LUCs ensure that exposure to any remaining contaminated soils beneath the site is controlled. The LUCs also prohibit the extraction of groundwater from the site for industrial or potable water supply use. These LUCs are to be incorporated either in full or by reference into all deeds, easements, mortgages, leases, or any other instruments of transfer prior to the transfer of the property to MassDevelopment, until such time that soil and groundwater concentrations reach cleanup levels. During the Five-Year Review process, existing land-use is evaluated to ensure control requirements are being met. A site-specific annual LUC checklist, including physical on-site inspection and interview components, was developed in 2007 for use during LUC verification activities. The checklist is presented in **Appendix E**.

2.7.1 Land-Use Control Interviews

Interviews were conducted with Mr. Ron Ostrowski of MassDevelopment and Mr. Neil Angus of the Devens Enterprise Commission, regarding the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls;
- Excavations (planned or emergency) that may involve soils and groundwater in Areas 2 or 3; and
- Proposed plans for property sale, future redevelopment and construction, or demolition activities at the site.

Mr. Angus stated that the building at 112 Barnum Road was transferred to a new owner in 2015 and is now owned by an LLC. The tenant remains Nypro, a provider in the precision manufacturing of plastic products. There were no other changes to the site in 2017. Prior to any construction, Nypro must obtain approval from MassDevelopment.

2.7.2 Land-Use Control On-Site Inspection

LUCs at AOC 57 were visually verified during annual groundwater sampling events. During sampling activities, a LUC inspection was performed to identify the following:

- Any signs of increased exposure potential to the public from soil and/or surface water contaminants;
- Any evidence that groundwater extraction wells were installed at the site; and
- Any evidence of site use changes.

No evidence of increased exposure potential was observed during the spring 2017 sampling event.

2.8 Conclusions

Based on the previous remedial activities performed at AOC 57 and evaluation of the available monitoring data, monitoring of Area 2 was eliminated in the 2015 spring sampling event (Sovereign/HGL, 2015) and monitoring was reduced at Area 3 to every five years. A sampling event was inadvertently conducted in 2017. The next sampling event is planned for 2019.

Groundwater and surface water at Area 3 were sampled for total and dissolved metals (arsenic, iron, and manganese). The total arsenic concentrations in groundwater at Area 3 were consistent with previous LTM results. The presence of arsenic above the MCL appears to be related to high iron and manganese concentrations, low ORP readings (below 50 millivolts), and low DO readings (below 1 milligram per liter [mg/L]), which are associated with reducing conditions in the aquifer. Area 3 wells 57M-96-11X and 57M-95-03X contain elevated arsenic concentrations above the MCL standard. Groundwater sampling results indicate that arsenic concentrations are generally steady over time, with no statistically significant trends detected**.** The metals are expected to come out of solution (precipitate) when the aquifer reverts to an oxidizing state within the impacted area, or when the impacted groundwater reaches and expands into an oxidizing environment; therefore, there is no anticipated adverse impact to the public drinking water wells in the Zone II.

As the AOC 57 shallow groundwater is discharging to Cold Spring Brook and the history of below-MCL arsenic concentrations detected in the surface water at Area 3 (13 of 19 samples collected over the span of the monitoring program), support the lack of anticipated adverse impact to the public drinking water wells in the Zone II.

Iron concentrations in the Area 3 surface water (57-AREA3-SW-1) have been consistently above the USEPA Water Quality Criterion (monitoring benchmark) since spring 2011. Iron concentrations in the shallow groundwater within Area 3 adjacent to Cold Spring Brook have also been greater historically than the monitoring criteria suggesting some contribution to the adjacent surface water; however upstream, area-wide contribution of iron to the surface water from natural sources may also be likely.

The monitoring results are consistent with the conceptual site model. After the removal of the source area in soil, natural attenuation processes have effectively reduced the remaining concentrations of site COCs (tetrachloroethene [PCE], cadmium, 1,4-dichlorobenzene, PCBs, and extractable petroleum hydrocarbon C_{11}-C_{22} aromatic carbon range) to below their respective remediation goals without offsite migration. Reducing conditions in the aquifer (low DO and ORP) are a byproduct of the biodegradation of fuel products which has mobilized naturally occurring arsenic from soil and resulted in elevated arsenic concentrations in groundwater. As with many other fuel-contaminated sites, once the fuel products have been attenuated, the metals in the aquifer formation are expected to revert to their pre-existing stable geochemistry and dissolved-phase concentrations will decrease (API, 2011). Arsenic concentrations in groundwater

at AOC 57 have decreased or remained steady since removal of the source of contamination. The extent of the elevated arsenic in shallow groundwater is defined. Downgradient of the site, the arsenic concentrations in surface water do not exceed the USEPA Water Quality Criterion and most of the samples (13 of 19 samples) at the longest sampled surface water location at Area 3 (57-AREA 3-SW-1) were below the MCL. Also, historical results from AOC 57 Area 2 surface water sampling indicate a decrease in arsenic concentrations in surface water to below the MCL in 2008 through 2014 (KGS, 2016b).

The remedial action selected in the ROD includes the implementation of LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. During 2017, observations were made to identify any signs of increased exposure potential. No evidence of increased exposure potential was observed. Although access to the site is not restricted, the site is remote and the building on the property blocks direct access, thereby making the site less accessible. The Army will continue to perform LTM and LUC inspections of the site until conditions warrant discontinuation of sampling and change in LUC implementation.

3.0 AREA OF CONTAMINATION 69W

3.1 Site Background

AOC 69W is located by the northeast corner of the intersection of Jackson Road and Antietam Street on the northern portion of what was formerly the Main Post at Devens (**Figure 1-1**). AOC 69W consists of the former Devens Elementary School (Building 215), its associated parking lot, and the adjacent lawn extending approximately 300 feet northwest to Willow Brook (**Figure 3-1**). The building is currently home to the Francis W. Parker Charter Essential School. Impacts at AOC 69W are attributed to two separate releases of No. 2 heating oil in 1972 and 1978. It is estimated that 7,000 to 8,000 gallons of No. 2 heating oil were released into soil from each event.

The 1972 release occurred during the installation of a new 10,000-gallon underground storage tank (UST). The release was addressed, in part, by the installation of an oil skimmer near the release point to recover the released heating oil. A secondary control measure involved the installation of a 250-gallon underground concrete collection vault placed approximately 250 feet to the northwest to capture oily water. It is not clear how many gallons of heating oil or oily water were recovered, although it is estimated that the 250-gallon vault was pumped out every 3 months for a period of time (HLA, 1999a).

The 1978 release resulted from a failed piping joint in the oil pipes that led to the old boiler. A large hole was excavated on the north side of the school adjacent to the loading dock to locate the source of the release. Reports indicate that residual oil was collected from the excavation for one month before the damaged piping was found and replaced (HLA, 1999a). Shortly after the release, an oily sheen was reported in Willow Brook and the associated wetlands north of the school. More than 2,000 gallons of residual oil was captured with the oil recovery system. A removal action was performed in 1998 that included the removal of approximately 3,500 cubic yards of petroleum-contaminated soil, the oil recovery system's 250-gallon underground vault and its associated piping, and the 10,000-gallon UST. The soil removal action was limited by the presence of the building.

Several investigations have been performed to identify impacts to surface and subsurface soil and groundwater at AOC 69W. The ROD issued for AOC 69W in June 1999 selected "Limited Action" as the remedy for subsurface soils and groundwater and included LTM, LUCs, and five-year reviews. The intent of the ROD was primarily to address soil and groundwater contaminated with fuel oil. The LTM was developed to monitor for any potential off-site migration of contaminants and to verify that elevated concentrations decreased over time. The 1999 ROD listed arsenic and MassDEP EPH and VPH as the monitored analytes. Sampling for VPH was discontinued in 2014.

Based on detections of manganese in groundwater at the well point 69WP-08-01 installed in 2008, the Army installed an additional downgradient well point 69WP-13-01 in 2013 to monitor for potential manganese migration.

The construction of a modular building expansion for the rear portion of the Frances W. Parker Charter Essential School was completed in 2009. The AOC 69W remedy and sampling program were not impacted by the construction activities.

3.2 Groundwater Hydrology

During the Fall 2017 LTM event, water levels were collected from 17 vicinity wells and piezometers at AOC 69W: 69W-94-12, 69W-94-13, 69W-94-14, ZWM-01-25X, ZWM-01-26X, ZWM-95-15X, ZWM-95-16X, ZWM-95-17X, ZWM-95-18X, ZWM-99-22X, ZWM-99-23X, ZWM-99-24X, ZWP-95-01X, ZWP-95-02X, 69WP-08-01, 69WP-13-01 and the Willow Brook piezometer. Measured water levels at AOC 69W are presented in **Table 1-2**. Interpretive water-table elevations for the 2017 LTM gauging event at AOC 69W are presented on **Figure 3-2**.

Data from the fall 2017 LTM event at AOC 69W indicate that groundwater flows in a north-northwestern direction. For the central and eastern portions of AOC 69W, groundwater flows approximately parallel to Willow Brook, which flows along the western boundary of the site. For the southeasternmost portion of the site, which includes the Excavated Soils Management Area (ESMA), shallow groundwater is able to discharge directly to Willow Brook. This flow pattern is consistent with historical groundwater flow patterns in this area. The groundwater gradient of 0.0069 ft/ft (69W-94-13 and ZWM-95-18X) was calculated for the 2017 LTM event. The flow lines used to calculate the gradient are believed to be representative of groundwater flow at the site.

3.3 Groundwater Sampling

Groundwater at AOC 69W is sampled annually in the fall. Wells sampled in October 2017 included: 69W-94-13, 69W-94-14, ZWM-95-15X, ZWM-95-18X, ZWM-99-22X, ZWM-99-23X, ZWM-99-24X, ZWM-01-25X, and well points 69WP-08-01 and 69WP-13-01.

3.4 Analytical Results

The annual 2017 LTM event was performed in October/November. The fall 2017 sampling event consisted of collecting eight groundwater monitoring well samples, two well point samples, and one field duplicate sample. The samples were analyzed for EPH and dissolved metals (arsenic, iron, and manganese) except for the sample from well point 69WP-08-01, which was analyzed for dissolved metals only, and well point 69WP-13-01, which was analyzed for dissolved manganese only (in accordance with the 2015 LTMMP). The fall 2017 analytical results are presented in **Table 3-1** and on **Figure 3-3** and **Figure 3-4**.

3.4.1 October/November 2017 Data Summary

- Dissolved Metals – Dissolved arsenic concentrations exceeded the 10 µg/L MCL standard in samples from 3 of 10 wells: 69W-94-13 (24 µg/L), ZWM-99-22X (190 µg/L), and ZWM-99-23X (17 µg/L). The other arsenic results were non-detect, or were at or below the MCL. Manganese concentrations exceeded the background level of 291 µg/L in 4 of 10 wells (40%): 69W-94-13 (320 µg/L), ZWM-99-22X (1,200 µg/L), ZWM-99-23X (1,800 µg/L), and ZWM-01-25X (590 µg/L). Manganese was detected below the background in the other sampled wells. Iron was detected above the 9,100 µg/L background level only in the source area well ZWM-99-22X (24,000 µg/L). The other iron results were either non-detect or detected below the background value.

- EPH Carbon Fractions – EPH hydrocarbon results were non-detect or detected below benchmark levels. EPH concentrations are evaluated against MassDEP GW-1 standards for comparison purposes.

3.4.2 AOC 69W Data Trends

The results of the 2017 sampling event at AOC 69W were compared to results from previous sampling events. Historical exceedances of the monitoring criteria at AOC 69W from 2000 through 2017 are presented in **Table 3-2**. Graphical and statistical analyses of selected wells are presented in **Appendix D**.

During the Fall 2017 LTM event, dissolved arsenic concentrations were detected above the 10 µg/L MCL in wells 69W-94-13 (24 µg/L), ZWM-99-22X (190 µg/L), and ZWM-99-23X (17 µg/L). The arsenic concentrations in well 69W-94-13 have been variable over time and no statistically significant trend was observed ($p = 0.276$) at the selected 95% confidence level (**Appendix D**). A statistically significant upward trend was noted in well ZWM-99-22X ($p = 0.034$) for the complete dataset collected since spring 2000; however, arsenic concentrations have consistently decreased from 2009 to 2015, with minor increases in 2016 and 2017. The arsenic concentrations at ZWM-01-25X have remained below the MCL in the five sampling rounds since 2013. The arsenic concentrations in well ZWM-95-15X were variable, with a minor increase in 2017 and had no statistically significant trend observed ($p = 0.223$). The arsenic concentrations in well ZWM-99-23X were variable, with a minor increase in 2017 and had no statistically significant trend observed ($p = 0.102$).

Manganese concentrations continued to fluctuate with no apparent trend from 2000 to 2017, except for well ZWM-99-23X, which even with an increased detected concentration value in 2017 (1,800 µg/L in 2017 compared to 590 µg/L in 2016), has an overall, statistically significant downward trend ($p = 0.004$). The manganese concentrations in well point 69WP-08-01 were variable, with a minor decrease in 2017 and no statistically significant trend observed ($p = 0.076$). Well ZWM-01-25X had a statistically significant upward trend for the overall dataset from 2000 to 2017 ($p = 0.034$); however, manganese concentrations have been on an overall downward trend since fall 2009. No statistically significant trends were observed in wells 69W-94-13 ($p = 0.243$), ZWM-95-15X ($p = 0.301$), and ZWM-99-22X ($p = 0.059$). The 2017 results for wells 69W-94-13 (320 µg/L), ZWM-99-22X (1,200 µg/L), ZWM-99-23X (1,800 µg/L), and ZWM-01-25X (590 µg/L) continue to exceed the 291 µg/L benchmark.

The EPH compound concentrations, specifically the C_{11}-C_{22} aromatic fraction, decreased since 2016. The C_{11}-C_{22} aromatic results from well 69W-94-13 decreased from 410 µg/L in 2016 and to non-detect (100 µg/L U) in 2017. The 2017 results, while lower than previous results, are consistent with historical results, which have ranged from non-detect to 410 µg/L since fall 2002 (and up to a maximum of 1,900 µg/L in spring 2002), and do not show a statistically significant trend ($p = 0.191$). The C_{11}-C_{22} aromatic results from wells ZWM-95-15X and ZWM-99-23X have decreased to non-detect levels, which is consistent with recent historic results from 2010 to 2015. The C_{11}-C_{22} results from well ZWM-99-22X have decreased to 170 µg/L which is below the monitoring criterion of 200 µg/L. C_{11}-C_{22} aromatic concentrations in well ZWM-99-22X show a statistically significant downward trend over time ($p = 0.002$). The EPH C_9-C_{18} aliphatic hydrocarbon results in 69W-94-13 decreased from 1,100 µg/L in 2016 to non-detect in 2017. The

detection of C_9-C_{18} aliphatic in 69W-94-13 in 2016 appears anomalous as C_9-C_{18} aliphatic was non-detect in 2014, 2015, and 2017.

3.4.3 Water Quality Parameters

General water quality chemistry parameters (pH, temperatures, specific conductivity, ORP, DO, and turbidity) were measured at each of the wells during the 2017 sampling events. These parameters are measured concurrently with low-flow sampling and are used to determine groundwater stabilization within each well prior to sampling. Final field readings taken prior to collection of each groundwater sample are presented in **Table 3-1**. The ORP and DO data are used to determine whether reducing or oxidizing conditions are present at a specific well. Low ORP values (below 50 millivolts) and DO concentrations below 1 mg/L are generally associated with reducing conditions and thus, elevated dissolved arsenic, iron, and manganese concentrations in groundwater. While reductive conditions may facilitate the breakdown of petroleum hydrocarbons, they can also cause naturally occurring arsenic in the soils to mobilize by reducing the relatively insoluble arsenic (V) oxidation state to soluble arsenic (III). Such reducing conditions also yield higher concentrations of iron and manganese. Overall, the ORP, DO, and metals data indicate that reducing conditions are present at wells ZWM-99-22X, ZWM-99-23X, and 69WP-13-01.

3.5 Data Quality Evaluation for 2017 Long-Term Monitoring Events

Groundwater samples were collected from eight monitoring wells and two well points in 2017. Samples were analyzed at TestAmerica for dissolved metals and submitted to Katahdin Analytical Services for EPH analysis.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, surrogate recoveries, LCS/LCSD recoveries, and MS/MSD recoveries), the results for the samples were acceptable as reported. No qualifications were needed.

3.6 Land-Use Controls

Ownership of AOC 69W was transferred from the Army to MassDevelopment in August 2007. MassDevelopment later transferred ownership of AOC 69W to the Francis W. Parker Charter Essential School, the current owner of the property. LUCs were implemented to limit potential exposure to contaminated soil and groundwater under existing and future site conditions, per the 1999 ROD and a subsequent deed (Deed, 2007). The LUCs ensure that the remaining contaminated soils beneath and adjacent to the building are not excavated. The LUCs also prohibit the extraction of groundwater from the site for industrial or potable water supply use. Existing land use is evaluated as part of the Five-Year Review process to ensure control requirements are being met. A site-specific annual LUC checklist, including physical onsite inspection and interview components, was developed in 2007 for use during LUC verification activities. The checklist is presented in **Appendix E**.

3.6.1 Land-Use Control Interviews

Interviews were conducted with Ms. Michelle McKenna of the Francis W. Parker Charter Essential School, Mr. Ron Ostrowski of MassDevelopment, Mr. Neil Angus of the Devens Enterprise Commission, regarding the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls;
- Excavations (planned or emergency) that may have extended to soil below 2 feet in depth north of the school within the ESMA delineated on **Figure 3-1**;
- The source of public drinking water for the property; and
- Proposed plans for property sale, future redevelopment, and construction or demolition activities at the site.

Ms. McKenna and Mr. Ostrowski stated that there were no changes to the property in 2017.

3.6.2 Land-Use Control On-Site Inspection

LUCs were visually verified during annual groundwater sampling events. During sampling activities, a LUC inspection was performed to identify the following:

- Any signs of increased exposure potential to the public from soil and/or surface water contaminants;
- Any evidence (repaved cut marks or penetrations in the pavement) within the ESMA that have not been otherwise identified and properly documented by the property owner;
- Any evidence that groundwater extraction wells had been installed at the site; and
- Any evidence of site use changes.

The Francis W. Parker Charter Essential School currently occupies the property; and MassDevelopment supplies potable water to the school. There were no excavations or penetrations through pavement within the ESMA observed during 2017. No groundwater extraction wells have been installed on the site and no evidence of increased exposure potential was observed during the 2017 LTM sampling event.

3.7 Summary and Conclusions

Arsenic levels remain above the 10 µg/L MCL in groundwater from wells 69W-94-13 (24 µg/L), ZWM-99-22X (190 µg/L), and ZWM-99-23X (17 µg/L). Arsenic was non-detect in the 2017 sample from the downgradient well point 69WP-08-01 and ZWM-95-18X. The manganese criterion of 291 µg/L was exceeded in wells 69W-94-13 (320 µg/L), ZWM-99-22X (1,200 µg/L), ZWM-99-23X (1,800 µg/L), and ZWM-01-25X (590 µg/L). Manganese was below the monitoring criterion at monitoring wells 69W-94-14, ZWM-95-15X, ZWM-95-18X, ZWM-99-24X and downgradient well points 69WP-08-01 and 69WP-13-01. Iron was detected above the 9,100 µg/L background level only in the source area well ZWM-99-22X (24,000 µg/L). The other iron results were either non-detect or detected below the background value.

Elevated dissolved metals, including arsenic and manganese, are anticipated and are due to reducing conditions resulting from hydrocarbon degradation. The metals dissolution is self-limiting once the hydrocarbon source is mitigated and is not expected to migrate a significant distance beyond the original hydrocarbon release point. Over time, as the reducing conditions return to oxidizing conditions, the concentrations of elevated dissolved metals are anticipated to decrease as evidenced at 69W-94-13.

Recent Results from 69W-94-13

Sample Year	Arsenic (µg/L)	Manganese (µg/L)	Dissolved Oxygen (mg/L)	ORP (mV)
2014	101	1,940	0.2	-53.7
2015	120	2,050	0.21	-85.9
2016	76	2,600	1.79	-103.7
2017	24	320	2.66	140.2

EPH C_{11}-C_{22} aromatics continued to be detected in groundwater from well ZWM-99-22X (170 µg/L) at a concentration below the 200 µg/L benchmark. The EPH C_9-C_{18} aliphatic hydrocarbon results from source area well 69W-94-13 decreased from 1,100 µg/L in 2016 to non-detect in 2017.

Groundwater sampling results indicate that, overall, COC concentrations have remained consistent with minor fluctuations since 2009 (with the exception of C_9-C_{18} EPH in well 69W-94-13 which appears to be anomalous in 2016), and the potential for EPH off-site migration has decreased over time. Sampling results at AOC 69W sentry wells indicate that EPH and arsenic are not migrating off site in groundwater at concentrations above the cleanup level and monitoring criteria.

The ROD remedy includes LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. Observations were made during sampling to identify any signs of increased exposure potential. No evidence of increased exposure potential was observed during the fall 2017 LTM event. The Army will continue LTM activities and LUC inspections until conditions warrant a change in LTM activities. LUCs are likely to remain in place at AOC 69W for the near future.

4.0 AREA OF CONTAMINATION 43G

4.1 Site Background

AOC 43G is in the central portion of the former Main Post of Fort Devens (**Figure 1-1**). It is located at the southwestern corner of Feinburg Road and Queenstown Street. The layout of AOC 43G is depicted on **Figure 4-1**. AOC 43G consists of the former Army Air Force Exchange Service (AAFES) gas station (Areas 2 and 3) and historical Gas Station G (Area 1) and has been the subject of RIs due to petroleum contamination resulting from the past operations. The former gas station was used as a motor pool fueling station during the World War II era. The identified USTs at AOC 43G have been removed.

In 1996, the Army conducted a FS to evaluate potential remedial alternatives and signed a ROD to document the selected remedy. The selected Remedial Action for AOC 43G relies on intrinsic bioremediation, groundwater and contaminant modeling, and long-term groundwater monitoring to evaluate the effectiveness of the alternative at controlling groundwater contamination and site risk. Intrinsic remediation is a remedial approach that relies on natural attenuation to remediate contaminants in the subsurface. The remedy will mitigate existing groundwater contamination through natural attenuation and bioremediation and reduce the potential risk of future commercial/industrial exposure to contaminated groundwater. Components of the selected remedy included assessment, data collection and groundwater modeling, LTM, annual reporting to USEPA and MassDEP, and performing 5-year reviews. Groundwater sampling results and modeling indicated that intrinsic remediation is a viable remedial option for AOC 43G.

4.2 Groundwater Hydrology

Measured water levels at AOC 43G for the Fall 2017 LTM event are presented in **Table 1-2**. Interpretive water-table elevations for the 2017 LTM gauging event at AOC 43G are presented on **Figure 4-2**. An analysis of data from the fall 2017 LTM event shows groundwater flow to be in a west-to-east/southeast direction (**Figure 4-2**), which is consistent with the site's surficial topography and historical flow patterns. The shallow groundwater flow pattern is toward the Robbins Pond drainage area, located approximately 600 feet to the east of downgradient well XGM-94-06X. A groundwater gradient of 0.053 ft/ft (XGM-97-12X and AAFES-7) was calculated for the fall 2017 LTM event. The flow lines used to calculate the gradient are believed to be representative of groundwater flow at the site.

4.3 Groundwater Sampling

Groundwater sampling activities at AOC 43G are conducted annually in October 2017. Wells sampled at AOC 43G included AAFES-2, XGM-93-02X, XGM-97-12X, XGM-94-04X, and AAFES-7.

4.4 Analytical Results

The analytical results for the 2017 LTM event at AOC 43G are summarized in **Table 4-1**. A summary of the exceedances over time at AOC 43G from 1999 to 2017 is presented in **Table 4-2**. The VPH and alkalinity data for the 2017 LTM event are summarized on **Figure 4-3**. Total metals results are summarized on **Figure 4-4**.

4.4.1 October 2017 Data Summary

- VOCs – Target VOCs; benzene, ethylbenzene, *m,p*-xylenes, *o*-xylene and toluene were either non-detect or were below the applicable MCLs standards in each of the sampled wells.
- Metals – Total manganese was detected in each of the sampled monitoring wells with concentrations ranging from 330 µg/L (in sentinel well AAFES-7) to 2,800 µg/L in AAFES-2. Total manganese concentrations exceeded the cleanup goal of 375 µg/L in groundwater at 4 of the 5 (80%) monitoring wells. Total iron was detected above the 9,100 µg/L cleanup goal level in 2 of the 5 (40%) monitoring wells: AAFES-2 (10,000 µg/L) and XGM-97-12X (18,000 µg/L). Arsenic was not identified as a COC for remediation in the ROD, although total arsenic detections were compared to the MCL for informational purposes. Total arsenic slightly exceeded the 10 µg/L MCL in 2 of 5 (40%) of the sampled wells: AAFES-2 (13 µg/L) and XGM-97-12X (14 µg/L).
- VPH Carbon Fractions – VPH concentrations are evaluated against MCP standards for purposes of comparison. The C_5-C_8 aliphatics result of 360 µg/L and the C_9-C_{10} aromatics result of 410 J µg/L for well XGM-94-04X exceeded respective benchmarks. The C_5-C_8 aliphatics results for the source area wells AAFES-2 (890 µg/L) and XGM-97-12X (350 µg/L) persist above the 300 µg/L benchmark. The C_9-C_{10} aromatics results for the source area wells, AAFES-2 (1,100 J µg/L) and XGM-97-12X (430 J µg/L), remain above the 200 µg/L benchmark. VPH concentrations at sentry wells XGM-94-07X and XGM-94-08X remain below the benchmarks.
- Alkalinity measured in samples from each of the wells ranged from 140 to 160 mg/L (calcium carbonate equivalents). No monitoring criterion is established for this parameter.

4.4.2 AOC 43G Data Trends

The 2017 LTM results were compared to previous sampling events. Historical exceedances of the cleanup goals from 1999 through 2017 are presented in **Table 4-2**. Graphical and statistical analyses of selected wells are presented in **Appendix D**. Statistical analyses were compared to a 95% confidence level.

Benzene concentrations at wells AAFES-2, XGM-93-02X, XGM-97-12X, and XGM-94-04X have been below the cleanup goal (5 µg/L) since 2014. Ethylbenzene has been below the cleanup level since 1997. Xylenes have been below the cleanup level since 1995. Toluene concentrations in well XGM-97-12X have been at or below the MCL since 2001.

The manganese concentrations in groundwater wells at AOC 43G are generally above the 375 µg/L cleanup level corresponding with high total iron concentrations. For manganese, statistically significant downward trends were identified for three of the five wells (60%) sampled in 2017: AAFES-2 ($p = 0.001$), XGM-93-02X ($p = 0.004$), and XGM-97-12X ($p = 0.002$). No statistically significant trends were identified for manganese in wells AAFES-7 ($p = 0.186$) or XGM-94-04X ($p = 0.181$). Statistically significant downward trends in iron concentrations were identified for two wells in 2017: AAFES-2 ($p = 0.003$) and XGM-93-02X ($p = 0.002$). No statistically significant trend was identified for iron in well XGM-97-12X ($p = 0.061$).

VPH monitoring criteria was established by the Army to evaluate intrinsic remediation at AOC 43G. The ROD does not include VPH as a cleanup goal, but the analysis is used to gauge the cleanup of the site and to determine whether a risk-based standard needs to be developed. VPH concentrations are evaluated against MCP standards for comparison purposes. The 2017 data for wells located in the source area and in the area of the historical extent of groundwater impacts indicated an increase in VPH C_9-C_{10} aromatics concentration at well AAFES-2 from 730 µg/L in 2016 to 1,100 J µg/L in 2017, at well XGM-97-12X from 340 µg/L to 430J µg/L, at well XGM-94-04X from 320 µg/L in 2016 to 410 J µg/L in 2017. No statistically significant trend was identified for VPH C_9-C_{10} aromatics in well XGM-94-04X ($p = 0.190$). However, the overall trend shows statistically significant decreasing trends for wells AAFES-2 ($p < 0.001$), XGM-97-12X ($p < 0.001$), and XGM-93-02X ($p < 0.001$).

The VPH C_5-C_8 aliphatic carbon fraction appears to indicate a general downward trend for some monitoring wells since the historical highs observed in November 2005; however, fluctuations periodically occur. This cyclic pattern may be caused by seasonal fluctuations of the water table with extreme high or low precipitation events. For the 2017 sampling event, wells XGM-94-04X (360 µg/L), XGM-97-12X (350 µg/L), and AAFES-2 (890 µg/L) contained VPH C_5-C_8 aliphatic hydrocarbon above 300 µg/L. Statistically significant downward data trends since the beginning of the monitoring program were noted for wells AAFES-2 ($p = 0.500$), XGM-93-02X ($p = 0.166$), and XGM-97-12X ($p = 0.029$). Well XGM-94-04X ($p = 0.027$) was noted with a statistically significant upward data trend since the beginning of the monitoring program.

The VPH C_9-C_{12} aliphatic concentrations have fluctuated since 1999. In 2017, the VPH C_9-C_{12} concentrations were below the 700 µg/L benchmark.

VPH concentrations at sentry wells XGM-94-07X and XGM-94-08X, located at the downgradient extent of the area historically impacted by the original release, remained well below the benchmarks or were non-detect throughout the monitoring period (Table 4-2).

4.4.3 Water Quality Parameters

General water quality chemistry parameters (pH, initial and final temperatures, specific conductivity, ORP, DO, and turbidity) were measured at each of the wells during the 2017 sampling event. These parameters are measured concurrently with low-flow sampling and are used to determine groundwater stabilization within each well prior to sampling. The final field readings taken prior to collection of each groundwater sample at AOC 43G are reported in **Table 4-1**. The ORP and DO data are used to determine whether reducing or oxidizing conditions are present at a specific well. Low ORP values (below 50 millivolts) and DO concentrations below 1 mg/L are generally associated with elevated arsenic, iron, and manganese concentrations. While reductive conditions may facilitate the breakdown of petroleum hydrocarbons, they can also cause naturally occurring arsenic in the soils to mobilize by reducing the relatively insoluble arsenic (V) oxidation state to soluble arsenic (III). Such reducing conditions also yield higher concentrations of iron and manganese. The ORP, DO, and metals data in **Table 4-1** indicate that reducing conditions are still prevalent in groundwater at the central AOC 43G wells, but oxidizing in nature at the downgradient well AAFES-7.

4.5 Data Quality Evaluation for 2017 Long-Term Monitoring Events

Groundwater samples were collected from five AOC 43G wells in October 2017. The samples were analyzed at TestAmerica for total and dissolved metals and total alkalinity and were analyzed at Katahdin Laboratory for VPH analysis.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, surrogate recoveries, LCS/LCSD recoveries, and MS/MSD recoveries), the data may be used without qualification, except the following:

- VPH Hydrocarbon Analysis – VPH hydrocarbon results were acceptable with the noted qualifications. Four samples required reanalysis at dilutions due to high levels of C_9-C_{10} aromatics and C_9-C_{12} aliphatics exceeding the upper limit of the calibration curves. Both the diluted and undiluted results were reported by the laboratory for these samples with comparable results. After review of the reported results. The undiluted results for samples AAFES-2_Fall17, XGM-94-04X_Fall 17, XGM-97-12X and XGM-DUP1-Fall17 were reported; the undiluted results for the C_9-C_{10} aromatics and C_9-C_{12} aliphatics in these samples were qualified as estimated with a potentially low bias.
- Total and Dissolved Metals and Alkalinity Analyses – The results for manganese were qualified as estimated in sample XGM-94-04X due to MS/MSD recoveries less than control limits. The alkalinity results for all AOC 43G wells were acceptable, as reported.

4.6 Land-Use Controls

AOC 43G is currently under Army ownership. Per the October 1996 ROD, substantive requirements of LUCs that restrict access to contaminated groundwater and soil are in place at AOC 43G. The September 2007 *Addendum to the Real Property Master Plan* (Army, 2007) included supplemental information on LUCs established under BRAC and CERCLA programs that are applicable to the former AAFES Gas station. The LUCs were designed to protect the integrity and effectiveness of the remedy. Any proposed actions that affect the AOC 43G property must consider following the ROD requirements, which include:

- Ensure that the property is not used for residential purposes and prohibit the use of groundwater beneath the site;
- If the Army transfers the property by lease or deed, an Environmental Baseline Survey will be conducted to ensure that the remedy remains protective by incorporating all necessary environmental protection provisions within the Finding of Suitability to Transfer (FOST) and the property transfer deed; and
- Any intrusive construction work must consider that residual soil and groundwater contamination has been documented for AOC 43G, and such actions should be coordinated with the Department of Public Works (DPW), and the BRAC.

In addition to the above LUCs, a site-specific annual LUC checklist, including physical on-site inspection and interview components, was developed in 2007 for use during LUC verification activities. The checklist is presented in **Appendix E**.

4.6.1 Land-Use Control Interviews

An interview was conducted with Mr. Robert Simeone the BRAC Environmental Coordinator regarding the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls;
- The source of public drinking water for the property; and
- Proposed plans for property sale, future redevelopment and construction or demolition activities at the site.

Mr. Simeone stated that there were no changes to the property during 2017.

4.6.2 Land-Use Control On-Site Inspection

LUCs were visually verified during annual groundwater sampling events. During sampling activities, a LUC inspection was performed to identify the following:

- Any signs of increased exposure potential to the public from soil and/or surface water contaminants;
- Any evidence that groundwater extraction wells had been installed at the site; and
- Any evidence of site use changes.

No evidence of increased exposure potential was observed during the fall 2017 sampling event.

4.7 Conclusions

The ROD identifies groundwater site-specific cleanup goals for COCs at AOC 43G including benzene, ethylbenzene, xylene, manganese, and iron. Toluene and VPH monitoring criteria were not included in the ROD. For purposes of monitoring, toluene is compared to its MCL and VPH is compared to MCP standards. The Army uses the VPH concentrations to evaluate intrinsic remediation at AOC 43G and determine whether risk-based standards need to be developed.

Benzene, ethylbenzene, and xylenes results are either non-detect or below the cleanup goals in each of the sampled wells. Benzene concentrations have been below the cleanup goal since 2014, ethylbenzene has been below the cleanup level since 1997, xylenes have been below the cleanup level since 1995. Toluene was non-detect in 2017 and has been at or below the MCL since 2001.

Manganese exceedances were noted in four of the five wells sampled in 2017, although statistically significant downward trends in manganese concentrations were identified in three of the five wells sampled in 2017. Manganese was detected below the cleanup goal in sentry well AAFES-7. Iron exceedances were noted in two of the five wells sampled in 2017. Statistically significant downward trends in total iron concentrations were identified in two wells in 2017. Manganese and iron trends will continue to be monitored in 2018.

VPH monitoring for C_5-C_8 aliphatics and C_9-C_{10} aromatics have exceedances of the monitoring criteria at source area wells AAFES-2 and XGM-97-12X. VPH concentrations are expected to be present within this area. VPH monitoring for C_5-C_8 aliphatics and C_9-C_{10} aromatics at sentry well XGM-94-04X maintained exceedances of the monitoring criteria in 2017. VPH trends in well

XGM-94-04X will continue to be monitored in 2018. The data trends reflect the overall degradation of the hydrocarbon source, with the concentrations of the lighter compounds (e.g., benzene, ethylbenzene, xylenes) decreasing at a faster rate than the more persistent aliphatic and aromatic compounds, as expected.

VPH concentrations at sentry wells XGM-94-07X and XGM-94-08X, located at the downgradient extent of the area historically impacted by the original release, remained well below the benchmarks or were non-detect. In accordance with the VPH monitoring protocol provided in *Final Intrinsic Remediation Assessment Report, Area of Contamination 43G, Historic Gas Station, Devens, Massachusetts* (Stone & Webster Environmental Technology and Services/HLA, 1999), the development of risk-based VPH concentrations is not warranted as VPH concentrations at sentry wells XGM-94-07X and XGM-94-08X, located approximately 800 feet upgradient of the boundary/compliance point for AOC 43 (i.e., the eastern boundary of the former Fort Devens property retained for Army Reserve operations), remain well below the MCP GW-1 benchmarks.

The ROD remedy includes LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. During LTM sampling, observations were made to identify any signs of increased exposure potential. No evidence of increased exposure potential was observed during the 2017 LTM event. The Army will continue to perform LTM and LUC inspections until site conditions warrant discontinuation of sampling and change in LUC implementation.

5.0 AREAS OF CONCERN 32 AND 43A

5.1 Site Background

AOCs 32 and 43A are located east of Cook Street and north of Independence Drive (**Figure 5-1**). A portion of AOC 32 intersects a Zone II aquifer protection area[2]. Three Grove Pond Wells (PWS IDs 2019001-06G, 2019001-07G, and 2019001-08G) are located within this Zone II protection area. AOC 32 (DRMO Yard) was an active materials storage facility from approximately 1964 to 1995. It consisted of three fenced areas where various materials were processed and stored, and contained a former waste oil UST (UST #13). The tank was removed in 1992; and contaminated soils were excavated and disposed of off-site. COCs historically have included VOCs, petroleum hydrocarbons, and lead. Arsenic and manganese have also exceeded site criterion. Monitored natural attenuation was the selected remedy for addressing the groundwater contamination. **Figure 5-1** shows the new warehouse overlying the footprint of the former AOC features.

AOC 43A (POL Storage Area) served as the central distribution point for all gasoline stations at Fort Devens during the 1940s and 1950s, and was subsequently used to store fuels for various purposes. The distribution facility consisted of a main gasoline station, a pump house, four 12,000-gallon USTs, one 10,000-gallon UST, two 12,000-gallon above-ground storage tanks (AST), and two 8,000-gallon ASTs. Gasoline was delivered by rail car and transferred to the tanks. The POL Storage Area consisted of a fenced lot within a developed industrial area of buildings, roads, and grass lots. The site investigation indicated that a low level of xylene and an elevated level of petroleum hydrocarbons existed in the subsurface soils. The RI concluded that groundwater contamination required a remedial action evaluation. After the FS was completed, monitored natural attenuation was chosen as the selected remedy for groundwater and incorporated into the sites' 1998 ROD.

Quarterly groundwater sampling conducted between January and October 1999 in AOCs 32/43A demonstrated that the plume was not migrating, and semi-annual sampling rounds were implemented to monitor the downward trend of concentrations over time (Stone & Webster Environmental Technology & Services, 2000a and 2000b). It was concluded that additional sampling was needed to determine if the future warehouse installation would influence the migration of contaminants or groundwater hydraulics. Groundwater sampling was discontinued at AOC 43A in fall 2005 because cleanup goal exceedances had not been observed in AOC 43A wells since 2002. Wells SHL-15 and 32M-92-01X were removed from the sampling program in 2007 because they are located hydraulically cross-gradient/upgradient of historical source areas and are not likely to be influenced by either source area. Each well was retained for the collection of groundwater level data. A remedial action consisting of injection of a persulfate oxidant was implemented in February 2009 to augment the natural attenuation remedy at AOC 32 in the vicinity of the former USTs. The remedial action targeted the remaining site COCs, including the dichlorobenzene isomers, at well 32M-01-18XBR. The findings and conclusions for this remedial action are reported in the 2009 *AOCs 32 & 43A Persulfate Injection Letter Report* (HGL, 2009).

[2] MassDEP establishes public water supply protection areas in accordance with the Drinking Water Regulations at 310 CMR 22.02. In part, a Zone II groundwater protection area is defined as the area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated.

5.2 Groundwater Hydrology

Measured water levels at AOC 32/43A for the June 2017 LTM event are presented in **Table 1-1**. Interpretive overburden and bedrock water table elevation maps prepared for AOCs 32 and 43A show that groundwater generally flows to the south/southeast in the overburden and to the south/southwest in bedrock with a component of easterly flow on the east side of the area (**Figure 5-2** and **Figure 5-3**, respectively) which is consistent with the site's historical flow patterns. The component of shallow groundwater that flows to the southeast, flows in the direction of Willow Brook, which is located approximately 1,700 feet from the southeasternmost monitoring well (32Z-01-09OB). The component of bedrock groundwater that flows to the east, flows in the direction of Grove Pond, which is located approximately 2,400 feet from the easternmost bedrock monitoring well (32M-01-14XBR).

The groundwater gradient 0.024 ft/ft for overburden wells (32Z-01-08XOB and 43M-01-16XOB) was calculated during the June 2017 monitoring event. The groundwater gradient for bedrock wells is 0.047 ft/ft (32Z-01-06XBR and 32M-01-14XBR) on the east side of the area and 0.02 ft/ft (equipotential contours) for flow to the south-southwest. The flow lines used to calculate the gradient are believed to be representative of groundwater flow at the site.

5.3 Groundwater Sampling

Groundwater sampling at AOCs 32 and 43A was reduced to an annual event in the 2015 LTMMP (Sovereign/HGL, 2015). Wells sampled during the 2017 LTM event included 32M-01-13XBR, 32M-01-14XOB, 32M-01-17XBR, and 32M-01-18XBR.

5.4 Analytical Results

The 2017 LTM event consisted of four monitoring well samples from AOC 32/43A. The groundwater analytical results for the LTM event are summarized in **Table 5-1**. VPH and VOC concentrations from the 2017 LTM event are summarized on **Figure 5-4**. Dissolved metal concentrations for the 2017 LTM event are on **Figure 5-5**.

5.4.1 2017 Data Summary

- VOCs – Groundwater collected from monitoring well 32M-01-18XBR in the source area contained a concentration of 1,4-dichlorobenzene (46 µg/L) above the cleanup goal of 5 µg/L and contained a concentration of chlorobenzene (170 µg/L) above the monitoring criteria of 100 µg/L. The other VOC results were either below respective cleanup goals or were non-detect.
- Dissolved Metals – Dissolved arsenic was detected in groundwater at a concentration above the 10 µg/L cleanup goal in monitoring well 32M-01-14XOB (30 µg/L). The other dissolved arsenic results were either non-detect or detected were below 10 µg/L. The manganese groundwater sample results were either non-detect or were below the 3,500 µg/L cleanup goal.
- VPH Carbon Fractions – The C_9-C_{10} aromatic results for well 32M-01-18XBR (410 µg/L) exceeded the benchmark of 200 µg/L. The other VPH carbon fraction groundwater sample results were non-detect.

- VPH Target Analytes – VPH target analytes groundwater sample results were non-detect.

5.4.2 AOCs 32 and 43A Data Trends

Results from 2017 sampling events at AOCs 32 and 43A were compared to results from previous sampling events. Historical exceedances of the cleanup goals from 2006 through 2017 for AOCs 32 and 43A are summarized in **Table 5-2**, and a summary of the cleanup goal exceedances from 2002 to 2017 for source area well 32M-01-18XBR is presented in **Table 5-3**. Graphical and statistical analyses of selected wells are presented in **Appendix D**. Statistical analyses were compared to a 95% confidence level.

A major contributor to the decrease in COC concentrations in groundwater is the February 2009 sodium persulfate injection performed near source area well 32M-01-18XBR. Prior to the 2009 injection, COC concentrations, primarily dichlorobenzene (DCB) isomers, exhibited seasonal fluctuations and no definitive concentration trend. Post injection monitoring reveals COC concentration reductions with values below pre-injection levels. No additional persulfate injections are currently planned due to the continued diminishing of COC concentrations.

As shown in **Table 5-3**, trichloroethene (TCE) concentrations in source area well 32M-01-18XBR have been below the monitoring criterion since Fall 2004 and has largely remained non-detect since October 2007. Bromodichloromethane in well 32M-01-18XBR has been non-detect since October 2006.

The target analytes 1,2-dichlorobenzene (1,2-DCB), 1,3-dichlorobenzene (1,3-DCB), and 1,4-DCB were detected above the associated monitoring criteria in groundwater at well 32M-01-18XBR from 2002 to 2009. However, since the February 2009 sodium persulfate injection, all three isomers have exhibited concentration declines. Furthermore, the three isomers continue to depict inter-related trends that fluctuate from event to event and are likely the result of sequential microbial de-chlorination and degradation reactions. 1,2-DCB has been below the monitoring criteria since May 2010. 1,3-DCB has been below the criteria since June 2014 and has shown a statistically significant downward concentration trend ($p = 0.035$) since the injection was conducted in 2009. Only 1,4-DCB was detected above its criterion (5 µg/L) in the source well, 32M-01-18XBR (46 µg/L), in 2017. Since the 2009 injection, 1,4-DCB concentrations have shown a general downward trend, although not statistically significant at the selected confidence interval ($p = 0.094$).

The VPH C_9-C_{10} aromatics concentrations at well 32M-01-18XBR have demonstrated an overall downward trend, although not statistically significant ($p = 0.125$). The VPH C_9-C_{12} and EPH C_9-C_{18} aliphatic concentrations decreased to below the monitoring criteria by 2005 and 2007 respectively. The VOC and VPH concentrations at well 32M-01-18XBR are expected to continue to decrease.

Arsenic has been periodically detected above the 10 µg/L cleanup goal in AOCs 32 and 43A wells since 2006 (**Table 5-2**). Since 2010, the only well with arsenic detections above the cleanup goal was 32M-01-01-14XOB, except in 2015 at 32M-01-18XBR. Historical total arsenic concentrations at 32M-01-14XOB were consistently above 10 µg/L; ranging up to a high of 90 µg/L in 2015, with no overall statistically significant trend ($p = 0.480$). The concentration for dissolved arsenic in 32M-01-14XOB was 30 µg/L in 2017. As discussed for other AOCs, such a

reducing environment, combined with a low DO concentration, promotes more soluble, non-sequestered arsenic and therefore, a higher groundwater concentration.

Manganese concentrations and have remained below the cleanup goal (background level) since 2012 (**Table 5-2**). The analytical results (**Table 5-3**) suggest that groundwater at well 32M-01-18XBR has reverted to an oxidized environment. Combined with increasing DO (5.4 mg/L during 2017, **Table 5-1**), the result is sequestration of arsenic and manganese back into the aquifer soils and lower concentrations in the groundwater sample.

5.4.3 Water Quality Parameters

General water quality chemistry parameters (pH, temperature, specific conductivity, ORP, DO, and turbidity) were measured at each of the four wells during the 2017 sampling event. These parameters are measured concurrently with low-flow sampling and are used to determine groundwater stabilization within each well prior to sampling. The final field readings for water quality parameters at AOCs 32 and 43A during the 2017 sampling event are reported in **Table 5-1**. The ORP and DO data show that the area is returning to an oxidizing environment with the lowest ORP and DO values present at 32M-01-14XOB. A comparison of the 2010 through 2017 field results indicates that well 32M-01-18XBR has reverted to an oxidizing environment (**Table 5-3**).

5.5 Data Quality Evaluation for 2017 Long-Term Monitoring Events

Groundwater samples were collected from four AOCs 32 and 43A wells in 2017. Samples were analyzed at TestAmerica for VOCs and dissolved metals and submitted to Katahdin Analytical Services for VPH analysis.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, surrogate recoveries, LCS/LCSD recoveries, and MS/MSD recoveries), the data may be used without qualification, except the following:

Volatile Organic Compound Analysis

- VOC results for the AOCs 32 and 43A wells were acceptable, as reported. No qualifications were needed.

Volatile Petroleum Hydrocarbon Analysis

- VPH results for the AOCs 32 and 43A wells were acceptable, as reported. No qualifications were needed.

Dissolved Metals Analysis

- Dissolved metals results for the AOCs 32 and 43A wells were acceptable as reported, except the relative percent difference for the dissolved arsenic result in the field duplicate exceeded the acceptable criteria and the results for dissolved arsenic in the field duplicate sample pair were qualified as estimated.

5.6 Land-Use Controls

Ozark Automotive Distributers, Inc. (a division of O'Reilly Automotive, Inc.) currently operates the property at AOCs 32/43A. LUCs were established to limit the potential exposure to the contaminated soil and groundwater under both the existing and future site conditions, per the ROD

signed in February 1998, and was incorporated into the deed upon transfer to MassDevelopment. The LUCs were included in the deed when O'Reilly Automotive, Inc., purchased the property. The LUCs ensure that exposure to any remaining contaminated soils beneath the site is controlled and the extraction of groundwater from the site for industrial or potable water supply is not permitted. LUCs are verified during annual sampling events. Existing land-use is evaluated as part of the Five-Year Review process to ensure control requirements are being met. A site-specific annual LUC checklist, including physical on-site inspection and interview components, was developed in 2007 for use during LUC verification activities. The checklist is presented in **Appendix E**.

5.6.1 Land-Use Control Interviews

Interviews were conducted with Mr. Ron Ostrowski and Mr. Neil Angus of MassDevelopment, and Mr. Jason Pahl of O'Reilly Automotive, regarding the following:

- Familiarity with the LUCs imposed upon the property and documentation of these controls;
- Excavations (planned or emergency) that may involve soils and groundwater; and
- Proposed plans for property sale, future redevelopment, and construction or demolition activities at the site.

Mr. Ostrowski and Mr. Angus stated that the building is owned and operated by O'Reilly Automotive. The contact for the site is Facilities Manager, Jason Pahl. He confirmed that there have been no changes at the facility and no ground disturbance at the site during 2017.

5.6.2 Land-Use Control On-Site Inspection

LUCs were verified during annual groundwater sampling events performed. During sampling activities, a LUC inspection was performed to identify the following:

- Any signs of increased exposure potential to the public from soil and/or surface water contaminants;
- Any evidence that groundwater extraction wells had been installed at the site; and
- Any evidence of site use changes.

MassDevelopment supplies potable water to the large warehouse that currently occupies the property. No evidence of increased exposure potential was observed during the 2017 sampling events.

5.7 Summary and Conclusions

Groundwater samples were collected from four monitoring wells at AOCs 32 and 43A in 2017. Groundwater from well 32M-01-14XOB had a detection of total arsenic above the cleanup goal of 10 µg/L. The concentrations of 1,4-DCB and VPH C_9-C_{10} in source area well 32M-01-18XBR remain above the cleanup goal and monitoring criteria, respectively, and show downward, although not statistically significant trends. 1,2-DCB has been below the cleanup goal since May 2010 at 32M-01-18XBR. 1,3-DCB has been below the criteria since June 2014 at 32M-01-18XBR and has shown a statistically significant downward concentration trend ($p = 0.035$) since the injection was conducted in 2009. Chlorobenzene was detected above the monitoring criteria

(100 µg/L) at 170 µg/L in 32M-01-18XBR. There were no other exceedances of cleanup goals/benchmarks during the 2017 sampling event.

The ROD remedy includes LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. During sampling, observations were made to identify any signs of increased exposure potential. No evidence of increased exposure potential was observed during the 2017 LTM event. The Army will continue to perform LTM and LUC inspections until site conditions warrant discontinuation of sampling and change in LUC implementation.

6.0 DEVENS CONSOLIDATION LANDFILL (DCL)

6.1 Site Background

The DCL was constructed on the former Fort Devens golf course driving range to accommodate excavated material from seven remedial areas consisting of two SAs, four AOCs, and one pesticide removal project at three Devens HAs. The DCL is shown on **Figure 6-1**. The seven DCL contributor sites were:

1. SA 12: A 0.5-acre location where construction debris and yard waste were deposited (approximately 8,700 cubic yards);
2. SA 13: A 1-acre area used from 1965 to the mid-1990s for yard-waste (approximately 10,000 cubic yards);
3. AOC 9: An area used for storing wood, concrete, asphalt, metal, brick, glass, and tree stumps (approximately 121,000 cubic yards);
4. AOC 11: A former landfill used from 1975 to 1980 for disposal of wood-frame hospital demolition debris (approximately 35,000 cubic yards);
5. AOC 40: 4 acres used for construction debris, ash, stumps, and logs (approximately 125,400 cubic yards);
6. AOC 41: A 0.25-acre landfill in the South Post Impact Area (SPIA) that was used up to the 1950s for disposal of non-explosive material and household debris (approximately 1,500 cubic yards); and,
7. HAs Grant, Locust, and Cavite: Soils and walling material contaminated with VOCs or pesticides (approximately 2,290 tons of soil and approximately 1,240 tons of concrete).

The USEPA approved the ROD for a landfilling remedy for the first six areas in July 1999. The ROD included provisions for either on-site or off-site disposal options. The on-site landfill construction alternative was selected as the preferred alternative. Construction of the DCL commenced in September 2000 and was completed in November 2002. *The Remedial Action Closure Report* prepared by Shaw Environmental, Inc. (Shaw) (formerly Stone & Webster, Inc.) in September 2003 was accepted, certifying that the DCL was constructed and capped in accordance with the ROD, and met the performance standards and/or response objectives in the ROD. The ROD required the collection of samples from groundwater monitoring wells in accordance with 310 CMR 19-132 to assess the effectiveness of the remedy. LTM activities have been performed since the completion of the landfill construction.

The Closure Report provides the operations and maintenance manual for the DCL (Shaw, 2003). In 2017, USACE operated and inspected the landfill facility and KGS conducted the groundwater and leachate discharge sampling in 2017. Landfill leachate is discharged to the Devens sewage system under an industrial wastewater discharge permit. Effluent criteria and reporting requirements are specified in the leachate discharge permit, which was updated August 21, 2006. MassDevelopment established new effluent criteria beginning in 2009.

In 2016, a building was constructed approximately 150 feet east of the southeastern edge of the landfill. MassDEP requested gas probes be installed between the landfill and the new structure

and landfill gas monitoring be conducted. The Army is preparing a soil gas monitoring plan to evaluate whether landfill gas is migrating from the landfill through soil and/or in groundwater that could create hazardous conditions in the area of the new structure.

6.2 Well Inspection

Initially, monitoring well LFM-03-07 (**Figure 6-1**) was inaccessible for sampling during the spring LTM event. Recent construction activities by MassDevelopment adjacent to the DCL in early 2017 resulted in this well being paved over as part of the parking lot construction. MassDevelopment uncovered and repaired the monitoring well in July 2017 and it was subsequently sampled by KGS in August. The well elevation was resurveyed in January 2018.

6.3 Groundwater Hydrology

Measured water levels at the DCL for the June and October 2017 LTM events are presented in **Table 1-1** and **Table 1-2**, respectively. Groundwater flow patterns at the DCL show a northeasterly flow pattern for the spring and fall 2017 events as indicated on **Figure 6-2** and **Figure 6-3**, respectively. Groundwater elevations were consistently lower (approximately 1.5 to 4 feet lower) during the fall 2017 event relative to the spring 2017 LTM event; however, the overall groundwater flow pattern remained consistent. The calculated groundwater gradients during June and October 2017 were 0.042 ft/ft and 0.044 ft/ft, respectively. The groundwater gradient was calculated between monitoring wells LFM-99-02B and LFM-99-05B for each groundwater gauging event. The flow lines used to calculate the gradient are believed to be representative of groundwater flow at the site. Analysis of the groundwater levels in monitoring wells located in the overburden (LFM-99-5A and LFM-99-6A-RP) and Profiles 1 and 2 (**Figure 6-4)** indicate that the groundwater level in the overburden continues to be lower than the elevation of the landfill liner (i.e., the groundwater table was not in contact with the landfill).

6.4 Groundwater Sampling

Groundwater at DCL is sampled semi-annually as part of the spring and fall LTM events. Wells to be sampled during the spring and fall LTM event included LFM-99-02B, LFM-99-05A, LFM-99-06A-RP, and LFM-03-07.

Water level readings are collected from overburden monitoring wells LFM-99-01B, LFM-99-03B, and LFM-05B during the spring and fall hydraulic events. The depth to water for each well is evaluated against shallow "trigger" depths listed in **Table 6-1.** If the depth to water is less than the "trigger" depth (i.e., higher water table elevation), there is a potential that groundwater may come into contact with the landfill and these locations would need to be sampled along with the LTM wells. The depth to water/groundwater elevations from the spring and fall 2017 hydraulic events compared to the "trigger" depths to water/groundwater elevations are summarized in **Table 6-1.** The water table remained below the "trigger" values during the 2017 hydraulic events and no additional sampling was required. A summary of the analytical results for the spring and fall 2017 DCL LTM wells are presented in **Table 6-2** and **Table 6-3.**

6.5 Leachate Sampling

The DCL is permitted to discharge industrial wastewater to the Devens Sewerage System in accordance with Industrial Discharge Permit No. 017 granted by MassDevelopment. Leachate

monitoring was performed on a quarterly and semi-annual frequency until August 2006 when MassDevelopment approved a reduction in the leachate monitoring to an annual event. Sampling is performed each year between October 1 and December 31, and self-monitoring reports are due to MassDevelopment by January 5 of the following year. **Table 6-4** lists the DCL Leachate analytical results from sampling on October 27, 2017. There were no exceedences of the effluent limits in 2017. Further details of the DCL leachate analytical results are presented in **Section 6.8.3.**

6.6 Devens Consolidation Landfill Leachate Discharge Quantity Monitoring

DCL leachate discharge quantity monitoring was historically performed monthly by MassDevelopment. O&M of the leachate pumping station began in March 2008. Monitoring results are used to calculate leachate discharge quantities for comparison with historical discharge data. Leachate discharge quantities are presented in **Table 6-5**. Leachate discharge quantities are decreasing over time and have decreased substantially since the landfill cap was completed.

6.7 Landfill Inspections

Since its completion, the DCL has been inspected annually by USACE to ensure it continues to be protective of human health and the environment. The inspection frequency was changed from semi-annual (spring and fall) to annual in 2008 based on recommendations in the USEPA and MassDEP approved LTMMP (HGL, 2008).

The DCL landfill cap was inspected on November 15 and 17, 2017, by USACE personnel. Observations were made regarding the vegetative cover, vegetation types, erosion, settlement, and general condition of the various features. The full report for the November 2017 inspection is presented in **Appendix F** and the following list summarizes the findings of the fall inspection:

- The landfill cap was in good condition, with no settlement or significant erosion. In general, the cap vegetation appeared healthy and provides good coverage of most areas of the cap; however, the original perennial grasses and clover are beginning to get replaced over large areas of the cap with weedy and some woody species invading. The woody vegetative growth gets cut during the annual mowing; however, the stalks are left over, and should be removed, and the areas reseeded. Some of the woody species are near gas vents and along riprap areas, and were not fully cut, and could become established. Maintenance activities to re-establish growth (i.e., re-seeding, fertilizer) should be performed in general over the entire cap, due to a mixture of species which do not promote dense growth. Track marks from mowing were visible during the inspection. Reseeding and grass reestablishment would help with preventing future erosion. The cap and adjacent area vegetation were mowed during fall 2017. Annual mowing should be continued. Reseeding, and fertilizing if needed, is being planned for 2018.

- A green sheet metal storage shed next to the leachate pump station had an open swinging door. This storage shed door should be repaired as needed, and locked and secured to protect contents stored inside. The shed door has been closed and potential repairs are being evaluated for 2018.

- The site and access roads are located on private property owned by Mass Development. Gates at the south end of the landfill were originally included in the construction of the landfill to restrict access, but were absent at the time of the annual inspection performed by USACE. Gates at the south end of the landfill appears to have been dislocated, damaged, and deposited in the shrubs on the west side of the access from Patton Road. The absence of a locking gate no longer restricts access to prevent unauthorized dumping of waste material. A variety of demolition debris-type of trash was present in the parking area on the day of inspection, with items ranging from propane tanks, concrete manhole riser, and piles of mulch and gravel. The debris should be assessed and removed for disposal at a suitable disposal facility. The access road from the entry gate around to the leachate pump station was in good condition. There were no ruts, potholes, or eroded areas. Gate repairs and debris removals are being evaluated for 2018.
- The fence is in good condition where it was able to be inspected. Inspection of the east and north perimeters of the landfill were hampered by the presence of a large coyote lingering in and out of the tree line and toe of slope of the landfill on the day of inspection and future inspections should note the presence of this wildlife as a potential safety hazard. The fence and entry gates, rock features (such as drainage swales and riprap), telephone poles lying on the ground, and the site's inherent relief help to minimize entry onto the site by motor vehicles. These access limitations appear to be adequate at the present time with no signs of vandalism or other unauthorized entry around the west, north, or east perimeter of the landfill.
- The cap drainage system was in good condition. Drainage channels were free of sediment and debris. The vegetation on the side slopes of the landfill was healthy and dense. A minimal amount of grass was growing in the gabion slope drains, but there were no species that appeared to have extensive root systems that would disrupt the function of the system. Some woody vegetation has begun to establish in the drainage channel around the perimeter of the landfill. The woody vegetation stumps should be removed before they become established in the drainage system components. Woody vegetation was flush-cut in the drainage channels in March 2018.
- The perimeter toe drain was showing signs of vegetation beginning to establish. The toe drain appeared to be functioning properly, and there were no visible signs of erosion or developing slope stability problems. Toe drains should continue to be monitored for vegetation, which should be removed to extent feasible.
- Landfill gas is monitored as part of the annual event. The gas vent system is in good condition. Most vent pipes had broken or missing bird/insect screens and all vents should have new screens installed with a hose clamp and screen fitting that can be attached/removed as a single unit. The new screens should be of similar mesh size as the old screens but made of more durable material. The identification (ID) labels are fading or absent on most gas vent riser pipes and the vents should be relabeled on two locations of the riser (north and south sides) to avoid incorrect identification during future monitoring. New screens and labels are planned to be added in the Spring of 2018.
- Gas monitoring showed: zero readings for hydrogen sulfide and carbon monoxide in all gas vents; zero to trace VOCs (0.2 parts per million [ppm] maximum) compared to 0.1

ppm in ambient air; carbon dioxide levels ranging from 0% at southwestern vents V-2 and V-4 to 10.2% and V-9; and variable levels of oxygen. Nine gas vents had methane and percent lower explosive limit (LEL) of zero. The gas vents V-6 and V-9, had methane levels of 100% LEL (5% methane) or greater (17% methane) on the GEM 2000 and are the highest vents and located near the top of the landfill. These results compare to four vents having methane of 5.2% to 22.3% during the 2016 inspection. Vents V-6 and V-9 were the two vents with the highest methane content in both the 2016 and 2017 inspections. Although historically there are high LEL readings for some of the higher elevation vents on the landfill, the Army believes this is not a concern for the reasons that follow. The landfill is fully encapsulated and, hence, the methane production is the result of the natural degradation of the organics from within the soils and sediments excavated and placed in the landfill during the construction process. The majority of the methane appears to be within the confined space of the respective vents of the passive gas collection system. The reason that the methane is predominantly observed in the higher elevation gas vents is that methane is lighter than air (predominantly nitrogen and oxygen). Once the methane has been passively vented to the surrounding atmosphere, it disperses rapidly and should not pose a significant ignitability risk. Currently, an assessment of an active system does not seem to be warranted as these wells are passively vented directly to the atmosphere and the vents are not located near any potential ignition source. As discussed in Section 6.1, due to the construction of the building approximately 150 feet from the landfill, additional soil gas monitoring will be conducted per request of the MassDEP; a soil gas probe installation plan is planned to be submitted in the Spring of 2018.

- Minor maintenance actions for the drainage system that are recommended at this time include removal of vegetation that has begun to show establishment within drainage channels (gabion slope drains, riprap toe drain, perimeter riprap drainage channels, etc.) and the crushed stone access roads. Woody vegetation was flush-cut in the drainage channels in March 2018.
- Routine maintenance activities that should continue to be performed are annual mowing and monitoring and control of encroaching vegetation in the drainage system. The annual mowing of the cap should be done in late August to avoid harming ground-nesting songbirds. Mowing should also include the adjacent open field areas.

6.8 Analytical Results

Groundwater analytical results for the spring and fall 2017 DCL LTM events are presented in **Table 6-2** and **Table 6-3**, respectively, and are summarized below. The spring and fall 2017 sampling events consisted of collecting four groundwater monitoring well samples and one field duplicate sample. There were no exceedences of the monitoring program benchmark criteria.

The annual fall 2017 leachate sampling event consisted of a single landfill effluent leachate sample collected on October 27, 2017 to fulfill the requirements of MassDevelopment Industrial Wastewater Discharge Permit No. 017. The leachate monitoring results are presented in **Table 6-4**.

6.8.1 Spring 2017 LTM Data Summary

- EPH fractions and target PAH compounds were non-detect.
- VPH fractions and target VOC compounds were non-detect.
- Organochlorine pesticide results were non-detect.
- Target metals results were either non-detect or detected below the respective monitoring criteria.
- Total cyanide results were either non-detect or detected below the monitoring criteria.
- Wet chemistry parameters TDS, chloride, sulfate, nitrate/nitrite and total alkalinity were reported in groundwater. TDS concentrations ranged from 440 to 880 mg/L; chloride concentrations ranged from 170 mg/L to 420 mg/L; sulfate concentrations ranged from 16 to 24 mg/L; total alkalinity concentrations ranged from 60 to 96 mg/L and nitrate/nitrite concentrations ranged from 0.47 to 2.1 mg/L. COD concentrations ranged from non-detect to 5.7 J mg/L.

6.8.2 Fall 2017 LTM Data Summary

- EPH fractions and target PAH compounds were non-detect.
- VPH fractions and target VOCs compounds were non-detect.
- Organochlorine pesticide results were non-detect.
- Target metals results were either non-detect or detected below respective monitoring criteria.
- Total cyanide results either non-detect.
- Wet chemistry parameters TDS, chloride, sulfate, nitrate/nitrite, total alkalinity were reported in groundwater. TDS concentrations ranged from 550 to 810 mg/L; chloride concentrations ranged from 250 to 440 mg/L; sulfate concentrations ranged from 21 to 36 mg/L; nitrate/nitrite concentrations ranged from 0.78 to 3.3 mg/L; and total alkalinity concentrations ranged from 78 to 140 mg/L. COD concentrations ranged from non-detect to 6.2 J mg/L.

6.8.3 2017 Leachate Analytical Data Summary

- VOCs, SVOCs, organochlorine pesticides and PCBs were non-detect in the leachate sample.
- Total toxic organics (TTO) is defined as the sum of all detected VOCs, SVOCs, organochlorine pesticides and PCBs. The TTO concentration for the leachate sample were non-detect.
- Cyanide and phenols were non-detect.
- TPH was detected in the leachate sample at 2.8 mg/L.
- Target metal results per the Wastewater Discharge Permit No. 017 were non-detect, except for nickel at 0.0028 J mg/L and copper at 0.0021 J mg/L.
- Wet chemistry parameters indicated the leachate pH was 7.7, which is within the permit range of 5.5-9.5. TSS was reported at 5.2 mg/L, below the 400 mg/L limit established in MassDevelopment Industrial Wastewater Discharge Permit No. 017.

6.8.4 DCL Data Trends

Historical analytical results for the DCL wells are summarized in **Table 6-6**, **Table 6-7**, and **Table 6-8**. Groundwater samples from wells LFM-99-02B, LFM-99-05A, and LFM-03-07 have remained at trace or non-detect levels for EPH and organochlorine pesticides since monitoring began in 2003. Similarly, metals concentrations have been consistently non-detect or below the respective MCLs in groundwater at all three DCL monitoring wells since November 2003. The 2017 wet chemistry parameters also remained generally consistent with past data.

6.8.5 Water Quality Parameters

General water quality chemistry parameters (pH, temperature, specific conductivity, ORP, DO, and turbidity) were measured during the 2017 sampling events. These parameters are measured concurrently with low-flow sampling and are used to determine groundwater stabilization within each well prior to sampling.

The final field readings taken prior to collection of each groundwater sample are reported in **Table 6-2** and **Table 6-3**. Any contaminant detection at the DCL wells is sporadic and low in concentration; therefore, no definitive correlation can be established between the measured groundwater quality parameters and the presence or absence of contamination in the sampled wells.

6.9 Data Quality Evaluation for 2017 Long-Term Monitoring Events

6.9.1 Spring 2017 Groundwater Analytical Data Review

Groundwater samples were collected from three DCL wells in June 2017 and one well in August 2017. The samples were analyzed at TestAmerica for organochlorine pesticides, total metals, cyanide and wet chemistry parameters (TDS, alkalinity, chloride, sulfate, nitrite/nitrate, and COD). The samples were submitted to Katahdin Analytical Services for VPH and EPH analyses.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, surrogate recoveries, LCS/LCSD recoveries, and MS/MSD recoveries), the data are acceptable as reported and may be used without qualification.

6.9.2 Fall 2017 Groundwater Analytical Data Review

Groundwater samples were collected from three wells in October 2017 and from one well in December 2017. Samples were analyzed at TestAmerica for organochlorine pesticides, total metals, cyanide, and wet chemistry parameters (TDS, alkalinity, chloride, sulfate, nitrite/nitrate, and COD). Samples were submitted to Katahdin Analytical Services for VPH and EPH analyses.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, surrogate recoveries, LCS/LCSD recoveries, and MS/MSD recoveries), the data are acceptable and may be used without qualification, except the following:

<u>Select Metals:</u>

- The method blank had a low-level detection of chromium. The result for chromium (1.7 µg/L) in the sample from LFM-03-07 was qualified as non-detect (4.0 U).

- There was a discrepancy between the field duplicate results for LFM-99-05A-FALL17 and LFM-DUP01-FALL17 for select metals. The reason for this discrepancy could not be determined; however, it is possible that the groundwater recovery was low due to the volume of analytes and number of sample bottles required to be collected from this location. The non-detect and detected results for all analytes from the field duplicate sample pair were qualified as estimated (J/UJ).

COD:

- COD was reported in the method blank. The estimated results for COD in all native samples were qualified as non-detect at the reporting limit (10 U).

6.9.3 2017 Leachate Analytical Data Review

One leachate sample was collected in October 2017. The leachate sample was submitted to TestAmerica for total metals, cyanide, TPH (diesel range organics [DRO]), total phenol, pesticides/PCBs and wet chemistry parameters. Samples were submitted to Katahdin Analytical Services for VOC and SVOC analyses. The data were found to be usable as reported and may be used for its intended purpose.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, surrogate recoveries, LCS/LCSD recoveries, and MS/MSD recoveries), the data are acceptable and may be used without qualification, except the following:

VOCs:

- Bromomethane was reported in the method blank. The result for bromomethane was qualified as non-detect at the reporting limit (5.0 U).

6.10 Land-Use Controls

MassDevelopment maintains ownership of the DCL property and agreed to grant the Army a permanent easement in 2001 to build and operate the landfill (Easement Agreement, 2001). DCL contributor sites AOC 9, AOC 40, and SA 13 were transferred from the Army to MassDevelopment in March 2006. The March 2006 deed included use restrictions on the contributor sites to prevent residential development of the properties (Deed, 2006).

The 1999 ROD had indicated LUCs "were planned for the proposed Consolidation Landfill." LUC inspections are conducted per the "LUC Monitoring Plan" included in the 2008 LTMMP. A site-specific annual LUC checklist, including physical on-site inspection and interview components, was developed in 2007 for use during LUC verification activities. The LUC checklists for DCL and the DCL contributor sites are included in **Appendix E**.

6.10.1 Land-Use Control Interview

An interview was conducted with Mr. Ron Ostrowski of MassDevelopment regarding the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls;

- Excavations (planned or emergency) that may involve soils and groundwater; and
- Proposed plans for property sale, future redevelopment and construction or demolition activities at the site.

Mr. Ostrowski acknowledged the construction activity near the DCL was completed in early 2017.

6.10.2 Land-Use Control On-Site Inspection

LUCs at the DCL were verified during annual groundwater and landfill leachate sampling events performed. During sampling activities, a LUC inspection was performed to identify the following:

- Any signs of increased exposure potential to the public from soil and/or surface water contaminants;
- Any evidence that groundwater extraction wells had been installed at the site; and
- Any evidence of site use changes.

No groundwater extraction wells have been installed on the site. Monitoring well LFM-03-07 was located and found to be usable for the 2017 sampling events.

In addition to the on-site DCL inspection, a LUC inspection of the DCL contributor sites (AOC 9, AOC 40, and SA 13) was performed. The findings of the contributor site inspections revealed no abnormalities or changes in land-use at the individual contributor sites and there was no evidence of residential development

6.11 Summary and Conclusions

The 2017 results for the DCL groundwater monitoring wells remained consistent with groundwater results from previous LTM events. VPH, EPH, and organochlorine pesticide results have been non-detect or detected below the associated analytical reporting limits since 2004. Metals results have been below monitoring criteria in the DCL monitoring wells groundwater samples since 2003 and the 2017 results were consistent with the historical results. The 2017 wet chemistry parameters were generally consistent with previous results. There were no exceedances of the DCL Wastewater Discharge Permit No. 017 in the December 2017 sampling of the DCL leachate.

The ROD remedy includes LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. During the 2017 LTM event no evidence of increased exposure potential or changes in land use were observed during the LUC inspections of DCL contributor sites (AOC 9, AOC 40, and SA 13). Per the requirements of the 2006 transfer deed, these contributor sites are not being used, or under development, for residential purposes**.** The Army will continue to perform LTM and LUC inspections until site conditions warrant discontinuation of sampling and change in LUC implementation

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7.0 HOUSING AREAS (HA) AND 37-MM IMPACT AREA

7.1 Site Background

The Grant HA, Oak HA, Maple HA, and 37-mm Impact Area are located within the Main Post, located between Hospital Road, El Carney Street, and the Nashua River. A map illustrating the location of the HAs and 37-mm Impact Area is presented on **Figure 7-1.** Historical records indicate that training was conducted within the then wooded HAs from 1917 until a multi-family housing development was constructed in the late 1950s. A 37-mm range was located along the western boundary of the Grant HA with an impact area, which occupies approximately 2 acres, on the northern slope of Oak Hill.

In 1994/1995, USACE completed a study to document the locations of all the training areas and ranges at Devens. Based on the findings of this study, the Archive Search Report several former weapons training ranges within the former installation were identified. Several potential MEC sites were identified. Grant HA, along with portions of the Oak and Maple Housing Areas, were designated as Area 11. A 1995 munitions response investigation confirmed the presence of MEC throughout Area 11 with a clustering of munitions and explosives of concern (MEC) located at the southern end of Area 11, north of the former Oak Housing Area (USACE, 1995). In 1996, MEC removal actions were performed at the 37-mm Impact Area and extending into the former Oak and Maple HAs. Over fifty unexploded 37-mm projectiles and many 37-mm fragments were located and disposed. Most of the ordnance that was discovered was found in the two dense clusters indicating former target locations. This removal action was summarized in the Final Removal Action Report (Human Factors Applications, Inc., 1996).

Following the removal action in 1996, concerns regarding the potential for remnant unexploded ordnance (UXO) to exist in the soil within the 37-mm Impact Area and the potential for similar conditions at the Grant HA resulted in MassDevelopment contracting Ordnance and Explosive Remediation, Inc. (OER) to conduct a survey of the area. Digital geophysical surveying was completed to evaluate whether MEC existed. The 1996 MEC investigation by USACE and the 2004/2005 MEC survey and removal action by OER removed all identified UXO located within 18 inches of the surface over the Grant HA and portions of the surrounding HAs. The OER removal action found and destroyed 31 UXO (20 37-mm practice round projectiles, four mines, one rifle grenade, and six stokes mortars), and 17 other ordnance items. Most the UXO were found within an estimated 2-acre area associated with the target Impact Areas and the north slope of Oak Hill. This area is located on the southwest edge of the Grant HA. The survey and removal action results were presented in the *Site Specific Final Report, Digital Geophysical Mapping (DGM) & Unexploded Ordnance (UXO) Removal, Grant Housing Area, Former Ft. Devens, Harvard, Worcester, Massachusetts* (OER, 2006).

Based on the findings of the previous investigations and removal actions, an Expanded Conceptual Site Model (ECSM) (USACE, 2006) was developed for the former Grant HA that extended to portions of the Oak and Maple Housing Areas. The report identified three ranges within the Grant HA and adjacent Oak HA. LUCs were identified by the report as the preferred response action to address the former ranges within the Grant Housing Area.

In addition to the UXO removal, the Army conducted a pesticide removal action in 2002. It was determined that in the late 1950s and early 1960s, the Army had applied pesticides around the

housing units for a means of pest control. The removal action resulted in the excavation and disposal of more than 150,000 tons of soil and concrete from the Grant HA. The excavated soil and concrete were hauled and placed in the DCL landfill. The Army also conducted a PCB Time Critical Removal Action from 2002 to 2005 within the Grant HA. Approximately 12,000 tons of soil were excavated and disposed. MEC was not encountered during either of the removal actions.

These efforts were documented in the Preliminary Assessment/Site Inspection and Supplemental Site Investigation Comprehensive Report (PASI/SSI Report). The PASI/SSI also provided a detailed summary of land-use, habitat survey, and sampling efforts, which concluded that the Grant HA did not pose unacceptable hazards to ecological receptors. However, the PASI/SSI Report recommended a Focused Feasibility Study (FFS) be prepared to evaluate the alternatives involving LUCs for the Impact Area (Weston, 2008b).

The Army then performed a FFS comparing the remedial alternatives addressing potential residual UXO at the Grant HA and the 37-mm Impact Area. The FFS evaluated potential remedial alternatives and was completed in 2008 (Weston, 2008a). Along with the FFS, a Proposed Plan was created in accordance with section 117 CERCLA, which gave the public the opportunity to participate in the remedial action.

A ROD for the Grant HA and Impact Area was signed in 2009. The Remedial Action Objective (RAO) for the Grant HA and 37-mm Impact Area is to prevent direct contact with UXO, which may remain in the soils at the site. As noted in the ROD, the LUCs are "preventative for direct contact as they educate the contractor and resident as to the potential presence of UXO and the actions to be taken if presumed UXO is encountered, which included not handling the UXO" (Weston, 2009).

Pursuant to the ROD, a Land-Use Control Implementation Plan (LUCIP) was issued in May 2011 (Army BRAC Environmental Division, Army Garrison Fort Devens, 2011). LUCs for Grant HA are addressed through affirmative actions which include:

> (1) public education to property owners, residents, as well as any construction and/or utility contractors via utility bill inserts, educational materials posted on a community website and training for contractors conducting ground intrusive activities on the property; and
>
> (2) a deed notice that will be inserted into any Grant HA deeds by MassDevelopment to convey there is no evidence of additional UXO present at the site, but that the possibility does remain that UXO could be discovered in the future.

Additionally, the LUCIP indicates that the LUCs for the Impact Area are addressed through institutional controls, access restrictions, affirmative measures and prohibitive directives which include:

(1) institutional controls (IC) to be implemented through a Grant of Environmental Restrictions and Easements;
(2) Access controls would be implemented using signage and fencing to restrict public access;
(3) public education to property owners, residents, as well as any construction and/or utility contractors conducting ground intrusive activities on the property;
(4) prohibitive directives to include restrictions on all ground intrusive activities; and

(5) annual site inspections to evaluate the access controls, monitor the potential presence of surficial UXO, and evaluate the overall effectiveness of the LUCs.

The Army conducts annual reviews to confirm the overall effectiveness and compliance with the established LUCs in the Grant HA and the Impact Area. The reviews include interviews with personnel of MassDevelopment and Devens Enterprise Commission (or successor municipal authority) as to the discovery, reporting, and disposal of UXO in the Grant HA and the Impact Area during the prior year. The annual review includes a physical inspection at the Impact Area to evaluate access controls and monitoring for the presence of surface and near surface UXO. The reviews include interviews with MassDevelopment (or the then current owner of the Impact Area) to determine if any utility repair or emergency work was conducted in the Impact Area during the prior year. The annual review of the LUCs at Grant HA includes verification that the website, utility bill inserts, UXO awareness training, inclusion of the Supplemental Deed Notice in deeds conveying the Grant HA (or portions thereof) and other requirements set forth in this LUCIP are being properly implemented. If deemed necessary, the annual review of the LUCs at the Grant HA may also include a physical inspection.

A MEC RI was conducted at former Oak and Maple Housing Areas in 2010/2011 based on recommendations in the PASI/SSI Report (Weston, 2008b). The investigation revealed that the probability of encountering MEC within the previously developed former Oak and Maple Housing Areas was considered to be extremely low (HGL, 2012). A FFS Addendum to the Grant HA and 37-mm Impact Area FFS was prepared to address the former Oak and Maple Housing Areas (Sovereign/HGL, 2013). The FFS Addendum recommended LUCs for the former Oak and Maple HAs. The RAO for the former Oak and Maple HAs was the same as the Grant HA and 37-mm Impact Area (prevent direct contact with UXO/MEC, which may remain in soils) (Weston, 2009). The remedy for the former Oak and Maple Has was incorporated within the Grant HA and 37-mm Impact Area site via an ESD (Sovereign/HGL, 2014). The additions to the ROD selected remedy, for application to the Oak and Maple Housing Areas, consist of inclusion of:

(1) pre-construction clearance of selected grids at the Oak Housing Area,

(2) a MEC physical preview of any proposed construction footprint,

(3) future MEC construction support for all intrusive activities in areas where construction support has not previously been conducted,

(4) the inclusion of a deed notice for the prohibition of residential reuse within the LUCs and

(5) LUC affirmative measures for public education.

In 2016, the pre-construction clearance of selected grids and at the Oak Housing Area was conducted and the housing area foundation slabs were removed (USACE, 2017).

The Grant HA is currently zoned for residential reuse per the Devens Reuse Plan. MassDevelopment executed and properly recorded a Grant of Environmental Restrictions and Easements for the Grant HA, which was recorded at the Worcester Registry of Deeds on December 19, 2011, book 48291, page 138. The Oak and Maple HA is zoned for commercial construction and the Impact area is restricted for future reuse.

7.2 Land-Use Controls

Ownership of Grant, Oak, and Maple HAs and 37-mm Impact Area was transferred from the Army to MassDevelopment in 1996 and 1999. LUCs were implemented to ensure that public education to property owners, residents, as well as any construction and/or utility contractors conducting ground intrusive activities on the property was completed through distribution of education materials and development of a web-based visual and audio media. Another LUC details that a deed notice will be inserted by MassDevelopment into any Grant, Oak, and Maple HAs and 37-mm Impact Area deeds in which conveys that there is no evidence of additional UXO present at the site, but that the possibility does remain that UXO could be discovered in the future. A site-specific annual LUC checklist for the Grant HA and Impact Area, including physical on-site inspection (if deemed necessary) and interview components, were developed in 2011 for use during LUC verification activities. The completed checklists for the 2017 LUC inspections are presented in **Appendix E.**

7.2.1 Land-Use Control Interviews

An interview was conducted with Mr. Ron Ostrowski of MassDevelopment and Mr. Neil Angus of the Devens Enterprise Commission on October 25, 2017, to discuss compliance with the LUCs at Grant and Oak and Maple HAs. The following items were evaluated:

- Any reports during the reporting year of any objects discovered on the site, including any findings of UXO;
- Verify the existence of an educational website for the public;
- Verify the inclusion of required utility bill inserts;
- Verify the posting of utility bill insert in a conspicuous location;
- Verify distribution of current soils management policy to construction;
- Verify that awareness training is being conducted (if construction activities occurred during the reporting year); and
- Verify that supplemental deed notice has been included in deeds conveying portion of the Grant HA.

Cathy O'Connor of MassDevelopment was also contacted regarding site utilities.

Interview notes for the Grant and Oak and Maple HAs are presented in **Appendix E**. In summary, the LUC requirements are being met. There were no objects discovered on the site during 2017, including any findings of UXO. Proper signage remains in-place and all contractors are required to attend pre-construction meetings where UXO awareness information is presented. Copies of the Soils Management Plan and UXO information are available on the Devens Enterprise Commission website, www.devensec.com. Within the Grant HA, condominiums have been constructed on Chance Road and sold to individuals. Deeds have been transferred to individual home owners in accordance with the LUC provisions. Copies of the deed notice and utility bill insert are provided in **Appendix E**. No intrusive activity has occurred in the Oak and Maple HA in 2017.

7.2.2 Land-Use Control On Site Inspection

LUCs were verified during the Impact Area property site visit. A LUC inspection was performed to identify the following:

- Land-use conditions (fencing, signage, and vegetation);
- Any areas of UXO concern, performed by sweeping 10% of the site with a metal detector; and
- Any evidence of site use changes.

A visual inspection and UXO screening were conducted on September 28, 2017. The fence around the Impact Area was inspected for damage and a metal detector was used to sweep the ground. No damage to the fence was noted. Steep areas and high brush within the center of the fenced area were avoided during the evaluation for UXO. The other areas were searched using a sweeping back and forth motion with the metal detector. Suspect points that were identified by the metal detector in 2013 and marked with orange flagging remain in place. At the time of the 2017 inspection, no exposed surface soils appeared to contain UXO. Overall, the findings of the site inspection revealed no abnormalities within the fenced, 37-mm Impact Area.

7.3 Conclusions

The RAO for the HAs and 37-mm Impact Area is to prevent direct contact with UXO that may remain in the soils at the site. The selected Remedial Action included LUCs in order to provide overall protectiveness of public health and welfare or the environment. During the 2017 review period, the former Grant, Oak and Maple Housing Areas, and the 37-mm Impact Area were subject to annual LUC interviews, on-site inspections, as well as other affirmative measures and prohibitive directives (e.g., distribution of educational materials, providing awareness courses for site workers and residents, implementing deed notices, and maintaining signage). An additional LUC provision states that upon future transfer of the property from MassDevelopment, a deed notice will be provided to the new owners detailing the property's history. This notice will convey additional information on UXO investigations and removal actions conducted at HAs and 37-mm Impact Area, and include the conclusion of the ROD that the property with LUCs in place is suitable for the proposed future use and that there is no evidence of additional UXO present at the site, but that the possibility does remain that UXO could be discovered in the future.

The Grant Housing and 37-mm Impact Area LUCIP was issued in May 2011 and the draft final LUCIP Addendum for the Oak and Maple Housing Areas is under review by EPA and MassDEP. Although implementation of the LUCs required per the 2014 Explanation of Significant Differences for the former Oak and Maple Housing Areas has yet to be memorialized in a final LUCIP, the specific actions undertaken by Army to ensure protectiveness of human health and the environment in the short-term are described herein.

The site-specific annual LUC checklist, including physical on-site inspection and interview components, was utilized during this reporting year and interviews with knowledgeable personnel confirmed the overall effectiveness and compliance with the established LUCs. Results of the annual compliance monitoring indicate that no deviations or deficiencies to the LUCs were evident and corrective action(s) were not necessary.

Compliance with the LUCs was verified through the physical on-site inspection and interviews. Specifically, the following was verified:

- No deeds were conveyed.
- The electric utility distributes education inserts to new residents.
- Education information is displayed on a community website.
- No work permits or zoning permits were found indicating intrusive activity at the site and the land use has not changed.
- A fence and signage were maintained to restrict public access.
- There was no evidence of site use change during the inspection.

The LUCs have been effective in preventing direct contact with UXO/MEC, which may remain in soils.

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FIGURES

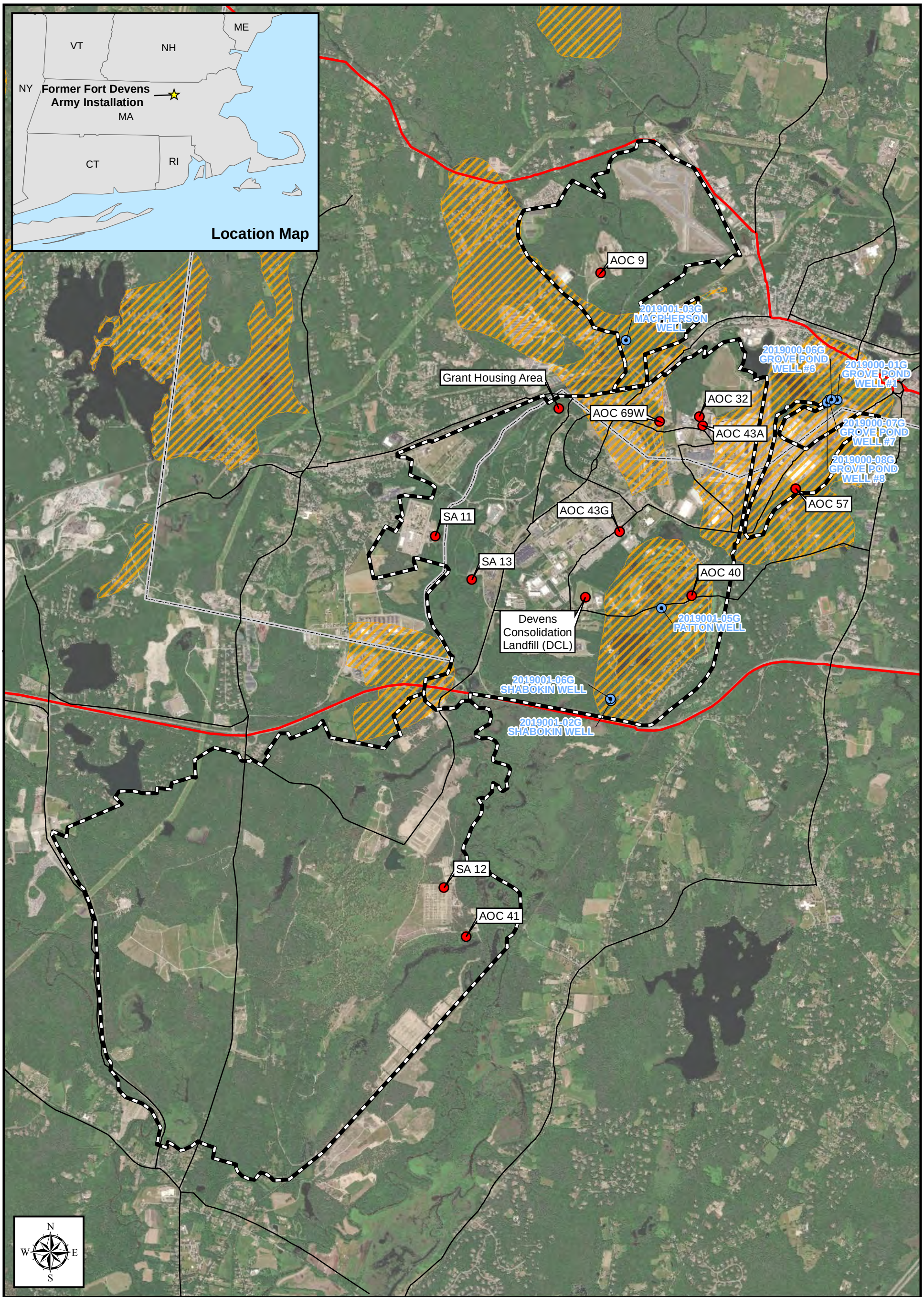


Figure 1-1
Site Location
Former Fort Devens
Army Installation

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- Area of Contamination (AOC)
- Water Supply Well
- DEP Approved Wellhead Protection Areas (Zone II)
- Highway
- Major Road
- County Line
- Former Fort Devens Boundary

2017 Main Post Annual Report
Former Fort Devens Army Installation

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

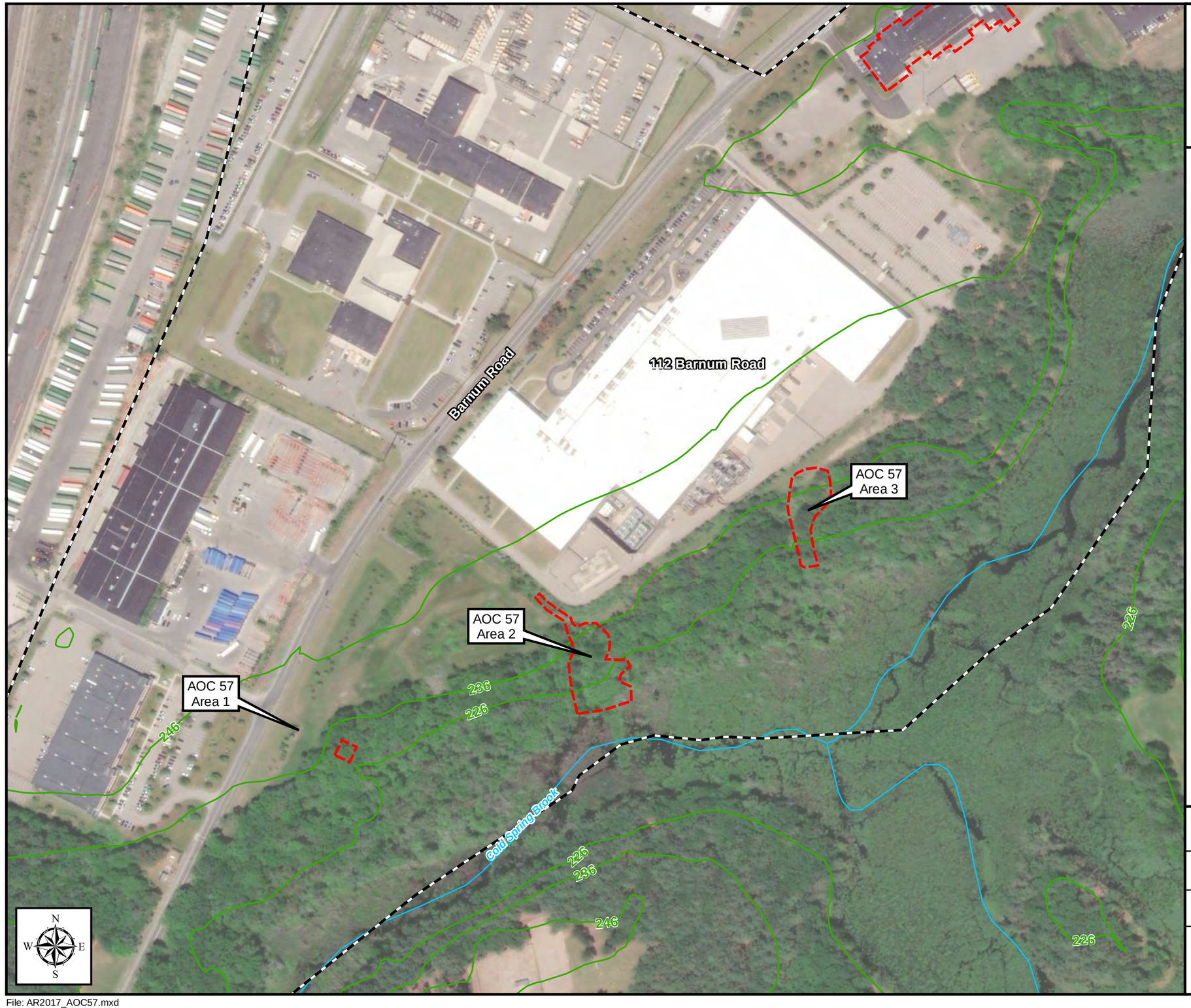
0 1,750 3,500
Feet

Date: 01/23/2019

Figure 1-1

File: AR2017_MP_FFD.mxd

Figure 2-1
Site Layout
Area of Contamination 57
Area 1, 2 & 3



Legend

- Former Fort Devens Boundary
- Area of Contamination (AOC)
- Stream
- Topographic Contour (Ft AMSL)

Note:
AOC 57 lies within the MassDEP Zone II Wellhead Protection Area for the Grove Pond wellfield.

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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AOC 57 - Area 1, 2 & 3

Former Fort Devens Army Installation
Devens, Massachusetts

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0 125 250
Feet

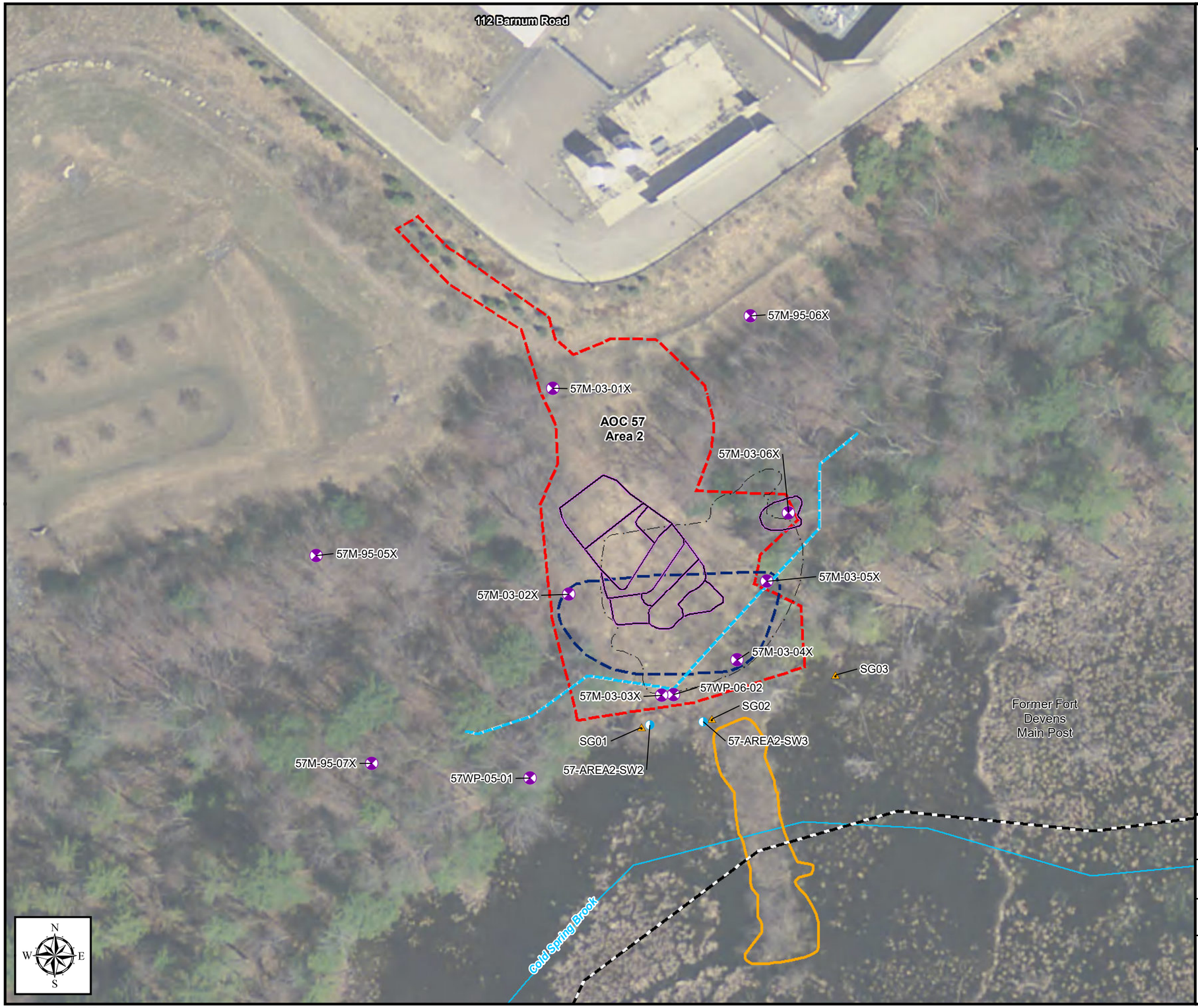
Date: 01/23/2019

Figure 2-1

KGS

File: AR2017_AOC57.mxd

Figure 2-2
Site Layout
Area of Contamination 57 - Area 2



Legend

- LTM Well - Gauge Only
- Staff Gauge
- Surface Water Sample Location
- 57M-03-06X — Well/Piezometer/Sample Location Identification
- Final Excavation Limit (2003)
- Conti Excavation Limit (2002)
- Former Fort Devens Boundary
- Flagged Wetland Limits
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on Fall 2003 to Spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Containment Dam
- Area of Contamination (AOC)
- Stream

Note:
AOC 57 lies within the MassDEP Zone II Wellhead Protection Area of the Grove Pond Wellfield.

Aerial Sources: 2013, USGS, MassGIS

2017 Main Post Annual Report
AOC 57 - Area 2

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
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0 30 60
Feet

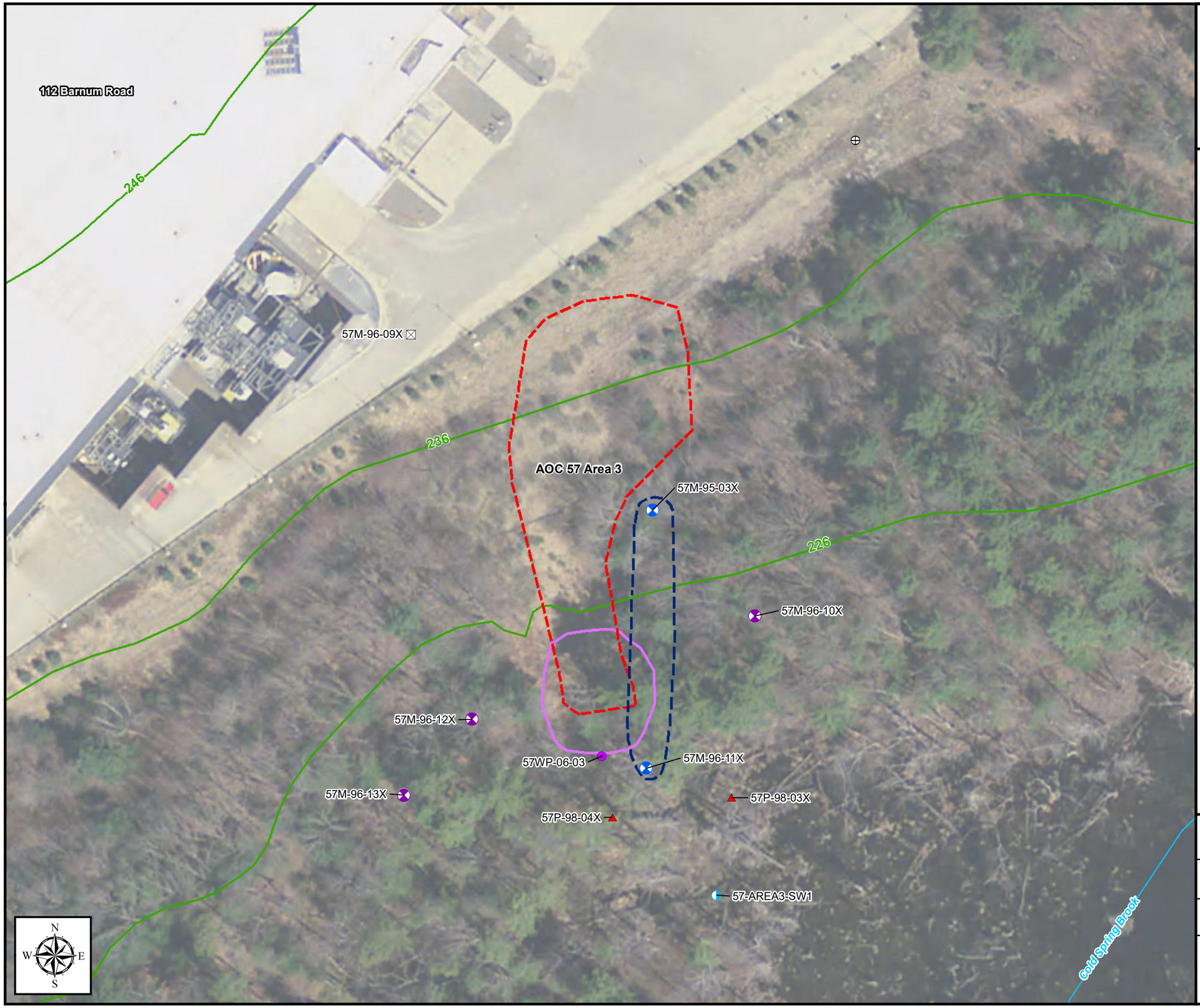
Date: 02/08/2018

Figure 2-2

KGS

File: AR2017_AOC57-2.mxd

Figure 2-3
Site Layout
Area of Contamination 57 - Area 3



Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Well Point - Gauge Only
- LTM Piezometer
- Surface Water Sample Location
- Monitoring Well - Abandoned (2012)
- Monitoring Well - Destroyed
- 57M-95-03X — Well/Piezometer/Sample Location Identification
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on Fall 2003 to Spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area of Contamination (AOC)
- Alternate III-2a Estimated Soil Excavation Area
- Stream
- Topographic Contour (Ft AMSL)

Notes:
AOC 57 lies within the MassDEP Zone II Wellhead Protection Area of the Grove Pond Wellfield.

Well 57M-96-09X buried by construction.
LTM = Long-term monitoring

Aerial Sources: 2013, USGS, MassGIS

2017 Main Post Annual Report
AOC 57 - Area 3

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
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0 30 60
Feet

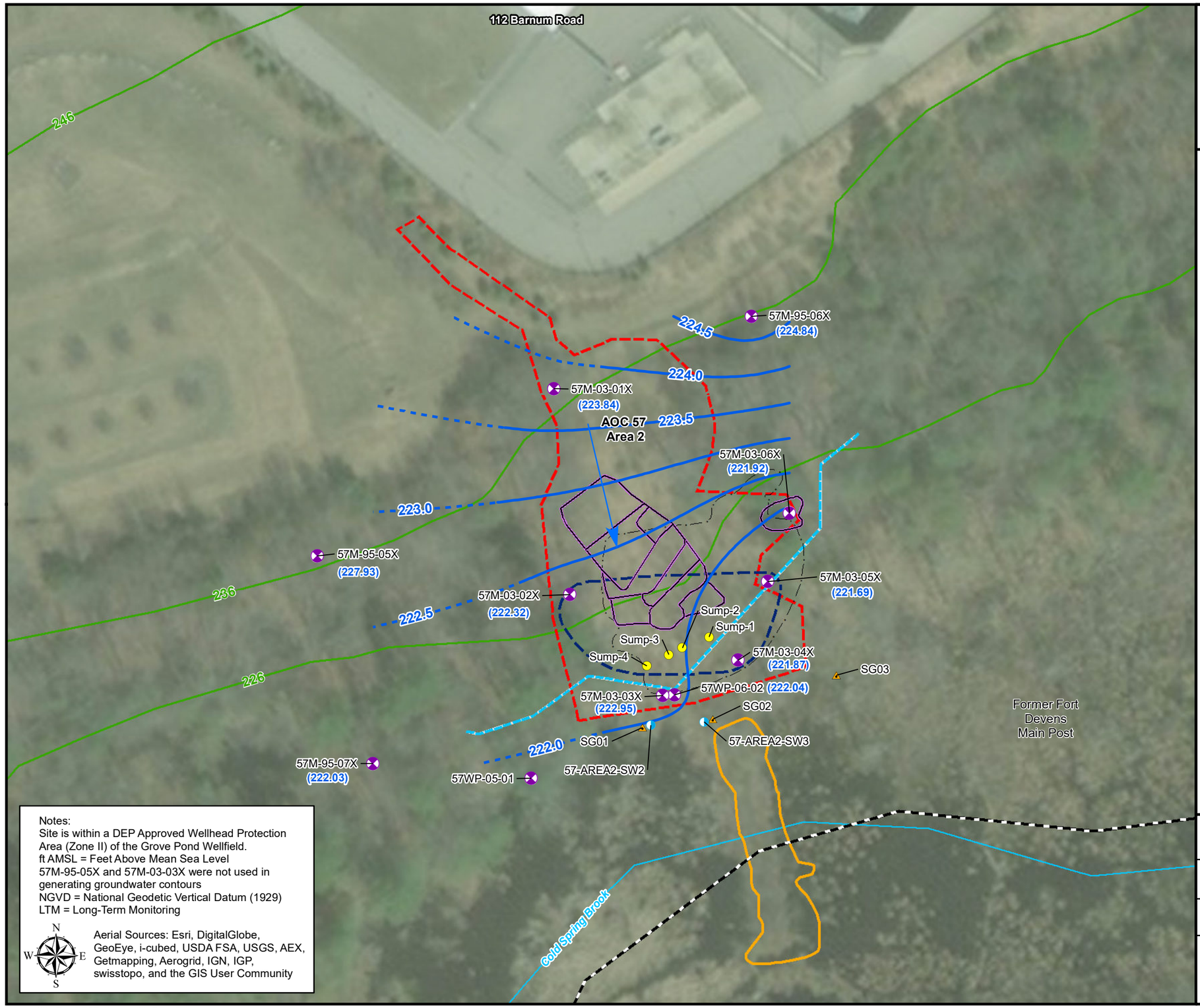
Date: 02/08/2018

Figure 2-3

KGS

File: AR2017_AOC57-3.mxd

Figure 2-4
Interpretive Water Table Elevation
Area of Contamination 57 - Area 2
June 2017



Notes:
Site is within a DEP Approved Wellhead Protection Area (Zone II) of the Grove Pond Wellfield.
ft AMSL = Feet Above Mean Sea Level
57M-95-05X and 57M-03-03X were not used in generating groundwater contours
NGVD = National Geodetic Vertical Datum (1929)
LTM = Long-Term Monitoring

N W E S

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- LTM Well - Gauge Only
- Staff Gauge
- Former Surface Water Sample Location
- Sump
- Groundwater Flow Direction
- Groundwater Elevation Contour (ft NGVD) (Contour Interval = 0.5 ft)
- Inferred Groundwater Elevation Contour
- 57M-03-06X — Well/Piezometer/Sump/Sample Location Identification
- (222.03) — Groundwater Elevation (ft NGVD)
- Final Excavation Limit (2003)
- Conti Excavation Limit (2002)
- Former Fort Devens Boundary
- Flagged Wetland Limits
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on Fall 2003 to Spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Containment Dam
- Area of Contamination (AOC)
- Stream
- Topographic Contour (Ft AMSL)

2017 Main Post Annual Report
AOC 57 - Area 2

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
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0 30 60
Feet

Date: 02/08/2018

Figure 2-4

File: AR2017_AOC57_2_June2017GWC.mxd

Notes:
Site is within a DEP Approved Wellhead Protection Area (Zone II) of the Grove Pond Wellfield. Well 57M-96-09X buried by construction.
ft AMSL = Feet Above Mean Sea Level
NGVD = National Geodetic Vertical Datum (1929)
LTM = Long-Term Monitoring

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

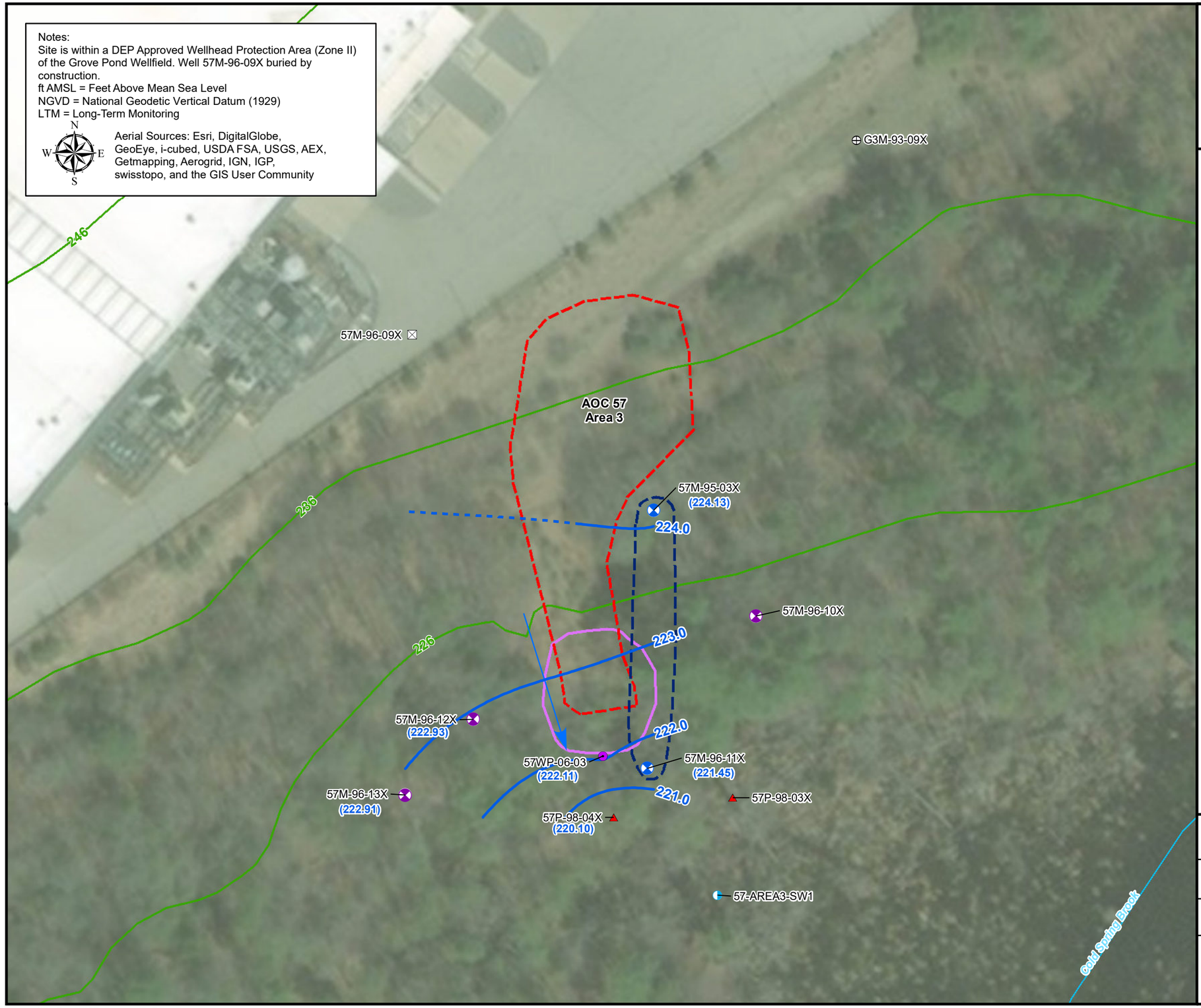

Figure 2-5
Interpretive Water Table Elevation
Area of Contamination 57 - Area 3
June 2017

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Well Point - Gauge Only
- LTM Piezometer
- Surface Water Sample Location
- Monitoring Well - Abandoned (2012)
- Monitoring Well - Destroyed
- (220.10) Groundwater Elevation (ft NGVD)
- Groundwater Elevation Contour (ft NGVD) (Contour Interval = 0.5 ft)
- Inferred Groundwater Elevation Contour
- Groundwater Flow Direction
- 57M-95-03X Well/Piezometer/Sample Location Identification
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on Fall 2003 to Spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area of Contamination (AOC)/ 1999 Excavation Area
- Alternate III-2a Estimated Soil Excavation Area (approximate location)
- Stream
- Topographic Contour (ft AMSL)

2017 Main Post Annual Report
AOC 57 - Area 3

Former Fort Devens Army Installation
Devens, Massachusetts

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0 30 60
Feet

Date: 02/08/2018

Figure 2-5

File: AR2017_AOC57_3_June2017GWC.mxd

Figure 2-6
Metal Concentrations in Groundwater and Surface Water
Area of Contamination 57 - Area 3
June 2017

Notes:

GW Cleanup Goal	
Metals	Result (µg/L)
Arsenic, Total	10
Arsenic, Dissolved	10

SW Benchmark	
Metals	Result (µg/L)
Iron, Total	*1,000*
Iron, Dissolved	*1,000*

Only exceedances of the groundwater cleanup goal and surface benchmark are posted on the figure
Bold, italicized, concentrations indicate detected parameter above Benchmark
Shaded and bold concentrations indicate detection above Cleanup Goal
µg/L = micrograms per liter
ft AMSL = feet above mean sea level
LTM = long term monitoring
AOC 57 lies within the MassDEP Zone II Wellhead Protection Area.

N W E S

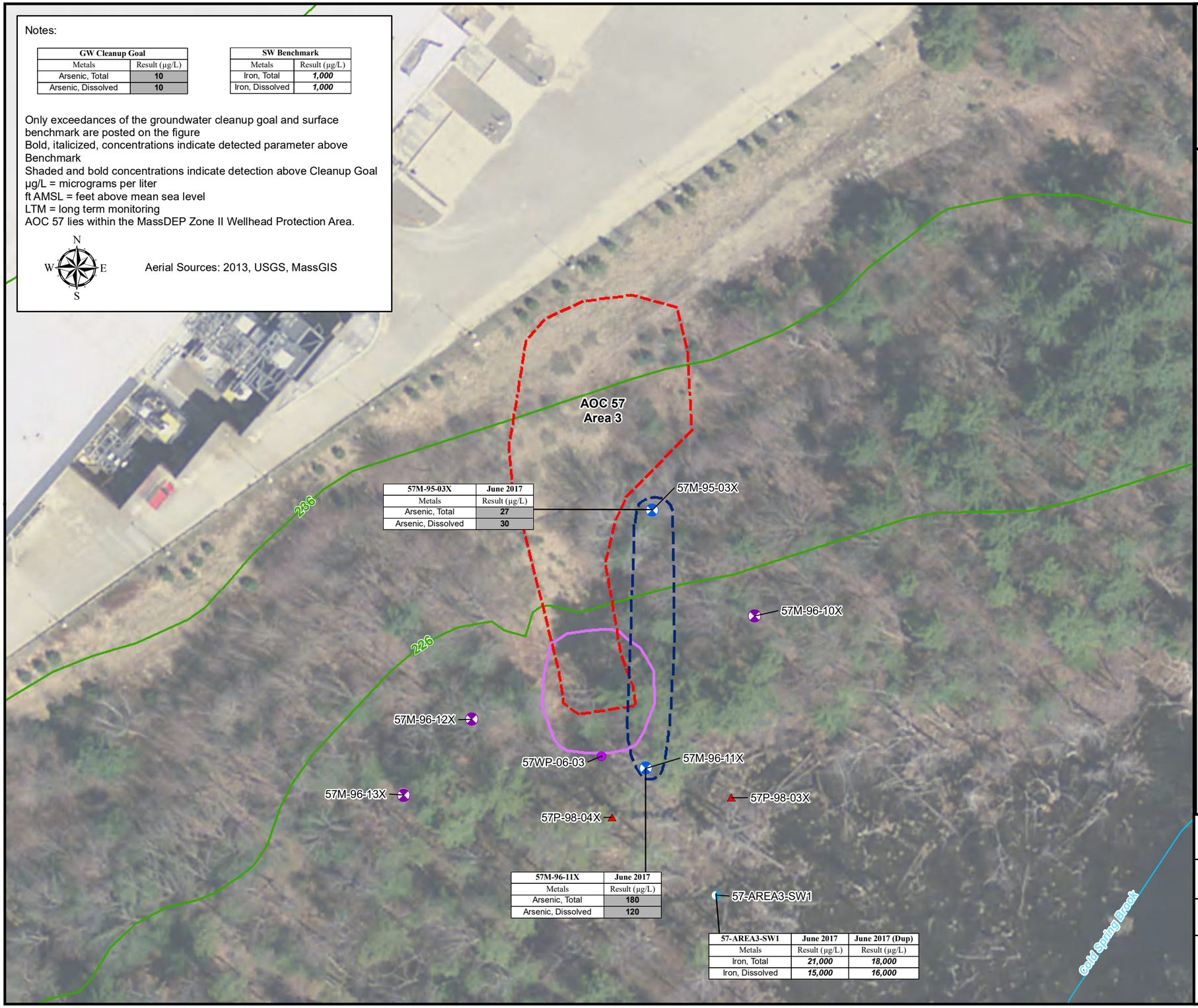
Aerial Sources: 2013, USGS, MassGIS

AOC 57
Area 3

57M-95-03X	June 2017
Metals	Result (µg/L)
Arsenic, Total	27
Arsenic, Dissolved	30

57M-96-11X	June 2017
Metals	Result (µg/L)
Arsenic, Total	180
Arsenic, Dissolved	120

57-AREA3-SW1	June 2017	June 2017 (Dup)
Metals	Result (µg/L)	Result (µg/L)
Iron, Total	*21,000*	*18,000*
Iron, Dissolved	*15,000*	*16,000*



Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Well Point - Gauge Only
- LTM Piezometer
- Surface Water Sample Location
- 57M-95-03X — Well/Piezometer/Sample Location Identification
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on Fall 2003 to Spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area of Contamination (AOC)
- Alternate III-2a Estimated Soil Excavation Area
- Stream
- Topographic Contour (Ft AMSL)

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AOC 57 - Area 3

Former Fort Devens Army Installation
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0 30 60
Feet

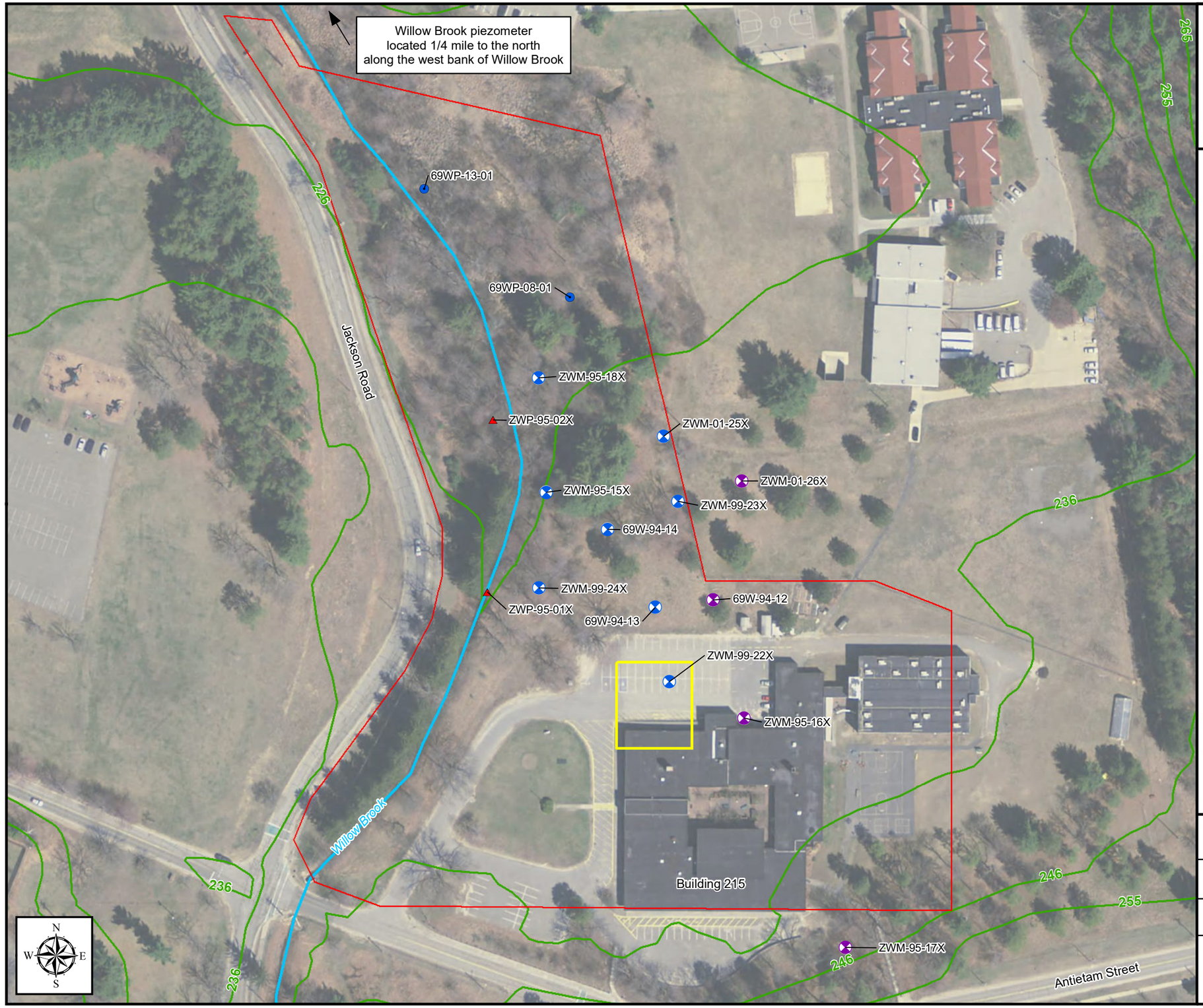
Date: 02/06/2018

Figure 2-6

KGS

File: AR2017_AOC57_3_Metals_June2017.mxd

Figure 3-1
Site Layout
Area of Contamination 69W



Legend

- LTM Sample Well
- LTM Sample Well Point
- LTM Well - Gauge Only
- LTM Piezometer
- ZWM-01-26X — Well/Piezometer/Surface Water Elevation Location
- Parcel Boundary
- Surface Water Course
- Excavated Soils Management Area
- Topographic Contour (Ft AMSL)

Notes:
LTM = Long-term monitoring

Aerial Sources: 2013, USGS, MassGIS

AOC 69W lies within the MassDEP Zone II Wellhead Protection Area for the MacPherson well.

2017 Main Post Annual Report
AOC 69W

Former Fort Devens Army Installation
Devens, Massachusetts

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0 60 120
Feet

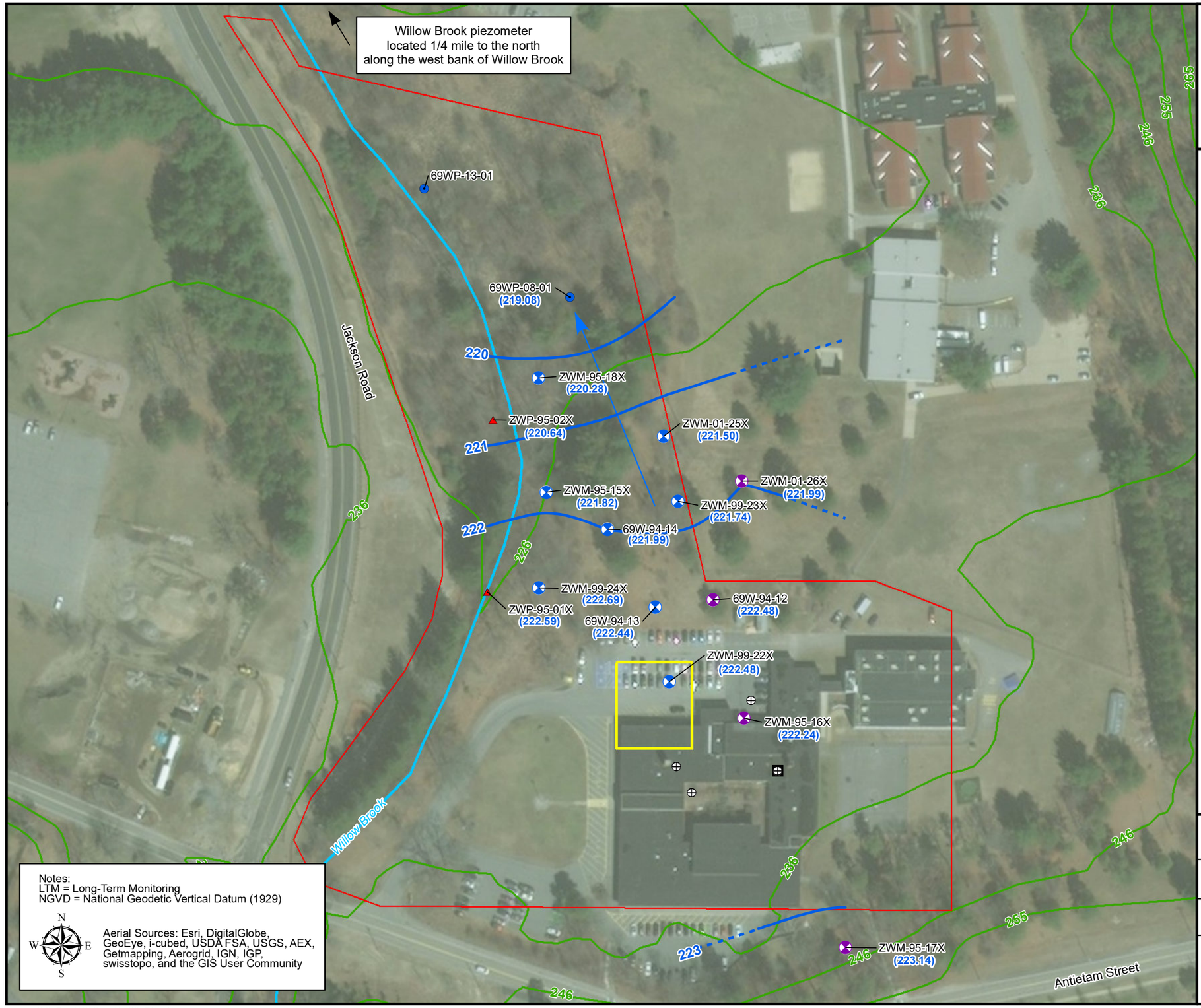
Date: 02/08/2018

Figure 3-1

KGS

File: AR2017_AOC69W.mxd

Figure 3-2
Interpretive Water Table Elevation
Area of Contamination 69W
October 2017



Notes:
LTM = Long-Term Monitoring
NGVD = National Geodetic Vertical Datum (1929)

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- LTM Sample Well
- LTM Sample Well Point
- LTM Well - Gauge Only
- LTM Piezometer
- Monitoring Well - Abandoned (2012)
- Monitoring Well - Presumed Destroyed
- (223.14) Groundwater Elevation (ft NGVD)
- Groundwater Contour (ft NGVD) (Interval = 1 ft)
- Inferred Groundwater Elevation Contour
- Groundwater Flow Direction
- ZWM-01-26X Well/Piezometer/Surface Water Elevation Location
- Parcel Boundary
- Surface Water Course
- Excavated Soils Management Area
- Topographic Contour (ft AMSL)

AOC 69W lies within the MassDEP Zone II Wellhead Protection Area of the MacPherson well.

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AOC 69W

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0 60 120
Feet

Date: 02/08/2018

Figure 3-2

File: AR2017_AOC69W_Oct2017GWC.mxd

Figure 3-3
EPH Concentrations in Groundwater
Area of Contamination 69W
October/November 2017



ZWM-95-18X	November 2017
EPH	Result (µg/L)
C9-C18 Aliphatics	94 U
C11-C22 Aromatics	94 U

ZWM-95-15X	October 2017
EPH	Result (µg/L)
C9-C18 Aliphatics	94 U
C11-C22 Aromatics	94 U

ZWM-99-24X	October 2017
EPH	Result (µg/L)
C9-C18 Aliphatics	100 U
C11-C22 Aromatics	100 U

ZWM-99-22X	October 2017	October 2017 (DUP)
EPH	Result (µg/L)	
C9-C18 Aliphatics	99 U	98 U
C11-C22 Aromatics	**170**	**140**

ZWM-01-25X	October 2017
EPH	Result (µg/L)
C9-C18 Aliphatics	100 U
C11-C22 Aromatics	100 U

ZWM-99-23X	October 2017
EPH	Result (µg/L)
C9-C18 Aliphatics	96 U
C11-C22 Aromatics	96 U

69W-94-14	October 2017
EPH	Result (µg/L)
C9-C18 Aliphatics	94 U
C11-C22 Aromatics	94 U

69W-94-13	October 2017
EPH	Result (µg/L)
C9-C18 Aliphatics	100 U
C11-C22 Aromatics	100 U

Legend

- LTM Sample Well
- LTM Sample Well Point
- LTM Well - Gauge Only
- LTM Piezometer
- ZWM-01-26X — Well/Piezometer/Surface Water Elevation Location
- Parcel Boundary
- Surface Water Course
- Excavated Soils Management Area
- Topographic Contour (ft AMSL)

Notes:

Monitoring Criteria (µg/L)	
C9-C18 Aliphatics	**700**
C11-C22 Aromatics	**200**

U = Not Detected
Bold concentrations indicate detected parameter
µg/L = micrograms per liter
EPH = Extractable Petroleum Hydrocarbon
LTM = Long-term monitoring

Aerial Sources: 2013, USGS, MassGIS

2017 Main Post Annual Report
AOC 69W

Former Fort Devens Army Installation
Devens, Massachusetts

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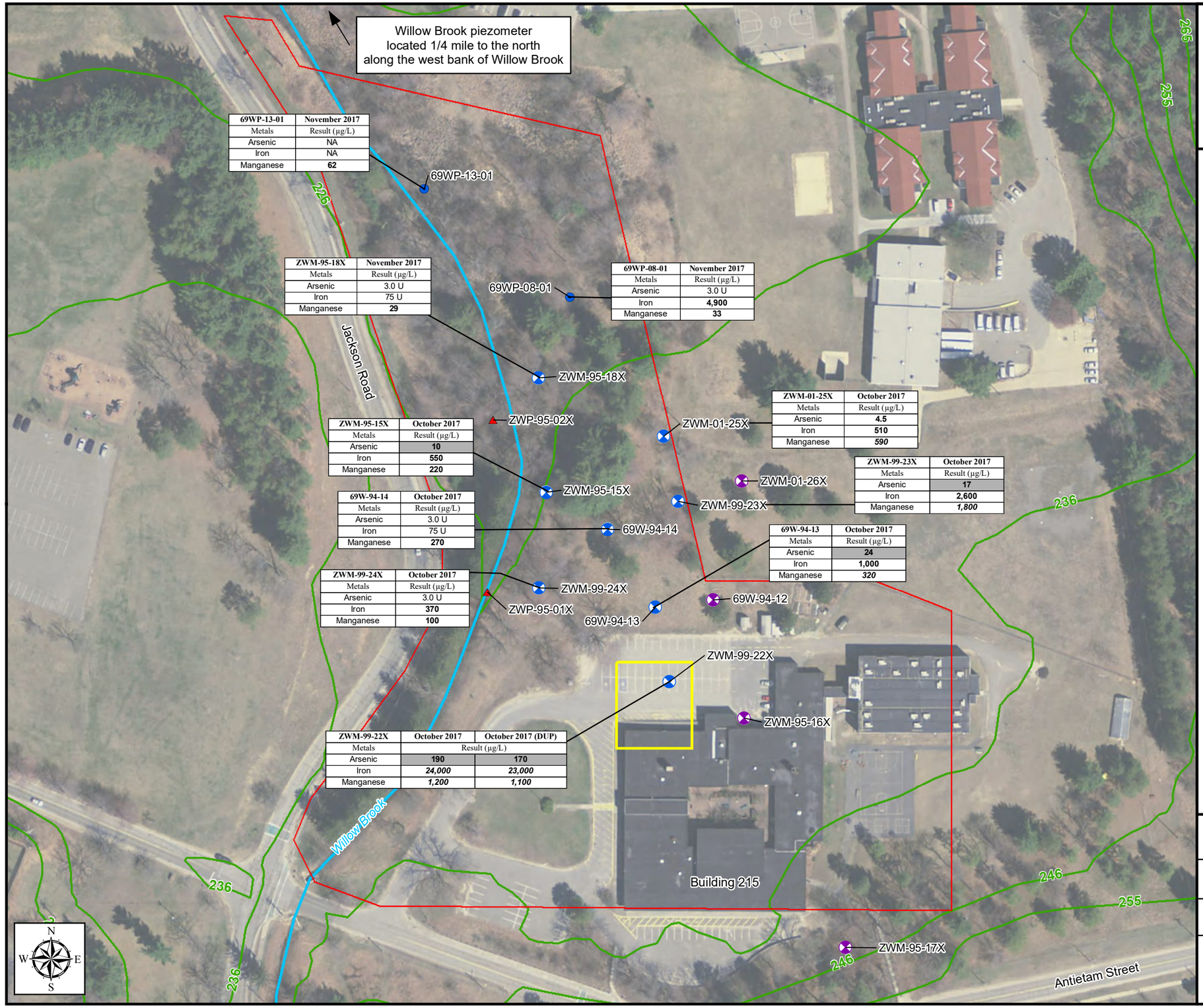
0 60 120
Feet

Date: 02/06/2018

Figure 3-3

File: AR2017_AOC69W_EPH_Fall2017.mxd

Figure 3-4
Metal Concentrations in Groundwater
Area of Contamination 69W
October/November 2017



69WP-13-01	November 2017
Metals	Result (µg/L)
Arsenic	NA
Iron	NA
Manganese	**62**

ZWM-95-18X	November 2017
Metals	Result (µg/L)
Arsenic	3.0 U
Iron	75 U
Manganese	**29**

69WP-08-01	November 2017
Metals	Result (µg/L)
Arsenic	3.0 U
Iron	**4,900**
Manganese	**33**

ZWM-01-25X	October 2017
Metals	Result (µg/L)
Arsenic	**4.5**
Iron	**510**
Manganese	***590***

ZWM-95-15X	October 2017
Metals	Result (µg/L)
Arsenic	**10**
Iron	**550**
Manganese	**220**

ZWM-99-23X	October 2017
Metals	Result (µg/L)
Arsenic	**17**
Iron	**2,600**
Manganese	***1,800***

69W-94-14	October 2017
Metals	Result (µg/L)
Arsenic	3.0 U
Iron	75 U
Manganese	**270**

69W-94-13	October 2017
Metals	Result (µg/L)
Arsenic	**24**
Iron	**1,000**
Manganese	***320***

ZWM-99-24X	October 2017
Metals	Result (µg/L)
Arsenic	3.0 U
Iron	**370**
Manganese	**100**

ZWM-99-22X	October 2017	October 2017 (DUP)
Metals	Result (µg/L)	
Arsenic	**190**	**170**
Iron	***24,000***	***23,000***
Manganese	***1,200***	***1,100***

Legend

- LTM Sample Well
- LTM Sample Well Point
- LTM Well - Gauge Only
- LTM Piezometer
- ZWM-01-26X — Well/Piezometer/Surface Water Elevation Location
- Parcel Boundary
- Surface Water Course
- Excavated Soils Management Area
- Topographic Contour (ft AMSL)

Notes:

Cleanup Goal (µg/L)	
Arsenic	**10**
Background (µg/L)	
Iron	***9,100***
Manganese	***291***

NA = Not Analyzed
U = Not Detected
Bold concentrations indicate detected parameter
Italics and bold concentrations indicate detection above Background
Shaded and bold concentrations indicate detection above Cleanup Goal
µg/L = micrograms per liter
LTM = Long-term monitoring

Aerial Sources: 2013, USGS, MassGIS

2017 Main Post Annual Report
AOC 69W

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
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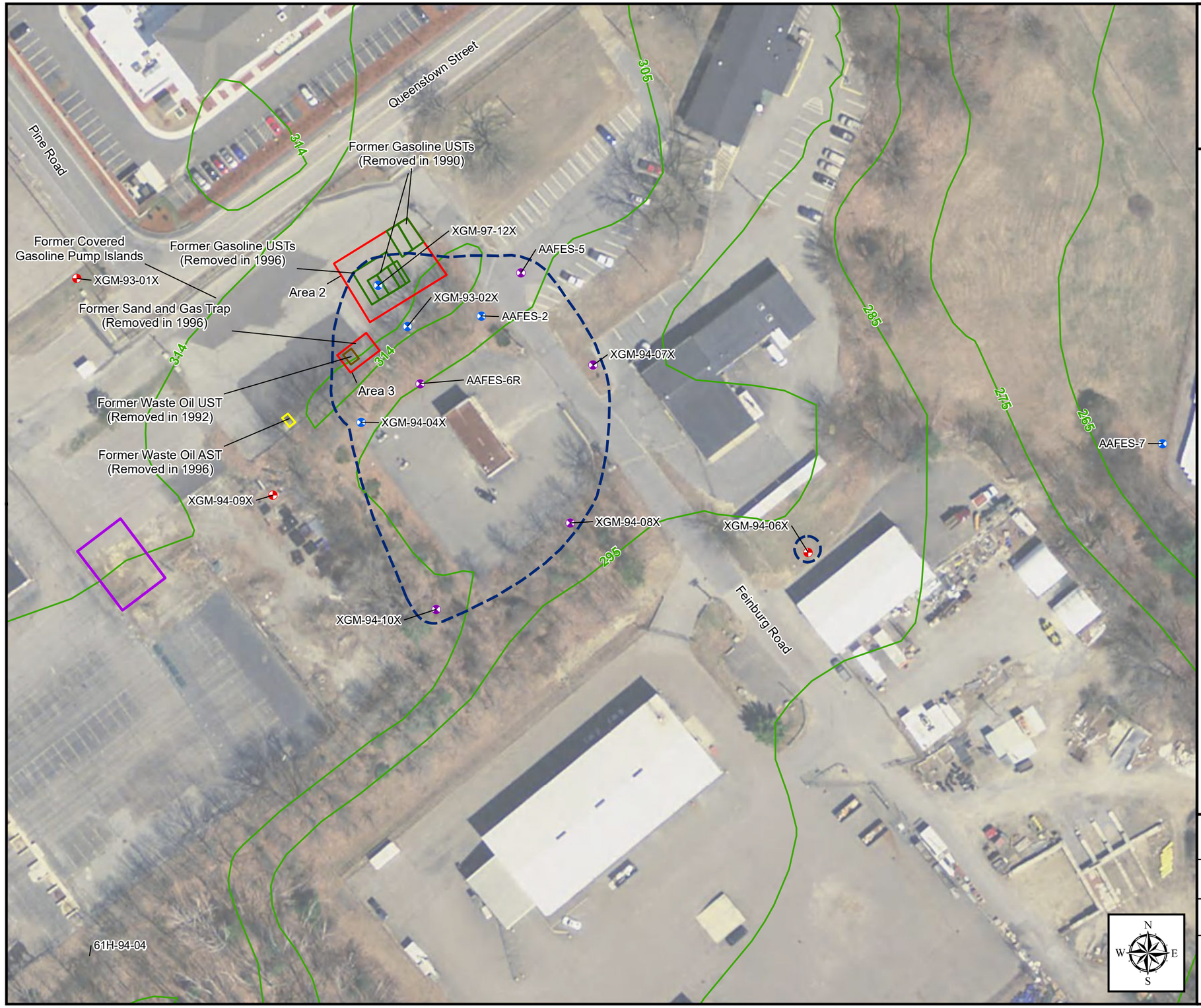
0 60 120
Feet

Date: 02/06/2018

Figure 3-4

File: AR2017_AOC69W_Metals_Fall2017.mxd

Figure 4-1
Site Layout
Area of Contamination 43G



Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Monitoring Well
- XGP-94-04X Well/Piezometer Identification
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on 1999 to 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area 1
- Former Gasoline UST(s)
- Former Waste Oil UST
- Former Waste Oil AST
- Former UST Area
- Topographic Contour (Ft AMSL)

Notes:
AST = Above ground storage tank
UST = Underground storage Tank
LTM = Long-term monitoring

Aerial Sources: 2013, USGS, MassGIS

2017 Main Post Annual Report
AOC 43G

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 40 80
Feet

Date: 02/06/2018

Figure 4-1

File: AR2017_AOC43G.mxd

Figure 4-2
Interpretive Water Table Elevation
Area of Contamination 43G
October 2017



Notes:
AST = Aboveground Storage Tank
UST = Underground Storage Tank
LTM = Long-Term Monitoring
NGVD = National Geodetic Vertical Datum (1929)

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Piezometer - Abandoned
- Monitoring Well
- Monitoring Well - Abandoned
- Monitoring Well - Presumed Destroyed
- XGP-94-04X — Well/Piezometer Identification
- (275.99) — Groundwater Elevation (ft NGVD)
- Groundwater Elevation Contour (ft NGVD) (Contour Interval = 2 ft)
- Inferred Groundwater Elevation Contour
- Groundwater Flow Direction
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on 1999 to 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area 1
- Former Gasoline UST(s)
- Former Waste Oil UST
- Former Waste Oil AST
- Former UST Area
- Topographic Contour (Ft AMSL)

2017 Main Post Annual Report
AOC 43G

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

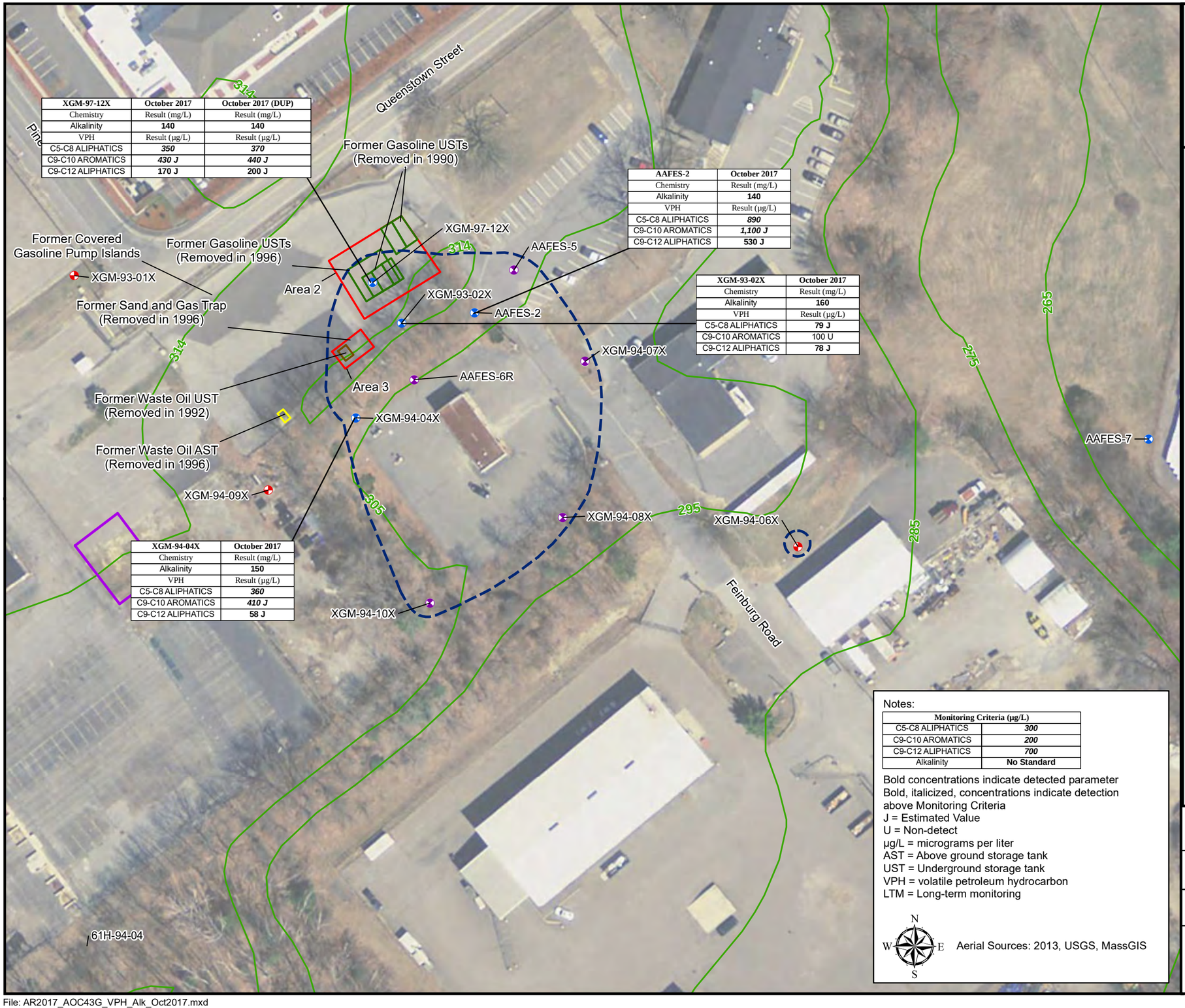
0 40 80
Feet

Date: 02/06/2018

Figure 4-2

File: AR2017_AOC43G_Oct2017GWC.mxd

Figure 4-3
VPH and Alkalinity Concentrations
Area of Contamination 43G
October 2017



XGM-97-12X	October 2017	October 2017 (DUP)
Chemistry	Result (mg/L)	Result (mg/L)
Alkalinity	**140**	**140**
VPH	Result (µg/L)	Result (µg/L)
C5-C8 ALIPHATICS	***350***	***370***
C9-C10 AROMATICS	***430 J***	***440 J***
C9-C12 ALIPHATICS	**170 J**	**200 J**

AAFES-2	October 2017
Chemistry	Result (mg/L)
Alkalinity	**140**
VPH	Result (µg/L)
C5-C8 ALIPHATICS	***890***
C9-C10 AROMATICS	***1,100 J***
C9-C12 ALIPHATICS	**530 J**

XGM-93-02X	October 2017
Chemistry	Result (mg/L)
Alkalinity	**160**
VPH	Result (µg/L)
C5-C8 ALIPHATICS	**79 J**
C9-C10 AROMATICS	100 U
C9-C12 ALIPHATICS	**78 J**

XGM-94-04X	October 2017
Chemistry	Result (mg/L)
Alkalinity	**150**
VPH	Result (µg/L)
C5-C8 ALIPHATICS	***360***
C9-C10 AROMATICS	***410 J***
C9-C12 ALIPHATICS	**58 J**

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Monitoring Well
- XGP-94-04X Well/Piezometer Identification
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on 1999 to 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area 1
- Former Gasoline UST(s)
- Former Waste Oil UST
- Former Waste Oil AST
- Former UST Area
- Topographic Contour (ft AMSL)

Notes:

Monitoring Criteria (µg/L)	
C5-C8 ALIPHATICS	***300***
C9-C10 AROMATICS	***200***
C9-C12 ALIPHATICS	***700***
Alkalinity	**No Standard**

Bold concentrations indicate detected parameter
Bold, italicized, concentrations indicate detection above Monitoring Criteria
J = Estimated Value
U = Non-detect
µg/L = micrograms per liter
AST = Above ground storage tank
UST = Underground storage tank
VPH = volatile petroleum hydrocarbon
LTM = Long-term monitoring

N W E S

Aerial Sources: 2013, USGS, MassGIS

2017 Main Post Annual Report
AOC 43G

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

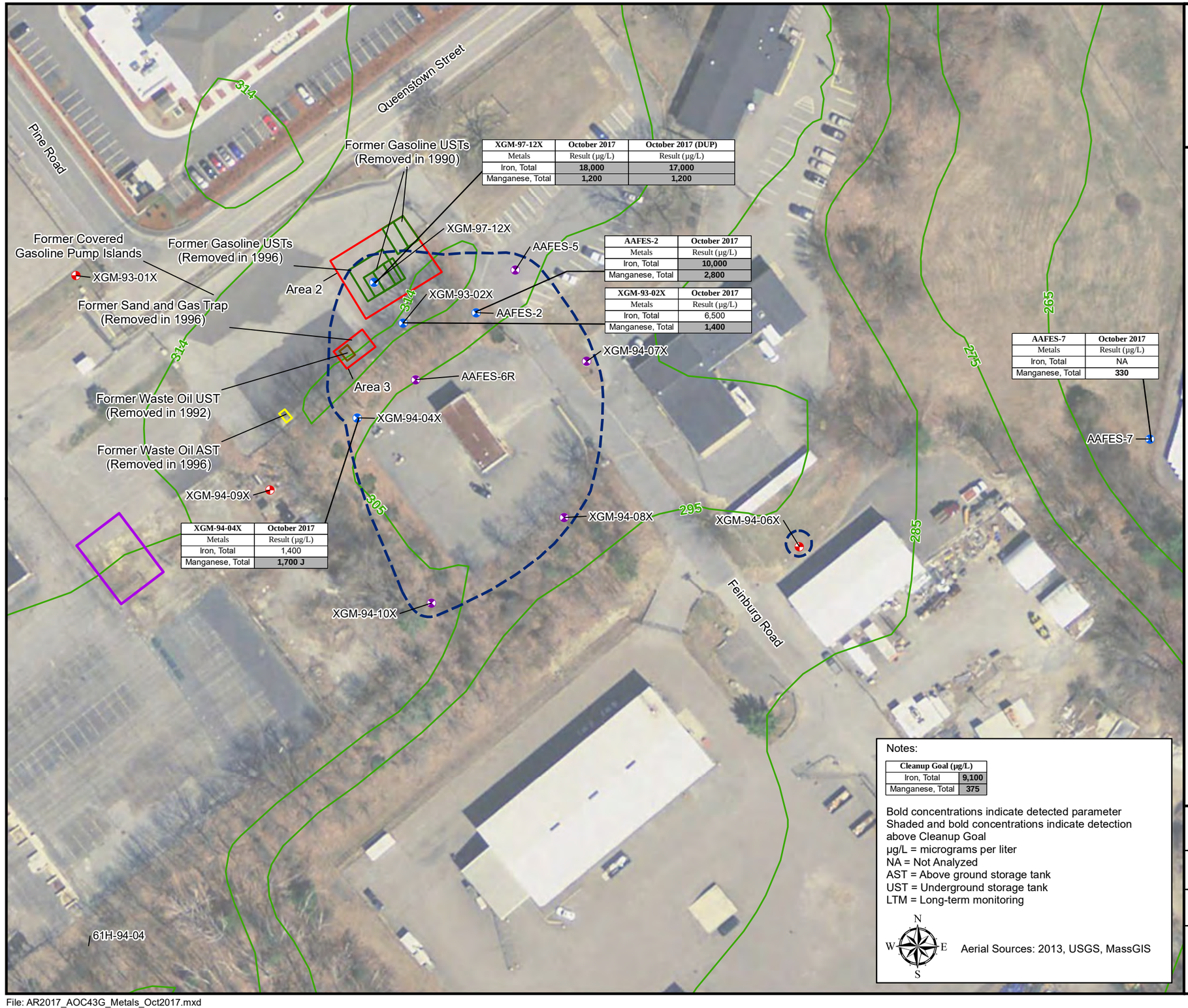
0 40 80 Feet

Date: 01/23/2019

Figure 4-3

File: AR2017_AOC43G_VPH_Alk_Oct2017.mxd

Figure 4-4
Metal Concentrations
Area of Contamination 43G
October 2017



XGM-97-12X	October 2017	October 2017 (DUP)
Metals	Result (µg/L)	Result (µg/L)
Iron, Total	**18,000**	**17,000**
Manganese, Total	**1,200**	**1,200**

AAFES-2	October 2017
Metals	Result (µg/L)
Iron, Total	**10,000**
Manganese, Total	**2,800**

XGM-93-02X	October 2017
Metals	Result (µg/L)
Iron, Total	6,500
Manganese, Total	**1,400**

AAFES-7	October 2017
Metals	Result (µg/L)
Iron, Total	NA
Manganese, Total	**330**

XGM-94-04X	October 2017
Metals	Result (µg/L)
Iron, Total	1,400
Manganese, Total	**1,700 J**

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Monitoring Well
- XGP-94-04X Well/Piezometer Identification
- Area 1
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on 1999 to 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Former Gasoline UST(s)
- Former Waste Oil UST
- Former Waste Oil AST
- Former UST Area
- Topographic Contour (ft AMSL)

Notes:

Cleanup Goal (µg/L)	
Iron, Total	9,100
Manganese, Total	375

Bold concentrations indicate detected parameter
Shaded and bold concentrations indicate detection above Cleanup Goal
µg/L = micrograms per liter
NA = Not Analyzed
AST = Above ground storage tank
UST = Underground storage tank
LTM = Long-term monitoring

N W E S

Aerial Sources: 2013, USGS, MassGIS

2017 Main Post Annual Report
AOC 43G

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Devens, Massachusetts

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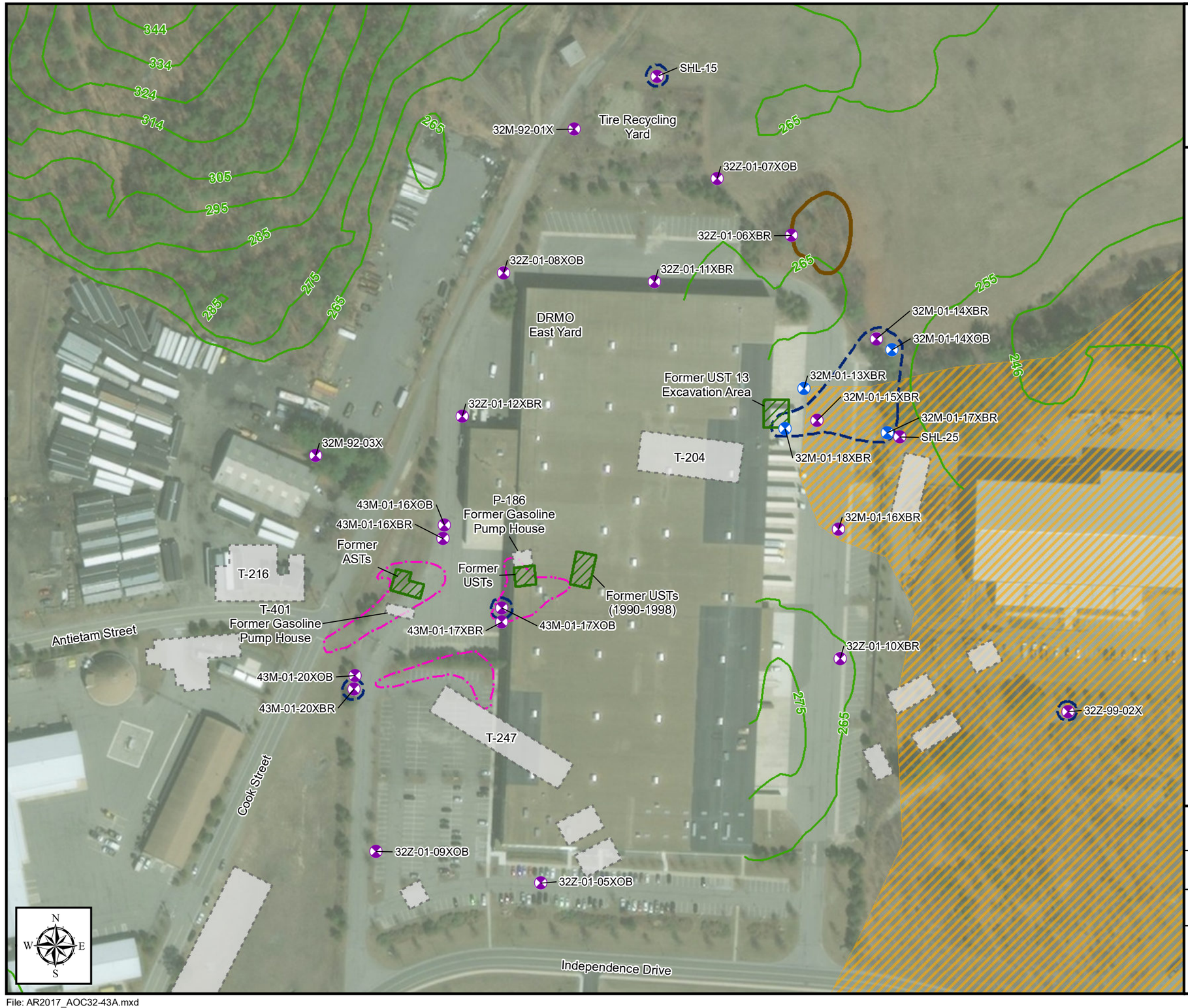
0 40 80
Feet

Date: 01/23/2019

Figure 4-4

File: AR2017_AOC43G_Metals_Oct2017.mxd

Figure 5-1
Site Layout
Area of Contamination 32 and 43A



Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- DEP Approved Wellhead Protection Areas (Zone II) for Grove Pond wellfield
- 32M-92-01X — Well Identification
- Former Storage Tank(s)
- Former Building
- T-247 — Former Building Number
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- TPHC Soil Contamination
- Remaining Bedrock Outcrop
- Topographic Contour (Ft AMSL)

Notes:
AST = Above ground storage tank
UST = Underground storage Tank
DRMO = Defense Reutilization and Marketing Office
LTM = Long-term monitoring
TPHC = Total petroleum hydrocarbons

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

2017 Main Post Annual Report
AOC 32 and 43A

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
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0 80 160
Feet

Date: 02/08/2018

Figure 5-1

File: AR2017_AOC32-43A.mxd

Notes:
32Z-01-05XOB not used in contouring
AST = Aboveground Storage Tank
UST = Underground Storage Tank
DRMO = Defense Reutilization and Marketing Office
LTM = Long-Term Monitoring
TPHC = Total Petroleum Hydrocarbons
ft AMSL = Feet Above Mean Sea Level
NGVD = National Geodetic Vertical Datum (1929)

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,

Figure 5-2
Interpretive Water Table Elevation Overburden Wells
Areas of Contamination 32 and 43A
July 2017

Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- Monitoring Well - Paved Over
- (233.01) Groundwater Elevation (ft NGVD)
- Groundwater Contour (ft NGVD) (Interval = 2 ft)
- Inferred Groundwater Elevation Contour
- Groundwater Flow Direction
- 32M-92-01X Well Identification
- DEP Approved Wellhead Protection Areas (Zone II) for Grove Pond wellfield
- Former Storage Tank(s)
- Former Building
- T-247 Former Building Number
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- TPHC Soil Contamination
- Remaining Bedrock Outcrop
- Topographic Contour (Ft AMSL)

2017 Main Post Annual Report
AOC 32 and 43A

Former Fort Devens Army Installation
Devens, Massachusetts

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0 80 160 Feet

Date: 02/08/2019

Figure 5-2

File: AR2017_AOC32-43A_July17GW-OB.mxd

Notes:
AST = Aboveground Storage Tank
UST = Underground Storage Tank
DRMO = Defense Reutilization and Marketing Office
LTM = Long-Term Monitoring
TPHC = Total Petroleum Hydrocarbons
ft AMSL = Feet Above Mean Sea Level
NGVD = National Geodetic Vertical Datum (1929)

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

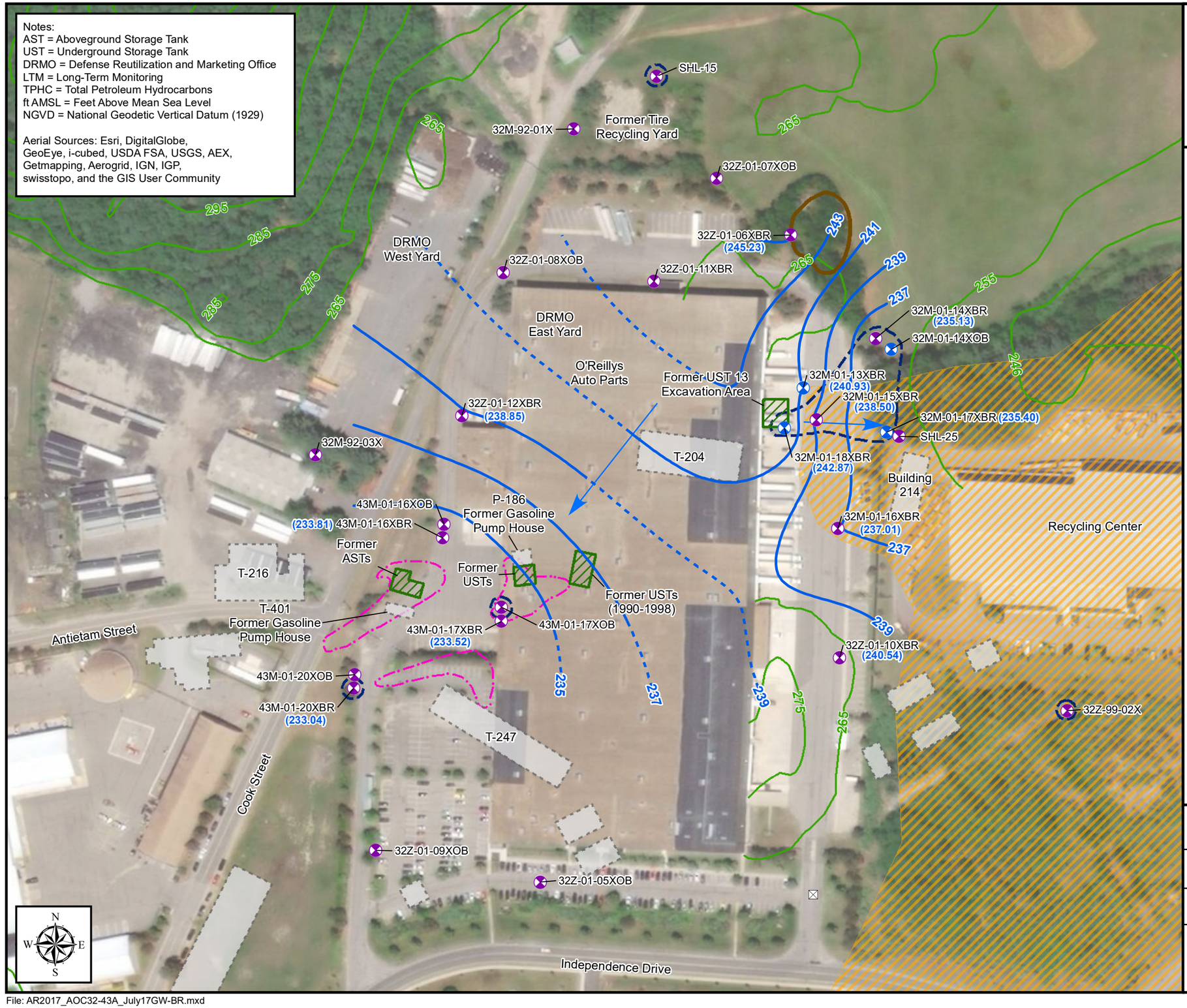

Figure 5-3
Interpretive Water Table Elevation
Bedrock Wells
Areas of Contamination 32 and 43A
July 2017

Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- Monitoring Well - Paved Over
- (233.04) Groundwater Elevation (ft NGVD)
- Groundwater Elevation Contour (ft NGVD) (Contour Interval = 2.0 ft)
- Inferred Groundwater Elevation Contour
- Groundwater Flow Direction
- DEP Approved Wellhead Protection Areas (Zone II) for Grove Pond Wellfield
- 32M-92-01X Well Identification
- Former Storage Tank(s)
- Former Building
- T-247 Former Building Number
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- TPHC Soil Contamination
- Remaining Bedrock Outcrop
- Topographic Contour (Ft AMSL)

2017 Main Post Annual Report
AOC 32 and 43A

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
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0 80 160
Feet

Date: 02/08/2019

Figure 5-3

File: AR2017_AOC32-43A_July17GW-BR.mxd

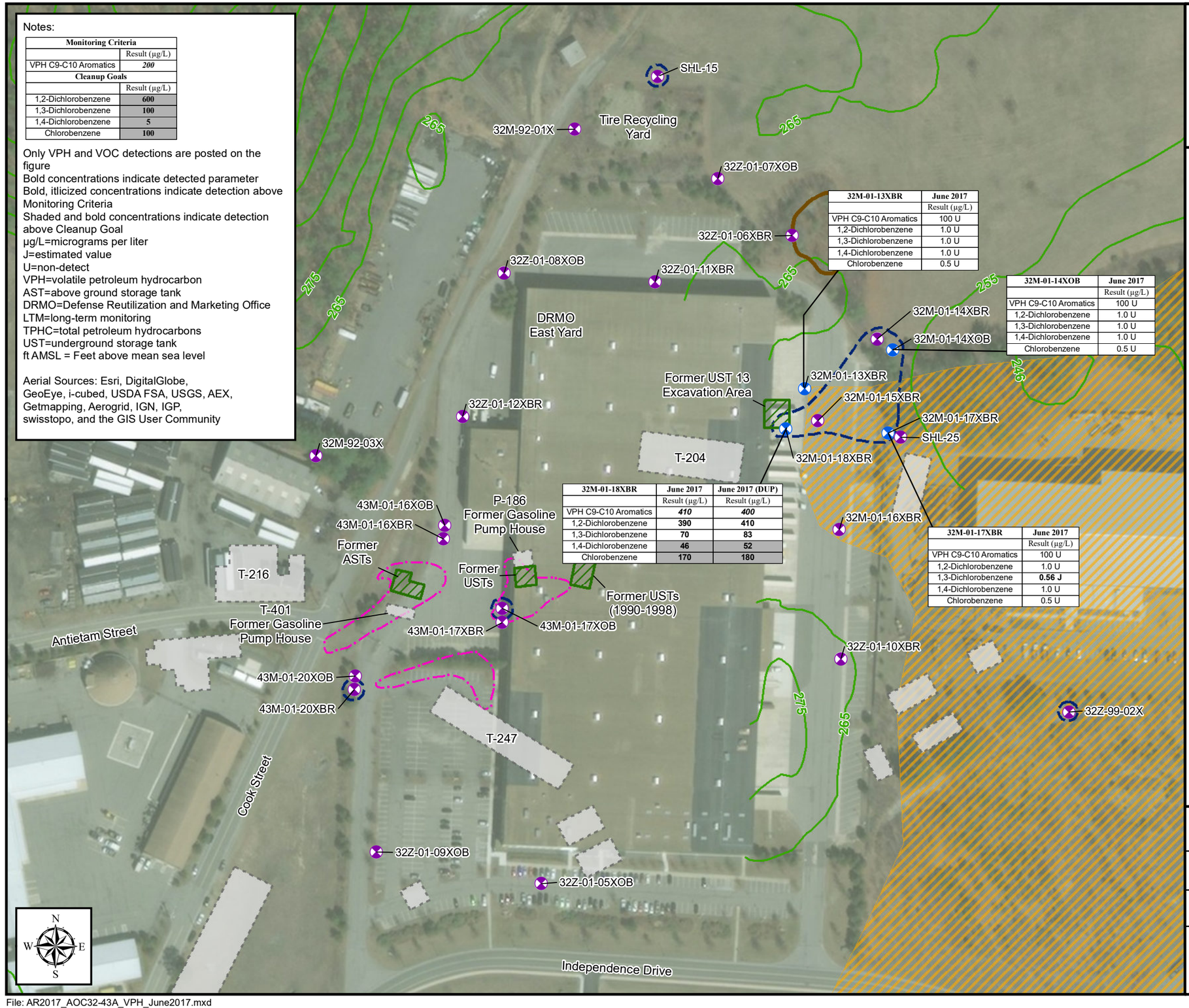
Figure 5-4
VPH and VOCs Concentrations
Area of Contamination 32 and 43A
June 2017

Notes:

Monitoring Criteria	
	Result (µg/L)
VPH C9-C10 Aromatics	***200***
Cleanup Goals	
	Result (µg/L)
1,2-Dichlorobenzene	**600**
1,3-Dichlorobenzene	**100**
1,4-Dichlorobenzene	**5**
Chlorobenzene	**100**

Only VPH and VOC detections are posted on the figure
Bold concentrations indicate detected parameter
Bold, itlicized concentrations indicate detection above Monitoring Criteria
Shaded and bold concentrations indicate detection above Cleanup Goal
µg/L=micrograms per liter
J=estimated value
U=non-detect
VPH=volatile petroleum hydrocarbon
AST=above ground storage tank
DRMO=Defense Reutilization and Marketing Office
LTM=long-term monitoring
TPHC=total petroleum hydrocarbons
UST=underground storage tank
ft AMSL = Feet above mean sea level

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



32M-01-13XBR	June 2017
	Result (µg/L)
VPH C9-C10 Aromatics	100 U
1,2-Dichlorobenzene	1.0 U
1,3-Dichlorobenzene	1.0 U
1,4-Dichlorobenzene	1.0 U
Chlorobenzene	0.5 U

32M-01-14XOB	June 2017
	Result (µg/L)
VPH C9-C10 Aromatics	100 U
1,2-Dichlorobenzene	1.0 U
1,3-Dichlorobenzene	1.0 U
1,4-Dichlorobenzene	1.0 U
Chlorobenzene	0.5 U

32M-01-18XBR	June 2017	June 2017 (DUP)
	Result (µg/L)	Result (µg/L)
VPH C9-C10 Aromatics	***410***	***400***
1,2-Dichlorobenzene	**390**	**410**
1,3-Dichlorobenzene	**70**	**83**
1,4-Dichlorobenzene	**46**	**52**
Chlorobenzene	**170**	**180**

32M-01-17XBR	June 2017
	Result (µg/L)
VPH C9-C10 Aromatics	100 U
1,2-Dichlorobenzene	1.0 U
1,3-Dichlorobenzene	**0.56 J**
1,4-Dichlorobenzene	1.0 U
Chlorobenzene	0.5 U

Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- DEP Approved Wellhead Protection Areas (Zone II)
- 32M-92-01X — Well Identification
- Former Storage Tank(s)
- Former Building
- T-247 — Former Building Number
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- TPHC Soil Contamination
- Remaining Bedrock Outcrop
- Topographic Contour (Ft AMSL)

2017 Main Post Annual Report
AOC 32 and 43A

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
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0 80 160
Feet

Date: 02/06/2018

Figure 5-4

File: AR2017_AOC32-43A_VPH_June2017.mxd

Figure 5-5
Metal Concentrations
Area of Contamination 32 and 43A
June 2017

Notes:

Cleanup Goals (µg/L)	
Manganese, Dissolved	3,500
Arsenic, Dissolved	10

Bold concentrations indicate detected parameter
Shaded and bold concentrations indicate detection above Cleanup Goal
µg/L=micrograms per liter
J=estimated value
U=non-detect
AST=above ground storage tank
DRMO=Defense Reutilization and Marketing Office
LTM=long-term monitoring
TPHC=total petroleum hydrocarbons
UST=underground storage tank
ft AMSL = Feet above mean sea level

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

SHL-15
32M-92-01X
Tire Recycling Yard
32Z-01-07XOB
32Z-01-06XBR
32Z-01-08XOB
32Z-01-11XBR
DRMO East Yard
32M-01-14XBR
32M-01-14XOB
Former UST 13 Excavation Area
32M-01-13XBR
32M-01-15XBR
32M-01-17XBR
SHL-25
32Z-01-12XBR
32M-92-03X
32M-01-18XBR
32M-01-16XBR
43M-01-16XOB
43M-01-16XBR
P-186 Former Gasoline Pump House
Former ASTs
Former USTs
Former USTs (1990-1998)
T-216
T-401
Former Gasoline Pump House
43M-01-17XBR
43M-01-17XOB
Antietam Street
32Z-01-10XBR
43M-01-20XOB
43M-01-20XBR
32Z-99-02X
T-247
Cook Street
32Z-01-09XOB
32Z-01-05XOB
Independence Drive

32M-01-13XBR	June 2017
Metals	Result (µg/L)
Manganese, Dissolved	52
Arsenic, Dissolved	3.0 U

32M-01-14XOB	June 2017
Metals	Result (µg/L)
Manganese, Dissolved	2,900
Arsenic, Dissolved	30

32M-01-18XBR	June 2017	June 2017 (DUP)
Metals	Result (µg/L)	Result (µg/L)
Manganese, Dissolved	2,700	2,900
Arsenic, Dissolved	2.4 J	3.3 J

32M-01-17XBR	June 2017
Metals	Result (µg/L)
Manganese, Dissolved	1.3 J
Arsenic, Dissolved	3.0 U

Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- DEP Approved Wellhead Protection Areas (Zone II)
- 32M-92-01X — Well Identification
- Former Storage Tank(s)
- Former Building
- T-247 — Former Building Number
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- TPHC Soil Contamination
- Remaining Bedrock Outcrop
- Topographic Contour (Ft AMSL)

2017 Main Post Annual Report
AOC 32 and 43A

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 80 160 Feet

Date: 02/06/2018

Figure 5-5

File: AR2017_AOC32-43A_Metals_June17.mxd

Figure 6-1
Site Layout
Devens Consolidation Landfill



Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Gas Vent
- Monitoring Well - Destroyed
- LFM-03-07 Well/Vent Identification
- Topographic Contour (ft AMSL)

Notes:

LFM-03-07 was paved over by asphalt during parking lot construction for the neighboring Building. In July 2017 LFM-03-07 was uncovered.

LFM-99-06A was replaced by LFM-99-06A-RP in September 2015.

Gas vent locations were approximated based upon the locations displayed in Figure 2 of USACE New England District's Devens Consolidation Landfill 2004 Annual Report.

ft AMSL = feet above mean sea level
LTM = long term monitoring

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

2017 Main Post Annual Report
Devens Consolidation Landfill

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 75 150
Feet

Date: 01/23/2019

Figure 6-1

File: AR2017_DCL_SITE.mxd

Notes:
LFM-99-06A was replaced by LFM-99-06A-RP in September 2015.
Gas vent locations were approximated based upon the locations displayed in Figure 2 of USACE New England District's Devens Consolidation Landfill 2004 Annual Report.
ft AMSL = Feet Above Mean Sea Level
LTM = Long-Term Monitoring
NGVD = National Geodetic Vertical Datum (1929)

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

LFM-99-03B (303.11)
LFM-99-05B (299.05)
LFM-99-05A (296.26)
LFM-99-01B (326.36)
LFM-99-02B (337.16)
LFM-03-07
LFM-99-06A-RP (302.69)
LFM-99-06A
V-1
V-2
V-3
V-4
V-5
V-6
V-7
V-8
V-9
V-10
V-11
A
A'
Queenstown Street

Figure 6-2
Interpretive Water Table Elevation
Devens Consolidation Landfill
June 2017

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Gas Vent
- Monitoring Well - Destroyed
- (303.11) Groundwater Elevation (ft NGVD)
- Groundwater Contour (ft NGVD) (Interval = 5 ft)
- Inferred Groundwater Elevation Contour
- Groundwater Flow Direction
- LFM-03-07 Well/Vent Identification
- A——A' Groundwater Gradient Calculation Location
- Topographic Contour (ft AMSL)

Note:

LFM-03-07 was paved over by asphalt during parking lot construction for the neighboring Building. In July 2017 LFM-03-07 was uncovered.

2017 Main Post Annual Report
Devens Consolidation Landfill

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
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0 60 120
Feet

Date: 01/23/2019

Figure 6-2

File: AR2017_DCL_June2017GWC.mxd

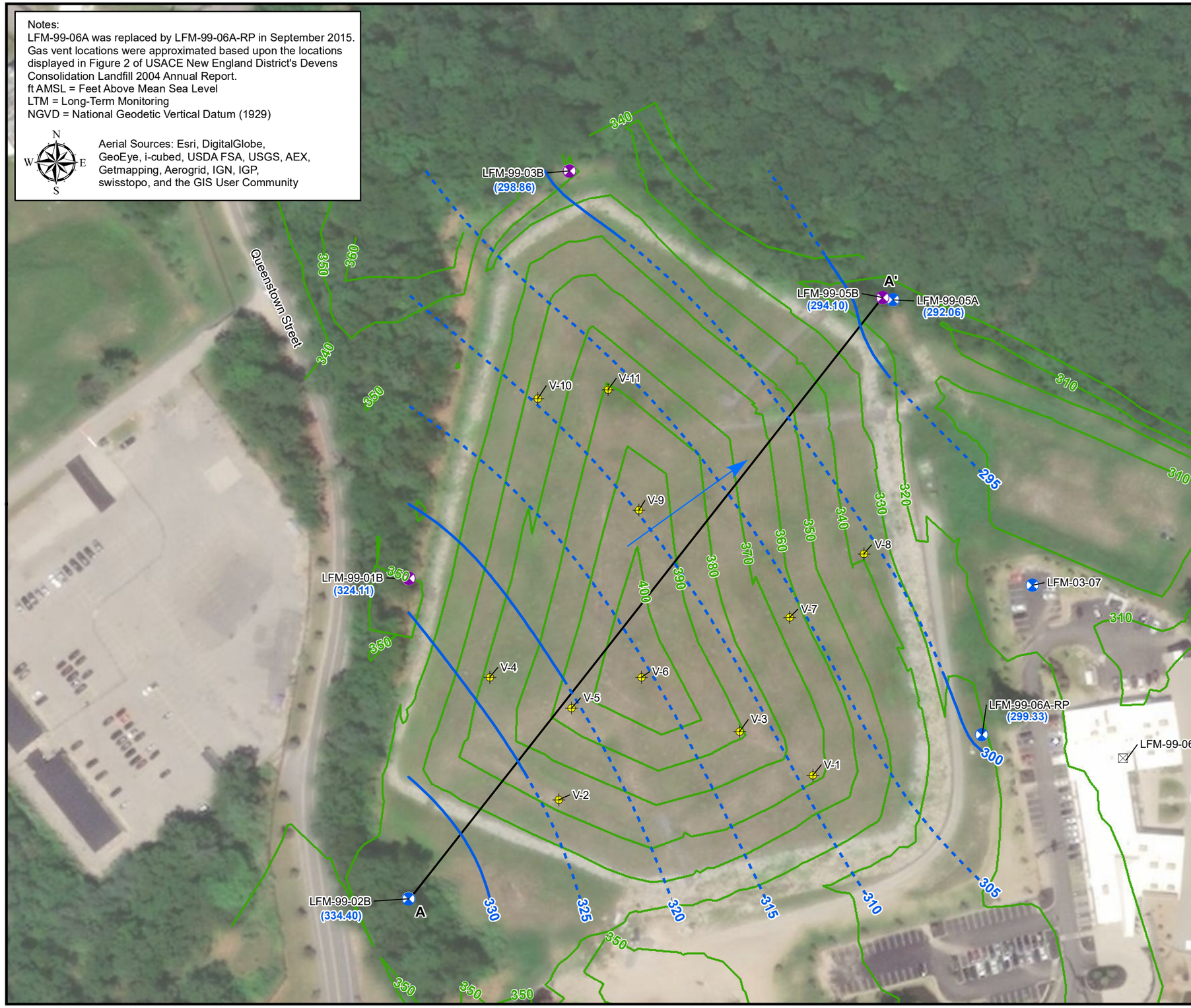

Figure 6-3
Interpretive Water Table Elevation
Devens Consolidation Landfill
October 2017

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Gas Vent
- Monitoring Well - Destroyed
- (299.33) Groundwater Elevation (ft NGVD)
- Groundwater Contour (ft NGVD) (Interval = 5 ft)
- Inferred Groundwater Elevation Contour
- Groundwater Flow Direction
- LFM-03-07 Well/Vent Identification
- A——A' Groundwater Gradient Calculation Location
- Topographic Contour (ft AMSL)

Note:

LFM-03-07 was paved over by asphalt during parking lot construction for the neighboring Building. In July 2017 LFM-03-07 was uncovered.

2017 Main Post Annual Report
Devens Consolidation Landfill

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
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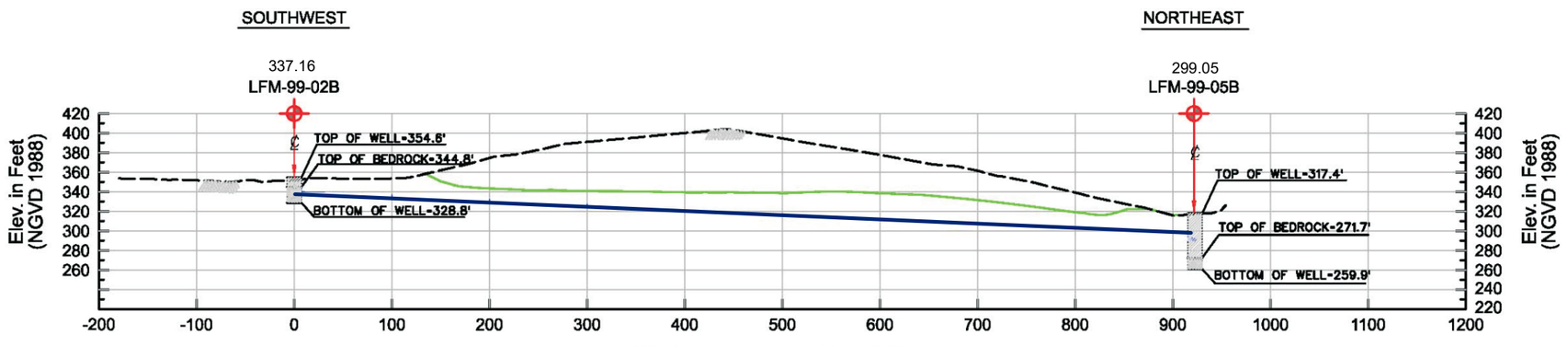
0 60 120
Feet

Date: 01/23/2019

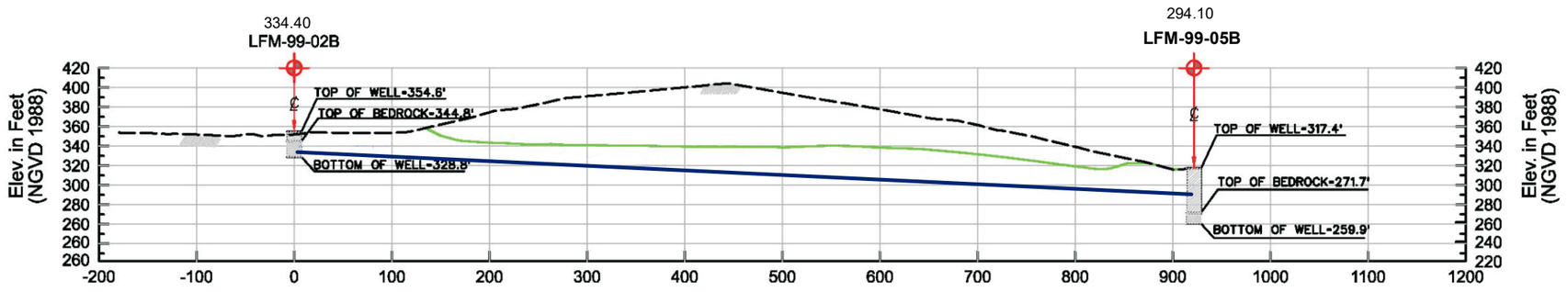
Figure 6-3

KGS

File: AR2017_DCL_Oct2017GWC.mxd



PROFILE 1 (June 2017)



PROFILE 2 (October 2017)

Figure 6-4
Devens Consolidation Landfill Profiles
LFM-99-02B to LFM-99-05B

Legend

- Existing Ground Surface
- Liner
- Bedrock Groundwater Levels
- Monitoring Well

Notes:

1. Horizontal and vertical scales as shown. No vertical exaggeration.

2. Existing ground surface and liner elevations based on figures from the remedial action closure report by Shaw Environmental, Inc. September 2003.

3. Bedrock wells water table elevations based on contours generated from June and October 2017 measurements.

NGVD = National Geodetic Vertical Datum

2017 Main Post Annual Report
Devens Consolidation Landfill

Former Fort Devens Army Installation
Devens, Massachusetts

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Date:	Figure
01/26/2018	6-4

File: AR2017_DCL_Profiles.mxd

Figure 7-1
Site Location
Grant Housing Area/
Oak and Maple Housing Area/
37-mm Impact Area



Legend

- Former Grant Housing Area
- Former Maple Housing Area
- 37-mm Impact Area
- Approximate Former Firing Location
- Road

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

2017 Main Post Annual Report
Housing Areas

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 250 500
Feet

Date: 01/23/2019

Figure 7-1

File: AR2017_GrantHousingAreas.mxd



TABLES

Table 1-1
Groundwater Elevations, Spring 2017 LTM Event
Main Post, Former Fort Devens Army Installation, Massachusetts

Site Name	Well Identification	Date of Gauging	DTW (ft BTOR)	TOR Elevation (ft NGVD)	GW Elevation (ft NGVD)	Notes
DCL	LFM-99-01B	6/21/2017	25.11	351.47	326.36	--
	LFM-99-02B	6/21/2017	17.47	354.63	337.16	--
	LFM-99-03B	6/21/2017	39.77	342.88	303.11	--
	LFM-99-05A	6/21/2017	21.12	317.38	296.26	no lock
	LFM-99-05B	6/21/2017	18.33	317.38	299.05	--
	LFM-99-06A-RP	6/21/2017	14.40	317.09	302.69	--
	LFM-03-07	--	--	313.90	--	paved over (repaired 7/25/17)
AOC 57, Area 2	57M-03-01X	6/19/2017	14.06	237.90	223.84	--
	57M-03-02X	6/19/2017	4.78	227.10	222.32	--
	57M-03-03X	6/19/2017	0.69	223.64	222.95	not used in contour map
	57M-03-04X	6/19/2017	2.15	224.02	221.87	--
	57M-03-05X	6/19/2017	2.64	224.33	221.69	--
	57M-03-06X	6/19/2017	2.64	224.56	221.92	--
	57M-95-05X	6/19/2017	9.38	237.31	227.93	not used in contour map
	57M-95-06X	6/19/2017	11.72	236.56	224.84	--
	57M-95-07X	6/19/2017	2.54	224.57	222.03	--
	57WP-05-01	6/19/2017	--	--	--	could not locate
	57WP-06-02	6/19/2017	0.87	222.91	222.04	--
AOC 57, Area 3	57M-95-03X	6/19/2017	10.84	234.97	224.13	--
	57M-96-10X	6/19/2017	--	229.55	--	Dry, DTB = 7.09 ft
	57M-96-11X	6/19/2017	2.93	224.38	221.45	--
	57M-96-12X	6/19/2017	4.94	227.87	222.93	--
	57M-96-13X	6/19/2017	4.82	227.73	222.91	--
	57P-98-03X	6/19/2017	--	222.58	--	could not locate
	57P-98-04X	6/19/2017	3.62	223.72	220.10	--
	57WP-06-03	6/19/2017	0.58	222.69	222.11	--
AOC 32/43A Overburden Wells	SHL-15	7/7/2017	17.28	259.10	241.82	--
	32M-92-01X	7/7/2017	17.12	260.93	243.81	--
	32Z-99-02X (32M-92-02X)	7/7/2017	23.72	260.79	237.07	--
	32M-01-14XOB	7/7/2017	23.84	257.42	233.58	--
	32M-92-03X	7/7/2017	19.07	260.99	241.92	--
	SHL-25	7/7/2017	25.44	260.30	234.86	--
	32Z-01-05XOB	7/7/2017	19.14	261.40	242.26	not used in contour map
	32Z-01-07XOB	7/7/2017	17.54	260.31	242.77	--
	32Z-01-08XOB	7/7/2017	17.77	261.33	243.56	--
	32Z-01-09XOB	7/7/2017	25.16	258.17	233.01	--
	43M-01-16XOB	7/7/2017	23.86	257.65	233.79	--
	43M-01-17XOB	7/7/2017	25.38	258.87	233.49	--
	43M-01-20XOB	7/7/2017	25.24	258.46	233.22	--

Table 1-1
Groundwater Elevations, Spring 2017 LTM Event
Main Post, Former Fort Devens Army Installation, Massachusetts

Site Name	Well Identification	Date of Gauging	DTW (ft BTOR)	TOR Elevation (ft NGVD)	GW Elevation (ft NGVD)	Notes
AOC 32/43A Bedrock Wells	32M-01-13XBR	7/7/2017	17.72	258.65	240.93	--
	32M-01-14XBR	7/7/2017	21.78	256.91	235.13	--
	32M-01-15XBR	7/7/2017	19.86	258.36	238.50	--
	32M-01-16XBR	7/7/2017	21.28	258.29	237.01	--
	32M-01-17XBR	7/7/2017	24.09	259.49	235.40	--
	32M-01-18XBR	7/7/2017	16.27	259.14	242.87	--
	32Z-01-06XBR	7/7/2017	17.47	262.70	245.23	--
	32Z-01-10XBR	7/7/2017	17.68	258.22	240.54	--
	32Z-01-11XBR	7/7/2017	--	262.22	--	dry
	32Z-01-12XBR	7/7/2017	19.83	258.68	238.85	--
	43M-01-16XBR	7/7/2017	23.76	257.57	233.81	--
	43M-01-17XBR	7/7/2017	25.53	259.05	233.52	--
	43M-01-20XBR	7/7/2017	25.07	258.11	233.04	--

Notes:
AOC = Area of Contamination
DCL = Devens Consolidation Landfill
DTW = Distance to Water
ft = Feet
ft BTOR = feet below top of riser
GW = Groundwater
TOR = Top of Riser
NGVD = National Geodetic Vertical Datum (1929)

Table 1-2
Groundwater Elevations, Fall 2017 LTM Event
Main Post, Former Fort Devens Army Installation, Massachusetts

Site Name	Well Identification	Date of Gauging	DTW (ft BTOR)	TOR Elevation (ft NGVD)	GW Elevation (ft NGVD)	Notes
DCL	LFM-99-01B	10/26/2017	27.36	351.47	324.11	--
	LFM-99-02B	10/26/2017	20.23	354.63	334.40	--
	LFM-99-03B	10/26/2017	44.02	342.88	298.86	--
	LFM-99-05A	10/26/2017	25.32	317.38	292.06	--
	LFM-99-05B	10/26/2017	23.28	317.38	294.10	--
	LFM-99-06ARP	10/26/2017	17.76	317.09	299.33	--
	LFM-03-07	10/26/2017	--	313.90	--	Dry, DTB = 23.36 ft
AOC 43G	AAFES-2	10/24/2017	25.50	302.80	277.30	--
	AAFES-5	10/24/2017	23.53	300.92	277.39	--
	AAFES-6R	10/24/2017	21.87	299.54	277.67	--
	AAFES-7	10/24/2017	11.41	259.51	248.10	--
	XGM-93-02X	10/24/2017	30.69	309.60	278.91	--
	XGM-94-04X	10/24/2017	21.94	301.50	279.56	--
	XGM-94-07X	10/24/2017	21.76	295.60	273.84	--
	XGM-94-08X	10/24/2017	27.82	299.80	271.98	--
	XGM-94-10X	10/24/2017	26.71	302.70	275.99	--
	XGM-97-12X	10/24/2017	27.22	309.63	282.41	--
AOC 69W	69W-94-12	10/30/2017	6.46	228.94	222.48	--
	69W-94-13	10/30/2017	5.35	227.79	222.44	--
	69W-94-14	10/30/2017	6.03	228.02	221.99	--
	Willow Brook PZ	10/30/2017	--	218.97	--	Unable to locate
	ZWM-01-25X	10/30/2017	4.01	225.51	221.50	--
	ZWM-01-26X	10/30/2017	5.62	227.61	221.99	--
	ZWM-95-15X	10/30/2017	3.99	225.81	221.82	--
	ZWM-95-16X	10/30/2017	6.14	228.38	222.24	--
	ZWM-95-17X	10/30/2017	15.49	238.63	223.14	--
	ZWM-95-18X	10/30/2017	2.67	222.95	220.28	--
	ZWM-99-22X	10/30/2017	5.04	227.52	222.48	--
	ZWM-99-23X	10/30/2017	4.14	225.88	221.74	--
	ZWM-99-24X	10/30/2017	3.96	226.65	222.69	--
	ZWP-95-01X	10/30/2017	4.25	226.84	222.59	--
	ZWP-95-02X	10/30/2017	2.99	223.63	220.64	--
	69WP-08-01	10/30/2017	2.42	221.50	219.08	--
	69WP-13-01	10/30/2017	1.93	NA	NA	--

Notes:
AOC = Area of Concern
DCL = Devens Consolidated Landfill
DTW = Distance to Water
ft = Feet
ft BTOR = feet below top of riser
GW = Groundwater
TOR = Top of Riser
NGVD = National Geodetic Vertical Datum (1929)

Table 1-3
Monthly Precipitation Data
Main Post, Former Fort Devens Army Installation, Massachusetts

	Year														
Month	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**Average**
January	0.75	3.46	4.58	2.72	2.38	2.49	3.31	3.66	2.18	1.38	2.18	2.73	1.48	3.00	2.59
February	1.32	2.17	2.28	1.21	8.85	2.51	6.05	4.11	1.12	2.91	3.16	0.55	3.36	2.34	3.00
March	2.97	4.08	0.53	3.97	5.28	2.40	10.61	4.08	1.25	2.31	4.16	1.03	3.12	3.86	3.55
April	7.67	5.47	2.21	7.09	3.61	4.00	1.43	5.05	2.87	1.62	3.25	0.33	1.89	4.85	3.67
May	3.43	4.25	7.32	4.37	1.99	3.97	3.37	3.81	3.13	5.38	3.29	0.10	2.04	6.21	3.76
June	1.67	3.87	9.31	1.56	4.02	6.41	3.53	5.69	4.03	8.53	1.76	2.76	1.04	3.97	4.15
July	4.72	1.67	1.71	6.25	6.35	9.61	4.01	2.27	1.46	3.46	4.10	1.73	1.92	3.37	3.76
August	2.77	2.56	4.38	1.40	4.66	2.64	3.58	10.99	4.92	2.09	2.25	1.17	2.55	2.42	3.46
September	7.35	1.67	2.87	2.25	8.05	1.28	2.48	6.94	3.06	1.64	1.07	3.23	0.05	4.54	3.32
October	1.91	13.46	6.10	3.35	1.81	3.99	6.17	7.12	5.12	1.28	5.22	3.60	4.58	9.12	5.20
November	3.42	4.40	6.38	2.67	3.66	3.43	3.92	3.94	0.47	2.66	3.60	1.66	3.27	1.22	3.19
December	3.89	3.79	1.77	3.67	3.78	3.69	4.08	4.84	3.39	3.46	4.44	2.10	3.40	2.50	3.49
TOTAL	**41.87**	**50.85**	**49.44**	**40.51**	**54.44**	**46.42**	**52.54**	**62.50**	**33.00**	**36.72**	**38.48**	**20.99**	**28.70**	**47.40**	**42.80**

Notes:
2017 monthly data retrieved from the National Oceanic and Atmospheric Administration (NOAA) data inventory.
Inches of Precipitation
Fitchburg, Massachusetts Weather Station

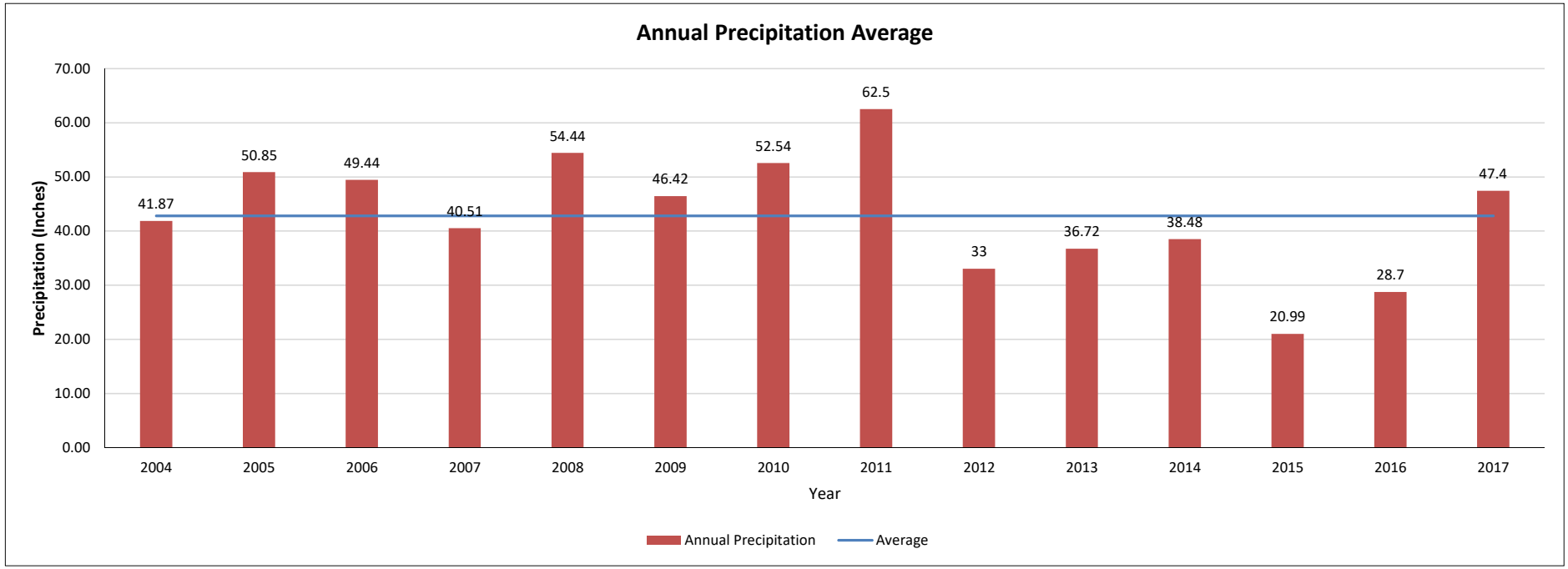

Table 1-4
Analytical Methods, Containers, Holding Times, and Preservatives
Main Post, Former Fort Devens Army Installation, Massachusetts

Site/Events	Parameter	Analytical Method[1]	Contaminant of Concern	Sample Container[2]	Preservative	Holding Time
AOC 57 (Spring)	Dissolved Metals*	SW6010C/6020A	As, Fe, Mn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
	Total Metals	SW6010C/6020A	As, Fe, Mn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
AOC 32/43A (Spring)	VOCs	SW8260B	TAL	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	VPH	MADEP-VPH-04-1.1	VPH/BTEX	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	Total Metals	SW6010C/6020A	As, Mn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
	Dissolved Metals*	SW6010C/6020A	As, Mn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
AOC 69W (Fall)	EPH	MADEP-EPH-04-1.1	EPH	2 x 1-Liter Glass Amber with Teflon- lined lid	HCl to pH < 2; 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	Dissolved Metals*	SW6010C/6020A	As, Fe, Mn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
AOC 43G (Fall)	VPH	MADEP-VPH-04-1.1	VPH/BTEX	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	Total Metals	SW6010C/6020A	Fe, Mn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
	Alkalinity	SM2320B	None	1 x 250-ml Polyethylene	Store at 4°± 2°C	14 Days
DCL (GW) (Spring/Fall)	VPH	MADEP-VPH-04-1.1	VPH/BTEX	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	EPH	MADEP-EPH-04-1.1	EPH	2 x 1-Liter Glass Amber with Teflon- lined lid	HCl to pH < 2; 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	Pesticides	SW8081A	TAL	2 x 1-Liter Glass Amber with Teflon- lined lid	Store at 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	Select Metals (Total)	SW6010C/6020A	As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, Ag	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
	Mercury	SW7470A	Hg			28 days
	Cyanide (Total)	SW9012B	Cyanide (Total)	1 x 250-ml Polyethylene	NAOH to pH > 12; 4°± 2°C	14 Days

Table 1-4
Analytical Methods, Containers, Holding Times, and Preservatives
Main Post, Former Fort Devens Army Installation, Massachusetts

Site/Events	Parameter	Analytical Method[1]	Contaminant of Concern	Sample Container[2]	Preservative	Holding Time
DCL (GW) (Spring/Fall) Cont.	TDS	SM2540C-11	None	1 x 500-ml Polyethylene	Store at 4°± 2°C	7 days
	Anions	SW9056A	Chloride, Sulfate	1 x 125-ml Polyethylene	Store at 4°± 2°C	28 days
	Alkalinity	SM2320B	None	1 x 250-ml Polyethylene	Store at 4°± 2°C	14 Days
	COD	410.4	None	1 x 250-ml Polyethylene	H2SO4 to pH < 2; 4°± 2°C	28 Days
	Nitrate/Nitrite as N	E353.2	Nitrate/Nitrite as N	1 x 500-ml Polyethylene	H2SO4 to pH < 2; 4°± 2°C	28 Days
DCL (Leachate) (Fall)	Select Metals (Total)	SW6010C/6020A	Total Metals include: Al, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
	Mercury	SW7470A	Hg	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	28 days
	Cyanide (Total)	SW9012B	Cyanide (Total)	1 x 250-ml Polyethylene	NAOH to pH > 12; 4°± 2°C	14 Days
	TSS/pH	SM2540D/SW9040C		1 x 1-liter Polyethylene	Store at 4°± 2°C	7 days
	TPH as DRO	SW8015B	DRO	2 x 1-Liter Glass Amber with Teflon- lined lid	Store at 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	Total Phenolics	SW9065	Total Phenols	1 x 250-ml amber	H2SO4 to pH < 2; 4°± 2°C	28 days
	TTO (VOCs)	624.00	VOCs	3 x 40-ml vials with teflon septa screw caps; no	HCl to pH < 2; 4°± 2°C	14 Days
	TTO (SVOCs)	625.00	SVOCs	2 x 1-liter amber	Store at 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	TTO (Pesticides/PCBs)	SW8081B/8082A	Pesticides/PCBs	2 x 1-liter amber	Store at 4°± 2°C	7 Days (extraction) 40 Days (analyses)

Notes:

* Samples submitted for dissolved metals are field filtered.

1 "Methods for Chemical Analysis of Water and Wastes", Cincinnati, OH, March 1979, EPA 600-4-79-020.
"Test Methods for Evaluating Solid Waste, Physical and Chemical Methods", U.S. EPA SW-846, Update 8, 2014.

2 Additional sample containers/volumes are required for matrix quality control samples.

DCL = Devens Consolidation Landfill
GW = Groundwater

Table 1-5
Monitoring Wells, Well Points, Piezometers, and Surface Water Locations Selected for Long-Term Monitoring
Main Post, Former Fort Devens Army Installation, Massachusetts

Monitoring Well/ Piezometer/ Surface Water ID	Location	Rationale	Screen Interval	Well Screen Intervals	Top of Casing Elevation	Ground Surface Elevation	Sample Pump Intake Depth	Dedicated Bladder Pump
			(ft NGVD)	(ft BTOR)	(ft NGVD)	(ft NGVD)	(ft BTOR)	(Yes/No)
AOC 57 Sampling (Annual Sampling)								
57M-03-01X	Area 2 - Upgradient location.	LTM water level only.	215.50 – 225.50	12.40 - 22.40	237.90	235.50	--	--
57M-03-02X	Area 2 - On west fringe of remedial excavation.	LTM water level only.	213.30 – 223.30	3.80 - 13.80	227.10	225.30	--	NO
57M-03-03X	Area 2 - On southern fringe of remedial excavation and at wetland limit.	LTM water level only.	210.34 – 220.34	3.30 - 13.30	223.64	222.34	--	NO
57M-03-04X	Area 2 – On southern fringe of remedial excavation and at wetland limit.	LTM water level only.	210.22 – 220.22	3.80 - 13.80	224.02	222.22	--	NO
57M-03-05X	Area 2 - On southeastern fringe of remedial excavation and at wetland limit.	LTM water level only.	210.43 – 220.43	3.90 - 13.90	224.33	222.43	--	NO
57M-03-06X	Area 2 – On east fringe of remedial excavation.	LTM water level only.	211.06 – 221.06	3.50 - 13.50	224.56	223.06	--	--
57M-95-05X	Area 2 - West of and upgradient of excavation limit.	LTM water level only.	214.87 – 224.87	12.44 - 22.44	237.31	234.87	--	--
57M-95-06X	Area 2 – West of and cross gradient of excavation limit.	LTM water level only.	212.34 – 222.34	14.22 - 24.22	236.56	234.42	--	--
57M-95-07X	Area 2 – East of and cross gradient of excavation limit.	LTM water level only.	210.36 – 220.36	4.21 - 14.21	224.57	223.36	--	--
57WP-05-01	Area 2 – Southwest of Staff Gauge 01.	LTM water level only.	0 – 2 bgs*	--	--	--	≈1.5 bgs*	--
57WP-06-02	Area 2 - Adjacent to monitoring well 57M-03-03X.	LTM water level only.	19 – 24 bgs*	20.0 - 25.0	222.91	--	≈21.5 bgs*	--
57M-95-03X	Area 3 - Downgradient of source.	Sentry well. Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	215.48 - 225.48	9.49 - 19.49	234.97	232.48	15.30	NO
57M-96-10X	Area 3 – On west fringe of 1999 excavation area.	LTM water level only.	214.09 - 224.09	5.46 - 15.46	229.55	227.09	--	--
57M-96-11X	Area 3 – Downgradient well.	Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	210.18 - 220.18	4.20 - 14.20	224.38	222.18	9.20	NO
57M-96-12X	Area 3 – West of and cross gradient of excavation limit.	LTM water level only.	212.82 - 222.82	5.05 - 15.05	227.87	224.82	--	--
57M-96-13X	Area 3 - West of and cross gradient of excavation limit.	LTM water level only.	213.06 - 223.06	4.67 - 14.67	227.73	225.06	--	--
57P-98-03X	Area 3 – Southeast of monitoring well 57M-96-11X.	LTM water level only.	--	--	222.58	--	--	--
57P-98-04X	Area 3 - Southwest of monitoring well 57M-96-11X.	LTM water level only.	--	--	223.72	--	--	--
57WP-06-03	Area 3 – Adjacent to monitoring well 57M-96-11X.	LTM water level only.	202.69 - 207.69	15.0 – 20.0	222.69	--	--	--
SW-1	Area 3 – At downgradient fringe of excavation. Active seeps seem likely to be temporal.	Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	--	--	--	--	--	--

Table 1-5
Monitoring Wells, Well Points, Piezometers, and Surface Water Locations Selected for Long-Term Monitoring
Main Post, Former Fort Devens Army Installation, Massachusetts

Monitoring Well/ Piezometer/ Surface Water ID	Location	Rationale	Screen Interval (ft NGVD)	Well Screen Intervals (ft BTOR)	Top of Casing Elevation (ft NGVD)	Ground Surface Elevation (ft NGVD)	Sample Pump Intake Depth (ft BTOR)	Dedicated Bladder Pump (Yes/No)
AOC 69W (Annual Sampling)								
69W-94-13	North of paved area near source area.	Source area well. Monitor for decrease in COC concentrations.	211.30 - 221.30 (approximate)	9.09 - 19.09	227.79	225.30	14.09	NO
69W-94-14	Approx. 30 feet upgradient of Willow Brook wetlands.	Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	212.53 - 222.53 (approximate)	5.49 - 15.49	228.02	225.53	11.09	NO
ZWM-95-15X	Near former underground concrete vault.	Sentry well. Monitor for decrease in COC concentration and decrease in the potential for off-site	209.94 - 219.94 (approximate)	8.74 - 18.74	225.81	222.94	13.74	NO
ZWM-95-18X	Approx. 120 feet downgradient of the concrete vault.	Sentry well. Monitor for off-site migration.	207.73 - 217.73 (approximate)	7.44 - 17.44	222.95	220.73	12.44	NO
ZWM-99-22X	Paved source area.	Replacement of destroyed well 69W-94-10. Monitor for decrease in COC concentrations.	212.89 - 222.89	4.66 - 14.66	227.52	227.69	9.66	NO
ZWM-99-23X	Downgradient well east of Willow Brook and northeast of 69W-94-14.	Sentry well. Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	211.20 - 221.20	6.63 - 16.63	225.88	224.20	9.63	NO
ZWM-99-24X	Downgradient well east of Willow Brook and southwest of 69W-94-14.	Sentry well. Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	211.13 - 221.13	8.54 - 18.54	226.65	223.63	13.54	NO
ZWM-01-25X	Downgradient well northeast of ZWM-95-15X.	Sentry well.	209.38 - 219.38	6.13 - 16.13	225.51	223.38	11.13	NO
ZWM-95-17X	Southeast of school.	Background well. Water level and quality parameters only.	213.87 - 223.87 (approximate)	14.76 - 24.76	238.63	236.07	19.76	NO
ZWM-01-26X	Northeast of ZWM-99-23.	Sentry well. Water level and quality parameters only.	211.16 - 221.16	6.45 - 16.45	227.61	225.16	11.48	NO
ZWP-95-01X	Along Willow Brook, west of ZWM-99-24X.	LTM water level only.	212.43 - 214.43 (approximate)	12.41 - 14.41	226.84	224.43	--	--
ZWP-95-02X	West side of Willow Brook, northwest of ZWM-95-15X.	LTM water level only.	209.21 - 211.21 (approximate)	12.42 - 14.42	223.63	220.71	--	--
69W-94-12	East of 69W-94-13.	LTM water level only.	--	--	228.94	226.45	--	--
ZWM-95-16X	Southeast of ZWM-99-22X, near loading dock.	LTM water level only.	212.71 - 222.71 (approximate)	5.67 - 15.67	228.38	229.01	--	--
Willow Brook Piezometer	Approximately ¼ mile north of site along Willow Brook.	LTM water level only.	--	--	218.97	217.60	--	--
69WP-08-01	Downgradient of ZWM-01-25X.	Sentry well point for manganese delineation.	208.50 - 211.50	10.0 - 13.0 bgs*	221.50	--	11.5 bgs*	NO
69WP-13-01	Downgradient of 69WP-08-01.	Sentry well point for manganese delineation.	208.50 - 211.50 (estimated)	10.02-13.02 bgs*	221.50 (estimated)	--	12.15 bgs*	NO

Table 1-5
Monitoring Wells, Well Points, Piezometers, and Surface Water Locations Selected for Long-Term Monitoring
Main Post, Former Fort Devens Army Installation, Massachusetts

Monitoring Well/ Piezometer/ Surface Water ID	Location	Rationale	Screen Interval	Well Screen Intervals	Top of Casing Elevation	Ground Surface Elevation	Sample Pump Intake Depth	Dedicated Bladder Pump
			(ft NGVD)	(ft BTOR)	(ft NGVD)	(ft NGVD)	(ft BTOR)	(Yes/No)
AOC 43G (Annual Sampling)								
AAFES-2	East-southeast of former gasoline USTs.	Source well. Monitor intrinsic remediation.	269.50 - 284.50	18.30 - 33.30	302.80	300.70	25.80	NO
AAFES-5	East of former gasoline USTs.	LTM water level only.	270.70 - 285.70	15.22 - 30.22	300.92	301.20	--	NO
AAFES-6R	South of well XGM-93-02X.	LTM water level only.	270.60 - 280.60	16.97 - 26.97	299.54	297.57	--	NO
XGM-93-02X	South of former gasoline USTs.	Source well. Monitor intrinsic remediation.	272.60 - 282.60	28.00 - 39.00	309.60	310.60	33.00	NO
XGM-94-04X	Approx. 100 feet south of former gasoline USTs.	Sentry well. Monitor potential for off-site migration.	271.00 - 281.00	20.50 - 30.50	301.50	299.10	25.50	NO
XGM-94-07X	Approx. 180 feet east southeast of former gasoline USTs.	LTM water level only.	266.00 - 276.00	19.60 - 29.60	295.60	293.00	--	NO
XGM-94-08X	Approx. 230 feet southeast of former gasoline USTs.	LTM water level only.	263.70 - 273.70	26.10 - 36.10	299.80	297.20	--	NO
XGM-94-10X	Approx. 250 feet south of former gasoline USTs.	LTM water level only.	268.90 - 278.90	23.80 - 33.80	302.70	300.40	--	NO
XGM-97-12X	At location of former gasoline USTs.	Source well. Monitor intrinsic remediation.	275.63 - 285.63	24.00 - 34.00* (bgs, approx.)	309.63	--	29.00* (bgs, approx.)	NO
AAFES-7	Approx. 620 feet southeast of former gasoline USTs.	Monitor potential for manganese off-site migration.	242.81 - 252.81	6.70 -16.70	259.51	256.90	11.70	NO
AOCs 32 and 43A (Annual Sampling)								
32M-92-01X	North of the building on west edge of former Tire Recycling Yard.	LTM water level only.	234.70 – 244.70	16.23 - 26.23	260.93	258.40	--	--
32M-92-03X	West of the building and just north of former DRMO Warehouse.	LTM water level only.	225.80 – 235.80	25.19 - 35.19	260.99	258.80	--	--
32Z-99-02X (32M-92-02X)	East of the building.	LTM water level only.	228.90 – 243.90	16.89 - 31.89	260.79	258.40	--	--
32Z-01-05XOB	Western end of parking lot to the south of the building.	LTM water level only.	226.30 – 236.30	25.10 - 35.10	261.40	261.75	--	--
32Z-01-06XBR	In vegetation north of northeast corner of the building.	LTM water level only.	234.10 – 244.10	18.60 - 28.60	262.70	260.80	--	--
32Z-01-07XOB	North of the building on southeast corner of former Tire Recycling Yard.	LTM water level only.	235.30 – 245.30	15.01 - 25.01	260.31	258.00	--	--
32Z-01-08XOB	Slightly northwest of the building.	LTM water level only.	236.80 – 246.80	14.53 - 24.53	261.33	258.80	--	--
32Z-01-09XOB	Western edge of parking lot near southwest corner of the building.	LTM water level only.	225.10 – 235.10	23.07 - 33.07	258.17	258.55	--	--
32Z-01-10XBR	In paved access road east of the building.	LTM water level only.	236.10 – 246.10	12.12 - 22.12	258.22	258.62	--	--
32Z-01-11XBR	In paved access road north of the building.	LTM water level only.	243.80 – 253.80	8.42 - 18.42	262.22	262.84	--	--
32Z-01-12XBR	In paved access road just north of truck bays on west side of the building.	LTM water level only.	220.90 – 230.90	27.78 - 37.78	258.68	259.08	--	--

Table 1-5
Monitoring Wells, Well Points, Piezometers, and Surface Water Locations Selected for Long-Term Monitoring
Main Post, Former Fort Devens Army Installation, Massachusetts

Monitoring Well/ Piezometer/ Surface Water ID	Location	Rationale	Screen Interval	Well Screen Intervals	Top of Casing Elevation	Ground Surface Elevation	Sample Pump Intake Depth	Dedicated Bladder Pump
			(ft NGVD)	(ft BTOR)	(ft NGVD)	(ft NGVD)	(ft BTOR)	(Yes/No)
AOCs 32 and 43A (Annual Sampling)								
SHL-15	North of the building on north edge of former Tire Recycling Yard.	LTM water level only.	234.0 – 244.0	16.30 - 26.30 (from metal casing)	259.10	259.00	--	--
SHL-25	Outside of perimeter fence on east side of the building; adjacent to well 32M-01-17XBR.	LTM water level only.	224.10 – 234.10	25.00 - 35.00 (from metal casing)	260.30	257.10	--	--
32M-01-13XBR	Between truck bays 33 and 34 on east side of the building.	Source area well.	235.40 – 245.40	13.25 - 23.25	258.65	259.07	18.25	YES (Broken)
32M-01-14XOB	Outside of perimeter fence northeast of 32M-01-13XBR.	Downgradient well.	227.90 – 237.90	19.52 - 29.52	257.42	255.20	24.52	YES
32M-01-14XBR	Outside of perimeter fence northeast of 32M-01- 13XBR.	LTM water level only.	211.10 – 221.10	35.81 - 45.81	256.91	255.10	43.81	YES
32M-01-15XBR	Southeast of 32M-01-13XBR in paved access road on east side of the building.	LTM water level only.	214.20 – 224.20	34.16 - 44.16	258.36	258.71	43.00	NO
32M-01-16XBR	Opposite from bay 20 on east side of the building.	LTM water level only.	227.50 – 237.50	20.79 - 30.79	258.29	258.52	29.00	NO
32M-01-17XBR (32M-01-17X)	Just inside perimeter fence on east side of the building.	Downgradient well.	205.70 – 215.70	43.79 - 53.79	259.49	257.10	48.79	YES
32M-01-18XBR	Just east of the building at truck bay 29.	Source area well.	235.40 – 245.40	13.74 - 23.74	259.14	259.43	18.74	NO
43M-01-16XOB	Opposite door B5 on west side of the building.	LTM water level only.	223.90 – 233.90	23.75 - 33.75	257.65	257.92	--	--
43M-01-16XBR	Opposite door B5 on west side of the building.	LTM water level only.	200.30 – 210.30	47.27 - 57.27	257.57	257.84	--	--
43M-01-17XOB	Near door B4 on west side of the building.	LTM water level only.	225.90 – 235.90	22.97 - 32.97	258.87	259.37	--	--
43M-01-17XBR	Near door B4 on west side of the building.	LTM water level only.	201.80 – 211.80	47.25 - 57.25	259.05	259.34	--	--
43M-01-20XOB	Western edge of paved access road on west side of the building.	LTM water level only.	224.70 – 234.70	23.76 - 33.76	258.46	258.66	--	--
43M-01-20XBR	Western edge of paved access road on west side of the building.	LTM water level only.	180.40 – 190.40	67.71 - 77.71	258.11	258.66	--	--

Table 1-5
Monitoring Wells, Well Points, Piezometers, and Surface Water Locations Selected for Long-Term Monitoring
Main Post, Former Fort Devens Army Installation, Massachusetts

Monitoring Well/ Piezometer/ Surface Water ID	Location	Rationale	Screen Interval	Well Screen Intervals	Top of Casing Elevation	Ground Surface Elevation	Sample Pump Intake Depth	Dedicated Bladder Pump
			(ft NGVD)	(ft BTOR)	(ft NGVD)	(ft NGVD)	(ft BTOR)	(Yes/No)
Devens Consolidation Landfill (Semi-Annual Sampling)								
LFM-99-01B	West edge of property between landfill and Queenstown St.	LTM water level only.	317.40 – 326.70	24.77 - 34.07	351.47	350.00	--	--
LFM-99-02B	Southwest edge of property near intersection of Queenstown St. and Patton Rd.	Monitor for changes in downgradient conditions.	328.80 – 338.10	16.50 - 26.50	354.63	352.63	21.50	NO
LFM-99-03B	Northern edge of property.	LTM water level only.	293.0 – 302.30	40.58 - 49.88	342.88	340.50	--	--
LFM-99-05A	Near northeast toe of landfill.	Monitor for changes in downgradient conditions.	287.40 – 296.70	20.70 - 30.70	317.38	315.68	25.70	NO
LFM-99-05B	Near northeast toe of landfill.	LTM water level only.	259.90 – 264.20	53.18 - 57.48	317.38	315.68	--	--
LFM-99-06ARP	East of landfill and south of LFM-03-07.	Monitor for changes in downgradient conditions.	297.70 – 307.0	20.20 - 35.20	317.09	315.00	27.70	NO
LFM-03-07	East of the landfill and south of the channel to the collection pond.	Monitor for changes in downgradient conditions.	293.0 – 303.0	10.90 - 20.90 bgs*	313.90	312.00	18.95 bgs*	NO

Notes:
NA = Not available
NGVD = National Geodetic Vertical Datum
bgs = below ground surface
ft = feet
TOR = top of riser
ft BTOR = feet below top of riser

Table 1-6
AOC - Specific Action Levels
Main Post, Former Fort Devens Army Installation, Massachusetts

Chemical of Concern	MCP GW-1[1] (µg/L)	Background[2] (µg/L)	MCL [3] (µg/L)	Cleanup Goal [4] (µg/L)	Monitoring Criteria[4] (µg/L)
AOC 57 Area 3 - Building 3713 Fuel Oil Spill Site					
Arsenic	10	10.5	10	10	NS
AOC 69W - Fort Devens Elementary School Fuel Oil Spill Site					
Arsenic	10	10.5	10	10	NS
Iron	NS	9,100	NS	NS	9,100
Manganese	NS	291	NS	NS	291
EPH [5]					
C9-C18 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C19-C36 Aliphatic Hydrocarbons	14,000	NS	NS	NS	14,000
C11-C22 Aromatic Hydrocarbons	200	NS	NS	NS	200
AOC 43G - Historical Gas Station G					
Iron	NS	9,100	NS	9,100	NS
Manganese	NS	291	NS	375[6]	NS
VOCs					
Benzene	5.0	ND	5.0	5.0	NS
Toluene	1,000	ND	1,000	1,000	NS
Ethylbenzene	700	ND	700	700	NS
Xylenes (total)	10,000	ND	10,000	10,000	NS
VPH [5]					
C5-C8 Aliphatic Hydrocarbons	300	NS	NS	NS	300
C9-C12 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C9-C10 Aromatic Hydrocarbons	200	NS	NS	NS	200
AOCs 32 and 43A - Defense Reutilization and Marketing Office Yard and Former POL Storage Area					
Arsenic	10	10.5	10	10	NS
Manganese	NS	3,500	NS	3,500	NS
VOCs					
Vinyl Chloride	2.0	NS	2.0	2.0	NS
1,2-dichloroethene (trans)	100	NS	100	100	NS
1,2-dichloroethene (cis)	55	NS	70	55	NS
1,1,1-trichloroethane	200	NS	200	NS	5.0
Trichloroethene	5.0	NS	5.0	5.0	NS
1,2-dichlorobenzene	600	NS	600	600	NS
1,3-dichlorobenzene	100	NS	NS	600	NS
1,4-dichlorobenzene	5.0	NS	75	5.0	NS
VPH [5]					
Benzene	5.0	NS	5.0	NS	5.0
Ethylbenzene	700	NS	700	NS	700
Xylenes, total	10,000	NS	10,000	NS	10,000
Toluene	1,000	NS	1,000	NS	1,000
C5-C8 Aliphatic Hydrocarbons	300	NS	NS	NS	300
C9-C12 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C9-C10 Aromatic Hydrocarbons	200	NS	NS	NS	200
EPH [5]					
C9-C18 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C19-C36 Aliphatic Hydrocarbons	14,000	NS	NS	NS	5,000
C11-C22 Aromatic Hydrocarbons	200	NS	NS	NS	200

Table 1-6
AOC - Specific Action Levels
Main Post, Former Fort Devens Army Installation, Massachusetts

Chemical of Concern	MCP GW-1[1] (µg/L)	Background[2] (µg/L)	MCL [3] (µg/L)	Cleanup Goal [4] (µg/L)	Monitoring Criteria[4] (µg/L)
Devens Consolidation Landfill (DCL)					
VPH [5]					
C5-C8 Aliphatic Hydrocarbons	300	NS	NS	NS	300
C9-C12 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C9-C10 Aromatic Hydrocarbons	200	NS	NS	NS	200
Methyl tert-butyl ether	70	NS	NS	NS	70
Benzene	5.0	NS	5.0	NS	5.0
Toluene	1,000	NS	1,000	NS	1,000
Ethylbenzene	700	NS	700	NS	700
Xylenes, total	10,000	NS	10,000	NS	10,000
Naphthalene	140	NS	NS	NS	140
EPH [5]					
C9-C18 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C19-C36 Aliphatic Hydrocarbons	5,000	NS	NS	NS	5,000
C11-C22 Aromatic Hydrocarbons	200	NS	NS	NS	200
Target PAH Analytes					
2-Methylnaphthalene	10	NS	NS	NS	10
Acenaphthene	20	NS	NS	NS	20
Acenaphthylene	30	NS	NS	NS	30
Anthracene	60	NS	NS	NS	60
Benzo(a)anthracene	1.0	NS	NS	NS	1.0
Benzo(a)pyrene	0.20	NS	0.2	NS	0.2
Benzo(b)fluoranthene	1.0	NS	NS	NS	1.0
Benzo(g,h,i)perylene	50	NS	NS	NS	50
Benzo(k)fluoranthene	1.0	NS	NS	NS	1.0
Chrysene	2.0	NS	NS	NS	2.0
Dibenzo(a,h)anthracene	0.50	NS	NS	NS	0.50
Fluoranthene	90	NS	NS	NS	90
Fluorene	30	NS	NS	NS	30
Indeno(1,2,3-cd)pyrene	0.50	NS	NS	NS	0.50
Naphthalene	140	NS	NS	NS	140
Phenanthrene	40	NS	NS	NS	40
Pyrene	60	NS	NS	NS	60
Pesticides					
Hexachlorobenzene	1.0	NS	1.0	NS	1.0
4,4'-DDD	0.20	NS	NS	NS	0.20
4,4'-DDE	0.05	NS	NS	NS	0.05
4,4'-DDT	0.30	NS	NS	NS	0.3
Aldrin	0.50	NS	NS	NS	0.5
alpha-BHC	500	NS	NS	NS	500
beta-BHC	2.0	NS	NS	NS	2.0
delta-BHC	100	NS	NS	NS	100
Dieldrin	0.10	NS	NS	NS	0.10
Endosulfan	10	NS	NS	NS	10
Endrin	2.0	NS	2.0	NS	2.0
Gamma-BHC (Lindane)	0.20	NS	0.20	NS	0.20
Heptachlor	0.40	NS	0.40	NS	0.40

Table 1-6
AOC - Specific Action Levels
Main Post, Former Fort Devens Army Installation, Massachusetts

Chemical of Concern	MCP GW-1[1] (µg/L)	Background[2] (µg/L)	MCL [3] (µg/L)	Cleanup Goal [4] (µg/L)	Monitoring Criteria[4] (µg/L)
Heptachlor epoxide	0.20	NS	0.20	NS	0.20
Methoxychlor	40	NS	40	NS	40
Total Chlordane	2.0	NS	2.0	NS	2.0
Toxaphene	100	NS	3.0	NS	100
Metals					
Arsenic	10	NS	10	NS	10
Barium	2,000	NS	2,000	NS	2,000
Cadmium	5.0	NS	5.0	NS	5.0
Chromium	100	NS	100	NS	100
Copper	NS	NS	1,300	NS	1,300
Iron	NS	NS	NS	NS	NS
Lead	15	NS	15	NS	15
Manganese	NS	NS	NS	NS	NS
Silver	100	NS	NS	NS	100
Selenium	50	NS	50	NS	50
Mercury	2.0	NS	2.0	NS	2.0
Wet Chemistry					
Solids, Total Dissolved	NS	NS	NS	NS	500,000
Anions					
Chloride	NS	NS	NS	NS	250,000
Sulfate	NS	NS	NS	NS	250,000
Nitrate/Nitrite					
Nitrate/Nitrite (as N)	NS	NS	10,000	NS	10,000
Alkalinity, Total					
As CaCO3	NS	NS	NS	NS	NS
Cyanide					
Cyanide, total	200	NS	200	NS	200
COD					
Chemical Oxygen Demand	NS	NS	NS	NS	NS

Notes:

[1]MassDEP MCL GW-1 Standards: 310.CMR 40.0000, 2014.

[2]Background concentrations determined from selected locations in each AOC.

[3]Drinking Water Standards and Health Advisories", Spring 2012, USEPA Office of Water.

[4]Clean up goals were established by respecitve AOC RODs; Monitoirng Criteria are used if the ROD did not include cleanup goals for listed analytes.

[5]EPH and VPH concentrations are evaluated against MCP standards for comparison purposes, but the standards are not considered cleanup goals under the ROD.

[6] The cleanup goal for manganese is a site-specific goal determined in 2008 (Long-Term Monitoring Plan Former Fort Devens Army Installation, HGL, 2008).

NS = No standard.

MCL = Maximum Contaminant Level.

Table 1-7
DCL Leachate Discharge Permit No.17 Limits
Main Post, Former Fort Devens Army Installation, Massachusetts

Analytical Fraction	Parameter	Discharge Limitation (mg/L)*
Metals Composite	Arsenic	0.20
	Chromium (total)	0.40
	Cadmium	0.045
	Copper	0.75
	Lead	0.20
	Nickel	0.60
	Silver	0.30
	Zinc	0.70
	Mercury	0.001
TSS	Total Suspended Solids	400
TTO	Total Toxic Organics	5.0
pH	pH (units)	5.5 - 9.5
Cyanide	Cyanide (Total)	NL
TPH	Total Petroleum Hydrocarbons	NL
Heptachlor-Pesticide		NL
Phenolics		NL

Notes:
* = Discharge Limit from Industrial Wastewater Permit No. 17
mg/L = milligrams per liter
NL = No limit; for monitoring purposes only
TTO = Total Organics (Sum of VOC's, SVOC's, Pesticides and PCB's)
VOCs = Volatile Organic Compounds
SVOCs = Semi Volatile Organic Compounds
PCBs = Polychlorinated Biphenyls

Table 2-1
AOC 57 Area 3 Groundwater Analytical Results, June 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal[1]	Background[2]	57M-95-03X	Q	57M-96-11X	Q	DUP-1 57M-96-11X	Q
				6/26/2017		6/26/2017		6/26/2017	
Total and Disolved Metals									
Arsenic, Total	µg/L	10	10.5	**27**		**180**		**170**	
Arsenic, Dissolved	µg/L	10	10.5	**30**		**120**		**120**	
Iron, Total	µg/L	NS	9,100	**5,300**		***31,000***		***31,000***	
Iron, Dissolved	µg/L	NS	9,100	**5,600**	J	***29,000***		***30,000***	
Manganese, Total	µg/L	NS	291	**110**		***2,900***		***3,000***	
Manganese, Dissolved	µg/L	NS	291	**120**		***3,000***		***3,100***	
Field Parameters									
Temperature	°C	NS	NS	**9.09**		**10.13**		**10.13**	
ORP	mV	NS	NS	**26.7**		**-38.7**		**-38.7**	
pH	Std Units	NS	NS	**6.83**		**7.00**		**7.00**	
Specific Conductance	µS/cm	NS	NS	**132**		**352**		**352**	
Dissolved Oxygen	mg/L	NS	NS	**1.24**		**1.05**		**1.05**	
Turbidity	NTU	NS	NS	**4.84**		**9.66**		**9.66**	

Notes:

0.333	= Detection
0.333	= Above background or monitoring criteria
0.333	= Above cleanup goal

µg/L = microgram per liter

mg/L = milligram per liter

NS = No Standard

Q = Qualifier

J = Estimated result

U = Non-detect

[1] Cleanup Goal for arsenic is the MCL standard.

[2] From the RI. (Final Remediation Investigation Report, Area of Contamination (AOC) 57, Devens, Massachusetts, HLA, 2000b)

Table 2-2
AOC 57 Area 3 Surface Water Analytical Results, June 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Surface Water Benchmark[1]	57M-SW-1	Q	57M-SWDUP	Q
			6/26/2017		6/26/2017	
Total and Dissolved Metals						
Arsenic, Total	µg/L	150	**31**		**27**	
Arsenic, Dissolved	µg/L	150	**17**		**18**	
Iron, Total	µg/L	1,000	***21,000***		***18,000***	
Iron, Dissolved	µg/L	1,000	***15,000***		***16,000***	
Manganese, Total	µg/L	NS	**1,200**		**1,200**	
Manganese, Dissolved	µg/L	NS	**1,300**		**1,300**	
Field Parameters						
ORP	mV	NS	--		--	
pH	Std Units	NS	--		--	
Specific Conductance	µS/cm	NS	--		--	
Dissolved Oxygen	mg/L	NS	--		--	
Temperature	°C	NS	--		--	
Turbidity	NTU	NS	--		--	

Notes:

0.333	= Detection
0.333	= Above background or monitoring criteria

µg/L = microgram per liter
mg/L = milligram per liter
NS = No Standard
Q = Qualifier
J = Estimated result
U = Non-detect
-- Not recorded for surface water
[1] USEPA Aquatic Life Water Quality Criterion for Surface Water benchmarks for iron and arsenic (USEPA, 2018).

Table 2-3
AOC 57 Area 3 Exceedances Over Time, 2003 to 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

Sample Location	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005	Spring 2006	Fall 2006	Spring 2007	Fall 2007	Spring 2008	Spring 2009	Spring 2010	Spring 2011	Spring 2012	Spring 2013	Spring 2014	Spring 2015	Spring 2016	Spring 2017
Groundwater																			
Arsenic (Total) - 10 µg/L Cleanup Goal																			
57M-95-03X	**36**	**44**	**230**	**25**	**13.6**	**7.0**	**49.0**	**4.8**	**51.0**	**23.0**	**21.0**	**23.0**	**58.0**	**36.0**	**60.0**	**60.0**	**37.5**	**31.0**	**27.0**
57M-96-11X	**270**	**240**	**120**	**161**	**215**	**163**	**171**	**166**	**193**	**160**	**163**	**148**	**190**	**192**	**181**	**160**	**284**	**290**	**180**
1,4-Dichlorobenzene - 5 µg/L Cleanup Goal																			
57M-95-03X	**1.4**	**2.2**	**13**	**0.5**	**0.8**	**1.4**	**4.5**	**1.4**	**13**	**0.9**	**2.4 J**	**1.4 J**	**5.1**	**2.4 J**	**3.13**	**3.27**	NA	NA	NA
57M-96-11X	**3.4**	**3.8**	**2.4**	**3.3**	**1.4**	**3.7**	**2.4**	**4.4**	**1.6**	**5.1**	**7.5**	**2.1 J**	**2.3 J**	**0.92 J**	**1.05 J**	**1.22**	NA	NA	NA
Surface Water																			
Arsenic - 150 µg/L Water Quality Criteria																			
57-AREA 3-SW-1	**35**	**3.1 J**	**4.9J**	ND	**5.2**	**34 J**	**6**	**2.7 J**	**9**	**11**	ND	ND	**18**	**8**	**8**	ND	**9.9**	**23**	**31**
Iron - 1,000 µg/L Water Quality Criteria																			
57-AREA 3-SW-1	NA	NA	NA	NA	NA	**600**	***4,500***	520	***7,100***	***6,800***	***2,500***	240	***20,000***	***8,300***	***10,000***	***10,000***	***4,140***	***19,000***	***21,000***
Lead - 2.5 µg/L Water Quality Criteria																			
57-AREA 3-SW-1	***34***	ND	**0.81**	***3.4***	ND	**2.3**	ND	**1.8**	***14***	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

0.333	= Detection
0.333	= Above background or monitoring criteria
0.333	= Above cleanup goal

J = Estimated result
NA = Not analyzed
ND = non-detect
NS = No Standard
µg/L = microgram per liter

Table 3-1
AOC 69W Groundwater Analytical Results, October/November 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal[1]	Monitoring Criteria[2]	69W-94-13	Q	69W-94-14	Q	ZWM-95-15X	Q	ZWM-95-18X	Q	ZWM-99-22X	Q	69W-DUP1 ZWM-99-22X	Q	ZWM-99-23X	Q	ZWM-99-24X	Q	ZWM-01-25X	Q	69WP-08-01	Q	69WP-13-01	Q
				10/31/2017		10/30/2017		10/31/2017		11/1/2017		10/30/2017		10/30/2017		10/30/2017		10/31/2017		10/30/2017		11/1/2017		11/1/2017	
Metals (SW6010B)																									
Arsenic (dissolved)	µg/L	10	NS	**24**		3.0	U	**10**		3.0	U	**190**		**170**		**17**		3.0	U	**4.5**		3.0	U	NA	
Iron (dissolved)	µg/L	NS	9,100	**1,000**		75	U	**550**		75	U	***24,000***		***23,000***		**2,600**		**370**		**510**		**4,900**		NA	
Manganese (dissolved)	µg/L	NS	291	***320***		**270**		**220**		**29**		***1,200***		***1,100***		***1,800***		**100**		***590***		**33**		**62**	
EPH[3] (MADEP)																									
C9-C18 Aliphatics	µg/L	NS	700	100	U	94	U	94	U	94	U	99	U	98	U	96	U	100	U	100	U	NA		NA	
C19-C36 Aliphatics	µg/L	NS	14,000	100	U	94	U	94	U	94	U	99	U	98	U	96	U	100	U	100	U	NA		NA	
C11-C22 Aromatics	µg/L	NS	200	100	U	94	U	94	U	94	U	**170**		**140**		96	U	100	U	100	U	NA		NA	
Field Parameters																									
Temperature	°Celsius	NS	NS	15.32		15.16		13.85		13.27		17.64		--		15.86		14.39		15.18		13.15		12.13	
pH	Std units	NS	NS	6.60		5.74		6.10		6.01		6.47		--		6.43		6.00		6.26		6.4		6.55	
Specific Conductance	µS/cm	NS	NS	1,418		899		419		1,043		944		--		1,057		422		726		1,203		623	
ORP/Eh	mV	NS	NS	140.2		166.6		103		209.1		-42.4		--		28.6		139.4		78.9		61.9		21.3	
Dissolved Oxygen	mg/L	NS	NS	2.66		2.37		0.68		3.04		0.16		--		0.14		1.4		2.03		1.37		0.79	
Turbidity	NTU	NS	NS	5.30		8.88		6.96		2.31		7.5		--		3.94		4.72		4.94		1.75		11.4	

Notes:

0.333	= Detection
0.333	= Above background or monitoring criteria
0.333	= Above cleanup goal

J = Estimated result
NA = Not analyzed
NS = No Standard
Q = Qualifier
U = Non-detect
µg/L = microgram per liter
Water quality parameters were meant to be collected from wells ZWM-95-17X and ZWM-01-26X but were mistakenly omitted during the Fall 2017 LTM event.
[1] Cleanup Goal for arsenic is the MCL standard.
[2] Monitoring criteria for iron and manganese are background levels from the RI (Final Remediation Investigation Report, Area of Contamination (AOC) 57, Devens, Massachusetts, HLA, 2000b). EPH concentrations are evaluated against Massachusetts Contingency Plan standards for comparison purposes.
[3] EPH concentrations are evaluated against Massachusetts Contingency Plan standards for comparison purposes

Table 3-2
AOC 69W Exceedances Over Time, 2000 to 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

Sample Location	Spring 2000	Fall 2000	Spring 2001	Fall 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005	Spring 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017
Arsenic, dissolved - 10 µg/l Cleanup Goal																								
69W-94-13	**54**	**110**	**85**	**150**	**52**	**130**	**35**	**69**	**27**	**88**	**56**	**60**	**69**	**142**	**73**	**86**	**127**	**120**	**115**	**73**	**101**	**120**	**76**	**24**
ZWM-95-15X	ND	**7.9**	ND	**22**	**36**	**40**	ND	**16**	**7.7**	**30**	ND	ND	ND	**16**	ND	ND	**13**	**41**	**23**	**17**	**30.2**	**19.3**	**3.7**	**10**
ZWM-99-22X	**150**	**130**	**230**	**140**	**86**	**140**	**150**	**160**	**140**	**140**	**120**	**120**	**159**	**244**	**223**	**408**	**343**	**367**	**299**	**233 J**	**172**	**125**	**150**	**190**
ZWM-99-23X	**23**	**70**	**67**	**55**	**15**	ND	**27**	ND	**44**	**61**	**46**	**47**	**56**	**56**	**52**	**62**	**15**	**60**	**29**	**27**	**19.5**	**13.9**	**7.7**	**17**
ZWM-01-25X	NA	NA	NA	**4.1 J**	ND	ND	**2.3 J**	ND	ND	**3.4 J**	ND	ND	**3 J**	**5**	**2.3 J**	**2 J**	ND	**13**	**19**	**5**	ND	ND	ND	**4.5**
Manganese, dissolved - 291 µg/l Monitoring Criteria																								
69WP-08-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**174**	**89**	**78**	***2,190***	***904***	**237**	**64.5**	**78.4**	**79**	**33**
69W-94-13	***2,300***	***1,700***	***1,500***	***1,600***	***2,100***	***2,400***	***2,800***	***4,100***	***2,500***	***1,300***	***3,000***	***1,600***	***2,600***	***1,120***	***1,940***	***2,110***	***1,360***	***1,840***	***1,400***	***1,730***	***1,940***	***2,050***	***2,600***	***320***
ZWM-95-15X	**28**	***1,300***	**25**	**100**	***1,500***	***2,200***	***1,600***	***970***	***4,600***	***980***	***850***	**130**	***860***	***1,230***	***438***	***502***	***1,120***	***1,010***	***1,580***	***1,280***	***900***	***843***	**17**	**220**
ZWM-99-22X	***2,000***	***1,800***	***2,300***	***2,400***	***2,000***	***1,500***	***2,700***	***2,300***	***3,100***	***1,900***	***3,400***	***3,200***	***3,700***	***3,120***	***3,790***	***2,660***	***1,750***	***2,160***	***1,120***	***998***	***1,280***	***1,440***	***960***	***1,200***
ZWM-99-23X	***4,200***	***3,600***	***5,800***	***1,500***	***550***	***1,700***	***5,300***	***4,300***	***2,500***	***2,300***	***5,200***	***2,500***	***2,700***	***1,320***	***2,500***	***3,080***	***523***	***1,720***	***500***	***556***	***533***	***749***	***590***	***1,800***
ZWM-01-25X	NA	NA	NA	**280**	**61**	***1,000***	**89**	**230**	**140**	***300***	**140**	***490***	***1,400***	***3,210***	***1,320***	***5,830***	***1,490***	***2,820***	***2,540***	***1,570***	***435***	***859***	**78**	***590***
EPH C^{11}-C^{22} Aromatics - 200 µg/l Monitoring Criteria																								
69W-94-13	***690***	***1,400***	***720***	***790***	***1,900***	***290***	ND	**160**	ND	**110**	ND	ND	***209***	***311***	**152**	***225***	***339***	***242***	***379***	***227***	***252***	**175**	***410***	ND
ZWM-95-15X	ND	ND	ND	ND	**1,400**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	**100**	ND
ZWM-99-22X	***2,500***	***1,400***	***2,100***	***370***	***620***	***210***	***380***	***330***	***270***	***400***	***320***	***280***	***627***	**166**	***356***	***276***	***209***	***327***	***308***	***286***	***332***	***354***	***210***	**170**
ZWM-99-23X	**170**	***520***	***200***	**140**	**140**	ND	ND	ND	ND	ND	ND	ND	**174**	**107**	**80**	ND	ND	ND	ND	ND	ND	ND	**110**	ND
VPH C^{9}-C^{10} Aromatics - 200 µg/l Monitoring Criteria																								
69W-94-13	**120**	***270***	**160**	***320***	**150**	***200***	**62**	**140**	**130**	***230***	**110**	**140**	**84**	**144**	**81**	**105**	**142**	**66.7**	**63 J**	**87.6**	NA	NA	NA	NA
ZWM-99-22X	***620***	**150**	***550***	**83**	**88**	**150**	***840***	***450***	***650***	***600***	***460***	***460***	***330***	**113**	***217***	**120**	**76.4**	**114**	**55.5 J**	**119**	NA	NA	NA	NA
ZWM-99-23X	**46**	**62**	**40**	**34**	ND	ND	**53**	**59**	ND	ND	**100**	ND	ND	ND	**28**	**35.2**	ND	ND	ND	ND	NA	NA	NA	NA

Notes:

0.333	= Detection
0.333	= Above background or monitoring criteria
0.333	= Above cleanup goal

J = Estimated result
NA = Not analyzed
ND = non-detect
µg/L = microgram per liter

Table 4-1
AOC 43G Groundwater Analytical Results - October 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal[1]	Monitoring Criteria[2]	XGM-94-04X	Q	AAFES-2	Q	XGM-93-02X	Q	XGM-97-12X	Q	XGM-DUP1 XGM-97-12X	Q	AAFES-7	Q
				10/24/2017		10/24/2017		10/24/2017		10/24/2017		10/24/2017		10/24/2017	
Total Metals (Select List)															
Arsenic, Total	µg/L	NS	10	**3.5**		***13***		**4.3**		***14***		***13***		3	U
Iron, Total	µg/L	9,100	9,100	**1,400**		**10,000**		**6,500**		**18,000**		**17,000**		NA	
Manganese, Total	µg/L	375	291	**1,700**	J	**2,800**		**1,400**		**1,200**		**1,200**		***330***	
MassDEP Volatile Petroleum Hydrocarbons (VPH)															
C5-C8 Aliphatics[3]	µg/L	NS	300	***360***		***890***		**79**	J	***350***		***370***		NA	
C9-C10 Aromatics[3]	µg/L	NS	200	***410***	J	***1,100***	J	100	U	***430***	J	***440***	J	NA	
C9-C12 Aliphatics[3]	µg/L	NS	700	**58**	J	**530**	J	**78**	J	**170**	J	**200**	J	NA	
Methyl tert-butyl ether	µg/L	NS	NS	5.0	U	**5.9**		**7.8**		5.0	U	5.0	U	NA	
Benzene	µg/L	5.0	NS	3.0	U	3.0	U	**0.38**	J	3.0	U	3.0	U	NA	
Ethylbenzene	µg/L	700	NS	**25**		**23**		5.0	U	**18**		**18**		NA	
Naphthalene	µg/L	NS	NS	**4.6**	J	**20**		5.0	U	**5.1**		**5.0**		NA	
m,p -Xylene	µg/L	10,000	NS	**3.6**	J	**6.6**	J	10	U	**1.6**	J	**1.6**	J	NA	
o -Xylene	µg/L	10,000	NS	**2.1**	J	**2.1**	J	5.0	U	5.0	U	5.0	U	NA	
Toluene	µg/L	1,000	NS	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA	
General Chemistry															
Alkalinity, Total	mg/L	NS	NS	**150**		**140**		**160**		**140**		**140**		NA	
Field Parameters															
Temperature	°Celsius	NS	NS	15.80		15.31		15.26		16.47		NA		14.97	
pH	Std units	NS	NS	7.02		7.07		6.75		6.80		NA		6.52	
Specific Conductance	µS/cm	NS	NS	1,569		1,448		1,932		1,793		NA		1,726	
ORP	mV	NS	NS	-1.9		-82.0		-54.9		-76.4		NA		137.6	
Dissolved Oxygen	mg/L	NS	NS	0.35		0.32		0.26		0.19		NA		3.40	
Turbidity	NTU	NS	NS	5.90		12.50		27.90		13.2		NA		27.30	

Notes:

0.333	= Detection	µg/L = microgram per liter	J = Estimated result
0.333	= Above background or monitoring criteria	mg/L = milligram per liter	U = Non-detect
0.333	= Above cleanup goal	NS = No Standard	NA = Not analyzed
		Q = Qualifier	

[1]The cleanup goal for iron is the background level. The cleanup goal for manganese is a site-specific goal determined in 2008 (Long-Term Monitoring Plan Former Fort Devens Army Installation, HGI 2008). Benzene, ethylbenzene, xylenes, and toluene are not contaminants of concern but the cleanup goals are the Maximum Contaminant Levels (MCLs).

2 The monitoring criteria for iron and manganese is the background from the RI (Final Remedial Investigation Report Area of Contamination (AOC) 43G, ABB Environmental Services, Inc., 1996). The VPH carbon ranges are not contaminants of concern and are evaluated against Massachusetts Contingency Plan GW-1 standards for comparison purposes. The monitoring criterion for arsenic is the MCL.

Table 4-2
AOC 43G Exceedances Over Time, 1999 to 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

Sample Location	Fall 1999	Fall 2000	Fall 2001	Fall 2002	Fall 2003	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017
AAFES-2	**62**	**36**	**43**	**26**	**9.0**	**6.6**	**6.1**	**1.3**	ND	ND	**3.93 J**	ND	ND	**6.60 J**	**5.04**	**3.7**	**4.2**	ND	ND
XGM-93-02X	**81**	**32**	**12**	**140**	**24**	**39**	**29**	**18.5**	**8.8**	**2.6**	**0.997 J**	ND	ND	ND	ND	**0.77 J**	ND	ND	**0.38 J**
XGM-97-12X	**270**	**550**	**700**	**780**	**290**	**260**	**35.6**	**129**	**22.8**	**13.7 J**	**27.4 J**	ND	**13.8**	**3.03 J**	**3.87**	**1.5**	**3.8**	ND	ND
Toluene- 1,000 µg/L Cleanup Goal																			
XGM-97-12X	**390**	**1,100**	**870**	**1,000**	**610**	**460**	**53.4**	**239**	**15.9**	**11.4 J**	**5.3 J**	ND	ND	ND	**2.54**	ND	**7.4**	ND	ND
Iron, total - 9,100 µg/L Cleanup Goal																			
AAFES-2	**24,000**	**20,000**	**27,000**	**26,000**	**14,000**	**20,000**	**21,900**	**12,000**	**20,000**	**18,000**	**16,000**	**14,000**	**22,000**	**18,000**	**19,000**	**19,400**	**14,400**	**11,000**	**10,000**
AAFES-6/6R	**11,000**	**9,200**	**13,000**	**9,400**	NS	NS	NS	**11,000**	**11,000**	**6,500**	**4,300**	**3,300**	**1,100**	**6,900**	**9,200**	**8,240**	NA	NA	NA
XGM-93-02X	**30,000**	**18,000**	**11,000**	**24,000**	**15,000**	**28,000**	**11,500**	**13,000**	**5,800**	**11,000**	**8,500**	**11,000**	**12,000**	**6,000**	**10,000**	**9,580**	**13,200**	**6,000**	**6,500**
XGM-94-07X	**3,500**	**2,900**	**5,800**	**2,300**	**1,000**	**300**	**1,610**	**1,400**	**4,500**	**9,300**	**8,800**	**12,000**	**13,000**	**23,000**	**10,000**	**6,820**	NS	NS	NS
XGM-94-08X	**4,800**	**13,000**	**4,500**	**4,600**	**3,200**	**2,500**	**4,520**	**6,100**	**4,600**	**2,200**	**1,300**	**1,000**	**750**	**2,300**	**910**	**147**	NS	NS	NS
XGM-97-12X	**32,000**	**26,000**	**33,000**	**46,000**	**33,000**	**32,000**	**20,100**	**18,000**	**22,000**	**25,000**	**25,000**	**16,000**	**27,000**	**20,000**	**24,000**	**25,800**	**34,300**	**25,000**	**18,000**
Manganese, total - 375 µg/L Cleanup Goal																			
AAFES-2	**4,600**	**3,900**	**4,800**	**3,700**	**3,100**	**4,000**	**3,590**	**2,700**	**3,790**	**3,600**	**3,320**	**2,490**	**3,700**	**3,100**	**3,270**	**3,460**	**2,740**	**2,800**	**2,800**
AAFES-5	**710**	**180***	**190**	**27**	**21**	**89**	**118**	**50**	**34**	ND	ND	**244**	**36**	**206**	**127**	**32.5**	NS	NS	NS
AAFES-6/6R	**2,900**	**9,200**	**3,400**	**3,000**	NS	NS	NS	**2,900**	**3,090**	**3,630**	**907**	**1,670**	**1,830**	**3,220**	**2,820**	**3,000**	NS	NS	NS
AAFES-7	NS	NS	NS	NS	NS	NS	NS	NS	NS	**106**/ND	**81**	**79**	**5 J**	**706**	**2,390**	**1,640**	**139**	**510**	***330***
XGM-93-02X	**3,900**	**2,500**	**1,900**	**2,500**	**1,900**	**2,600**	**1,450**	**2,000**	**1,800**	**1,420**	**1,630**	**737**	**3,020**	**612**	**1,180**	**1,570**	**2,020**	**1,400**	**1,400**
XGM-94-04X	**2,900**	**2,200**	**3,400**	**2,000**	**1,400**	**1,400**	**1,580**	**1,100**	**559**	**68**	**2,730**	**6,490**	**2,140**	**2,580**	**2,730**	**1,510**	**1,090**	**1,500**	**1,700 J**
XGM-94-07X	**5,700**	**3,700**	**6,100**	**4,500**	**3,600**	**1,000**	**6,120**	**5,100**	**4,120**	**5,100**	**4,990**	**3,870**	**6,060**	**5,560**	**5,380**	**6,940**	NS	NS	NS
XGM-94-08X	**4,500**	**4,600**	**4,900**	**3,600**	**3,600**	**3,800**	**7,260**	**4,200**	**3,380**	**3,100**	**2,150**	**2,070**	**2,780**	**4,620**	**2,300**	**3,210**	NS	NS	NS
XGM-97-12X	**6,300**	**4,100**	**4,200**	**3,900**	**4,100**	**3,000**	**437**	**1,800**	**2,070**	**3,060**	**2,390**	**2,110**	**3,540**	**1,640**	**1,680**	**2,080**	**3,460**	**1,700**	**1,200**
C_5-C_8 Aliphatics - 300 µg/L VPH Standards																			
AAFES-2	ND	***1,400***	ND	***1,200***	***1,200***	ND	***2,070***	***1,430***	***1,400***	ND	ND	***859***	***1,270***	***1,560 J***	***1,390***	***1,250***	***728***	***850***	***890***
AAFES-6/6R	***370***	***420***	**290**	ND	NA	NA	NA	***305***	ND	ND	ND	**114**	ND	**215**	**287**	**188**	NS	NS	NS
XGM-93-02X	ND	***570***	**270**	***790***	***410***	ND	***788***	***519***	ND	ND	ND	**124**	ND	ND	**65**	**268**	**101**	**94**	**79 J**
XGM-94-04X	ND	***420***	**140**	ND	ND	ND	ND	ND	ND	ND	ND	***533***	***765***	***497 J***	***1,140***	**186**	**65**	***480***	***360***
XGM-94-07X	ND	ND B	ND	ND	ND	ND	ND	**113**	ND	ND	ND	**159**	ND	**66**	**120**	**58.8**	NS	NS	NS
XGM-94-08X	**120**	**150 B**	**100**	**140**	**120**	ND	ND	**125**	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS
XGM-97-12X	***970***	***1,300***	***1,100***	***1,100***	***1,100***	ND	***2,370***	***1,740***	***1,230***	ND	***4,050***	***644***	***367***	***507 J***	***494***	**272**	***515***	***420***	***350***
C_9-C_{12} Aliphatics - 700 µg/L VPH Standards																			
AAFES-2	ND	**81**	ND	**200**	ND	**57**	***5,220***	***987***	***1,000***	***1,020***	***950***	***768***	***1,080***	**542 J**	***1,650***	**688**	**85.7**	**430**	**530 J**
XGM-93-02X	ND	**39**	ND	**58**	**33**	**34**	***1,570***	**268**	**94**	**182**	**55.5**	ND	**85.1**	ND	**100**	**76.6**	**ND**	**56**	**78 J**
XGM-97-12X	**96**	ND	ND	**130**	ND	**90**	***7,310***	***1,340***	***1,080***	***2,210***	***1,450***	***922***	**535**	**275 J**	***724***	**162**	***718***	**230**	**170 J**
XGM-94-07X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**89.1**	**54.5**	**90.5**	ND	**66.8**	ND	NS	NS	NS
XGM-94-08X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**6.19 J**	ND	ND	ND	ND	ND	NS	NS	NS
C_9-C_{10} Aromatics - 200 µg/L VPH Standards																			
AAFES-2	***9,400***	***7,200***	***5,300***	***13,000***	***6,600***	***6,700***	***3,130***	***3,710***	***2,420***	***2,120***	***2,660***	***1,870***	***1,050***	***1,090***	***1,940***	***1,090***	***827***	***730***	***1,100 J***
XGM-93-02X	***510***	***2,300***	***1,100***	***3,600***	***1,600***	***3,700***	***918***	***766***	***228***	***325***	**110**	**73.4**	ND	ND	ND	**113**	**62.3**	ND	ND
XGM-94-04X	***200***	***570***	**170**	**28**	ND	ND	ND	ND	ND	ND	ND	***243***	***469***	***300 J***	***769***	**76.8**	ND	***320***	***410 J***
XGM-97-12X	***4,500***	***5,500***	**5400**	**7500**	8700	7400	3810	4010	4220	5260	4110	***2,470 J***	***463***	***367 J***	***840***	***253***	***1,560***	***340***	***430 J***
XGM-94-07X	ND	ND	ND	ND	ND	ND	ND	ND	ND	**45.1 J**	**76.4**	**77.8**	ND	ND	ND	ND	NS	NS	NS
XGM-94-08X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS

Notes:

0.333	= Detection	µg/L = microgram per liter	NA = Not Analyzed
0.333	= Above background or monitoring criteria	J = Estimated result	ND = Non-Detect
0.333	= Above cleanup goal	B = Blank qualified	NS = Not Sampled

The cleanup goal for iron is the background level. The cleanup goal for manganese is a site-specific goal determined in 2008 (Long-Term Monitoring Plan Former Fort Devens Army Installation, HGL, 2008).
The VPH carbon ranges are not contaminants of concern and are evaluated against MCP GW-1 standards for comparison purposes.
Benzene, ethylbenzene, xylenes, and toluene are not contaminants of concern but the cleanup goals are the Maximum Contaminant Levels.

Table 5-1
AOCs 32/43A Groundwater Analytical Results, June 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal [1]	Monitoring Criteria	32M-01-13XBR	Q	32M-01-14XOB	Q	32M-01-17XBR	Q	32M-01-18XBR	Q	32M-DUP01 32M-01-18XBR	Q
				6/26/2017		6/28/2017		6/28/2017		6/26/2017		6/26/2017	
Total and Dissolved Metals (SW6010C)													
Arsenic, Dissolved	µg/L	10	NS	3.0	U	**30**		3.0	U	**2.4**	J	**3.3**	J
Arsenic, Total	µg/L	10	NS	**1.7**	J	**33**		**2.6**	J	**4.7**		**4.4**	
Total and Dissolved Metals (SW6020A)													
Manganese, Dissolved	µg/L	3,500	NS	**52**		**2,900**		**1.3**	J	**2,700**		**2,900**	
Manganese, Total	µg/L	3,500	NS	**64**		**2,900**		**3.9**	J	**2,300**		**1,800**	
VOCs (SW8260B)													
1,1,1-Trichloroethane	µg/L	NS	5.0	1.0	U	1.0	U	1.0	U	5.0	U	1.0	U
1,1,2-Trichloroethane	µg/L	NS	5.0	0.50	U	0.50	U	0.50	U	2.5	U	0.50	U
1,2-Dichlorobenzene	µg/L	600	NS	1.0	U	1.0	U	1.0	U	**390**		**410**	
1,3-Dichlorobenzene	µg/L	100	NS	1.0	U	1.0	U	**0.56**	J	**70**		**83**	
1,4-Dichlorobenzene	µg/L	5.0	NS	1.0	U	1.0	U	1.0	U	**46**		**52**	
cis -1,2-Dichloroethene	µg/L	55	NS	1.0	U	1.0	U	1.0	U	5.0	U	1.0	U
trans -1,2-Dichloroethene	µg/L	100	NS	1.0	U	1.0	U	1.0	U	5.0	U	1.0	U
Benzene	µg/L	NS	5.0	1.0	U	1.0	U	1.0	U	5.0	U	1.0	U
Chlorobenzene	µg/L	NS	100	0.50	U	0.50	U	0.50	U	***170***		***180***	
Ethylbenzene	µg/L	NS	700	0.50	U	0.50	U	0.50	U	2.5	U	0.50	U
Tetrachloroethene	µg/L	5.0	NS	1.0	U	1.0	U	1.0	U	5.0	U	1.0	U
Toluene	µg/L	1,000	NS	1.0	U	1.0	U	1.0	U	5.0	U	1.0	U
Trichlorethene	µg/L	5.0	NS	1.0	U	1.0	U	1.0	U	5.0	U	1.0	U
Vinyl Chloride	µg/L	NS	2.0	1.0	U	1.0	U	1.0	U	5.0	U	1.0	U
VPH (MADEP)[2]													
C5-C8 Aliphatics	µg/L	NS	300	100	U	100	U	100	U	100	U	100	U
C9-C10 Aromatics	µg/L	NS	200	100	U	100	U	100	U	***410***		***400***	
C9-C12 Aliphatics	µg/L	NS	700	100	U	100	U	100	U	100	U	100	U
Benzene	µg/L	NS	5.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Ethylbenzene	µg/L	NS	700	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Toluene	µg/L	NS	1,000	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
m,p -Xylene[3]	µg/L	NS	NS	10	U	10	U	10	U	10	U	10	U
o -Xylene[3]	µg/L	NS	NS	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U

Table 5-1
AOCs 32/43A Groundwater Analytical Results, June 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal [1]	Monitoring Criteria	32M-01-13XBR	Q	32M-01-14XOB	Q	32M-01-17XBR	Q	32M-01-18XBR	Q	32M-DUP01 32M-01-18XBR	Q
				6/26/2017		6/28/2017		6/28/2017		6/26/2017		6/26/2017	
Field Parameters													
Temperature	°Celsius	NS	NS	**15.31**		**11.71**		**12.34**		**14.87**		**14.87**	
pH	pH	NS	NS	**6.97**		**6.73**		**7.16**		**7.06**		**7.06**	
Specific Conductance	us/cm	NS	NS	**1,658**		**381**		**733**		**850**		**850**	
ORP	mV	NS	NS	**92.6**		**51.3**		**75.1**		**134.4**		**134.4**	
Dissolved Oxygen	mg/L	NS	NS	**4.87**		**1.47**		**1.93**		**5.42**		**5.42**	
Turbidity	NTU	NS	NS	**9.78**		**11.2**		**11.4**		**11.9**		**11.9**	

Notes:

0.333	= Detection
0.333	= Above monitoring criteria
0.333	= Above cleanup goal

J = Estimated result
NS = No Standard
Q = Qualifier
U = Non-detect
µg/L = microgram per liter

[1] The cleanup goal for arsenic and select VOCs is the MCL; the cleanup goal for manganese is the background level.
[2] VPH carbon range concentrations are evaluated against MassDEP standards for comparison purposes.
[3] The monitoring criteria for total xylenes is 10,000 µg/L.

Table 5-2
AOCs 32/43A Exceedances Over Time, 2006 to 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

Sample Location	Spring 2006	Fall 2006	Spring 2007	Fall 2007	Spring 2008	Fall 2008	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Spring 2015*	Spring 2016*	Spring 2017 (T/D)
Arsenic (Total) - 10 µg/L Cleanup Goal																				
32M-01-18XBR (Source well)	**30**	**15**	**51**	**3.1 J**	**38**	**34**	**51**	**18**	**18**	**3.5 J**	**3.0 J**	**5.0**	**5.0**	**4.0 J**	**2.0 J**	**6.0**	**3.0 J**	**4.0**	**2.8 J**	**4.7/2.4 J**
32M-01-14XBR (Sentry well)	ND	ND	ND	ND	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	NS	NS
32M-01-14XOB (Sentry well)	**59**	**49**	**45**	**69**	**50**	**70**	**66**	NS	**43**	NS	**62**	NS	**80**	NS	**58**	NS	**62 J**	**90**	**13**	**33/30**
32M-01-15XBR	ND	ND	ND	ND	ND	ND	**180**	NA	**9.0**	**2.9 J**	ND	**3.0 J**	**2.0 J**	ND	ND	**2.0 J**	ND	NS	NS	NS
32M-01-17XBR	**2.8 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**3.1**	ND	**2.6J/ND**
32Z-99-02X (Distant sentry well)	ND	ND	**2.1 J**	**3.2 J**	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	NS	NS
SHL-15	**9.0**	**11**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese (Total) - 3,500 µg/L Cleanup Goal																				
32M-01-18XBR (Source well)	**18,000**	**16,000**	**18,200**	**10,200**	**14,800**	**18,900**	**29,400**	**6,970**	**2,360**	**4,510**	**2,300**	**1,150**	**4,100**	**1,540**	**270**	**137**	**1,990**	**1,720**	**1,100**	**2,300/2,700**
32M-01-14XOB (Sentry well)	**2,800**	**3,200**	**1,500**	**3,420**	**2,760**	**5,050**	**3,660**	NS	**2,460**	NS	**1,740**	NS	**1,950**	NS	**1,650**	NS	**2,550**	**3,390**	**1,800**	**2,900/2,900**
1,4-Dichlorobenzene - 5 µg/L Cleanup Goal																				
32M-01-18XBR (Source well)	**490**	**210 J**	**550**	**67**	**270**	**390**	**180**	**100**	**26**	**62**	**50**	**37**	**69**	**42**	**1.2 J**	**1.1 J**	**71**	**51**	**38**	**46**
32M-01-15XBR	ND	**5.5**	**0.78 J**	**5.1 J**	**7.9**	**5.7 J**	ND	ND	**0.55 J**	ND	ND	ND	ND	**0.33 J**	ND	ND	ND	NS	NS	NS
32M-01-17XBR	**3.0**	**5.1**	**2.1 J**	**4.2**	**1.0 J**	**1.8 J**	**3.4**	**8.2 J**	**7.1 J**	**0.33 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene - 100 µg/L Cleanup Goal																				
32M-01-18XBR (Source well)	**900**	**480**	**1,200**	**110**	**850**	**1,600**	**540**	**200**	**88**	**210**	**78**	**49**	**280**	**82**	**0.88 J**	**0.97 J**	**131**	**88**	**81**	**170**
VPH C^9- C^{10} Aromatics - 200 µg/L Monitoring Criteria																				
32M-01-18XBR (Source well)	***5,850***	***4,120***	***6,050***	***952***	***3,230***	***3,660***	***1,890***	***837***	***300***	***541***	***444***	***272***	***728***	***322***	ND	ND	***730***	***360***	***450***	***410***

Notes:

0.333	= Detection
0.333	= Above monitoring criteria
0.333	= Above cleanup goal

J = Estimated result
NA = Not analyzed
ND = non-detect
NS = not sampled

µg/L = microgram per liter

* = Spring 2015 and 2016 metals results are for dissolved metals.
T/D = Total and dissolved metals results are reported for Spring 2017 results.

Table 5-3
AOCs 32/43A Summary of Cleanup Goal Exceedances, Well 32M-01-18XBR
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal [1]	Monitoring Criteria [2]	April 2002	October 2002	June 2003	December 2003	May 2004	October 2004	June 2005	October 2005	June 2006	October 2006	May 2007	October 2007	June 2008	October 2008	May 2009	October 2009	May 2010	October 2010	June 2011
Arsenic, Total	µg/L	10	NS	ND	ND	**3.5**	**8.8**	**10**	**6.2**	**24.4**	ND	**30**	**15**	**51**	**3.1**	**38**	**34**	**51**	**18**	**18**	**3.5 J**	**3 J**
Arsenic, Dissolved	µg/L	10	NS	ND	ND	**3.0**	NA	**10**	**6.3**	NA	NA	**33**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese, Total	µg/L	3,500	NS	**7,730**	**9,260**	**14,100**	**11,000**	**17,400**	**13,400**	**16,700**	**11,600**	**18,000**	**16,000**	**18,200**	**10,200**	**14,800**	**18,900**	**29,400**	**6,970**	**2,360**	**4,510**	**2,300**
Manganese, Dissolved	µg/L	3,500	NS	**7,500**	**8,960**	**14,200**	**13,900**	**18,100**	**12,500**	NA	NA	**19,000**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	µg/L	600	NS	**5,900**	**2,500**	**3,800**	**3,900**	**6,200**	**4,200**	**4,500**	**1,450**	**5,900**	**2,800**	**6,100**	**690**	**2,700**	**4,100**	**1,700**	**730**	**300**	**570**	**340**
1,3-Dichlorobenzene	µg/L	100	NS	**660**	**300**	**460**	**430**	**730**	**530**	**590**	**209**	**750**	**360**	**850**	**120**	**450**	**580**	**270**	**150**	**59**	**100**	**86**
1,4-Dichlorobenzene	µg/L	5.0	NS	**450**	**200**	**310**	**280**	**470**	**320**	**370**	**120**	**490**	**210**	**550**	**67**	**270**	**390**	**180**	**100**	**26**	**62**	**50**
Trichloroethene (TCE)	µg/L	5.0	NS	**19**	ND	ND	**3.4**	**5.2**	**3.4**	ND	**0.6**	ND	ND	**4.2**	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	µg/L	3.0	NS	NA	NA	NA	ND	ND	ND	ND	ND	**19**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
VPH C9-C12 Aliphatics	µg/L	NS	700	***5,000***	ND	**350**	**511**	***5,100***	***4,480***	**470**	**686**	ND	ND	**2.5**	ND	ND	ND	**132 J**	**250**	ND	ND	**104**
VPH C9-C10 Aromatics	µg/L	NS	200	***9,100***	***2,900***	***1,700***	***2,600***	***11,000***	***4,400***	***260***	***1,150***	***5,850***	***4,120***	***6,050***	***952***	***3,230***	***3,660***	***1,890***	***837***	***300***	***541***	***444***
EPH C9-C18 Alphatics	µg/L	NS	700	***920***	**240**	**620**	***940***	***2,300***	***1,100***	***1,400***	**228**	***1,340***	***785***	***854***	**158**	**430**	**455**	**470**	NA	ND	ND	ND
Field Paramters - ORP	mV	NS	NS	**120.4**	**216.3**	**111.9**	**45.1**	NA	**17.6**	**24.7**	**33.8**	**-2.0**	**14.9**	**-30.9**	**1.5**	**-40.1**	**60.9**	**437.7**	**120.7**	**-177.8**	**137.2**	**408.1**
Field Paramters - Turbidity	NTU	NS	NS	NA	NA	NA	**0.91**	NA	**1.63**	**0.51**	**0.50**	**0.10**	**0.65**	**1.9**	**0.40**	**0**	**3**	**17.7**	**2.4**	**244.0**	**3.07**	**2.68**

Notes:

0.333	= Detection
0.333	= Above monitoring criteria
0.333	= Above cleanup goal

J = Estimated result
NA = Not analyzed
ND = Non-detect
NS = No Standard
µg/L = microgram per liter

[1] The cleanup goal for arsenic and the VOC compounds is the MCL. The cleanup goal for manganese is the background level.

[2] VPH/EPH concentrations are evaluated against MassDEP standards for comparison purposes.

Table 5-3
AOCs 32/43A Summary of Cleanup Goal Exceedances, Well 32M-01-18XBR
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal [1]	Monitoring Criteria [2]	October 2011	May 2012	October 2012	May 2013	October 2013	June 2014	June 2015	June 2016	June 2017
Arsenic, Total	µg/L	10	NS	**5**	**5**	**4 J**	**2 J**	**6.0**	**3 J**	**24.9**	NA	**4.7**
Arsenic, Dissolved	µg/L	10	NS	NA	NA	NA	NA	NA	NA	**4.0**	**2.8**	**2.4**
Manganese, Total	µg/L	3,500	NS	**1,150**	**4,100**	**1,540**	**27**	**137**	**1,990 J**	**2,140**	NA	**2,300**
Manganese, Dissolved	µg/L	3,500	NS	NA	NA	NA	NA	NA	NA	**1,720**	**1,100**	**2,700**
1,2-Dichlorobenzene	µg/L	600	NS	**260**	**640 J**	**340**	**7.46 J**	**7.30**	**598**	**407**	**340**	**390**
1,3-Dichlorobenzene	µg/L	100	NS	**64**	**120 J**	**70**	**7.10 J**	**2.12 J**	**106**	**80**	**58**	**70**
1,4-Dichlorobenzene	µg/L	5.0	NS	**37**	**69**	**42**	**1.19 J**	**1.14 J**	**71**	**51**	**38**	**46**
Trichloroethene (TCE)	µg/L	5.0	NS	ND	**0.60**	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	µg/L	3.0	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
VPH C9-C12 Aliphatics	µg/L	NS	700	**108**	**486**	ND	ND	ND	ND	ND	**190**	ND
VPH C9-C10 Aromatics	µg/L	NS	200	***272***	***728***	***322***	ND	ND	***730***	***360***	***450***	***410***
EPH C9-C18 Alphatics	µg/L	NS	700	ND	**175**	ND	ND	ND	ND	112	NA	NA
Field Paramters - ORP	mV	NS	NS	**158.8**	**163.4**	**223.8**	**298.8**	**192**	**111.1**	**113.5**	**162.7**	**134.4**
Field Paramters - Turbidity	NTU	NS	NS	**3.53**	**2.22**	**1.26**	**1.36**	**3.5**	**1.21**	**2.0**	**12.9**	**11.9**

Notes:

0.333	= Detection
0.333	= Above monitoring criteria
0.333	= Above cleanup goal

J = Estimated result
NA = Not analyzed
ND = Non-detect
NS = No Standard
µg/L = microgram per liter
[1] The cleanup goal for arsenic and the VOC compounds is the MCL. The cleanup goal for manganese is the background level.
[2] VPH/EPH concentrations are evaluated against MassDEP standards for comparison purposes.

Table 6-1
Trigger Groundwater Elevations for Analytical Testing at Devens Consolidation Landfill
Main Post, Former Fort Devens Army Installation, Massachusetts

Well Identity	Top of Casing Elevation (ft NGVD)	GW Elevation (DTW) for Required Sampling (ft NGVD)	GW Elevation (DTW) Spring 2017 (ft NGVD)	GW Elevation (DTW) Fall 2017 (ft NGVD)
LFM-99-01B	351.47	345 or above (6.47 or less)	326.36 (25.11)	324.11 (27.36)
LFM-99-02B[1]	354.63	*any*	337.16 (17.47)	334.40 (20.23)
LFM-99-03B	342.88	335 or above (7.88 or less)	303.11 (39.77)	298.86 (44.02)
LFM-99-05A[1]	317.38	*any*	296.26 (21.12)	292.06 (25.32)
LFM-99-05B	317.38	315 or above (2.38 or less)	299.05 (18.33)	294.10 (23.28)
LFM-99-06A-RP[1]	317.09	*any*	302.69 (14.40)	299.33 (17.76)
LFM-03-07[2]	NA	*any*	NA	NA

Notes:
[1] Monitoring well included on LTM sampling list.
[2] Monitoring well was paved over and will be resurveyed.
NA = not available
NGVD = National Geodetic Vertical Datum
GW = Groundwater
DTW = Depth to water (feet) in feet belot top of casing
This table evaluates the DTW at monitoring wells located around the DCL. If the DTW is less than the "trigger" levels for the three wells noted above; it indicates that the water table is shallow and the well(s) should be sampled along with wells on the LTM sampling list.

Table 6-2
Devens Consolidation Landfill Groundwater Analytical Results, June/August 2017
Main Post, Former Devens Army Installation, Massachusetts

	Units	Monitoring Criteria	LFM-99-02B	Q	LFM-99-05A	Q	LFM-DUP01 (LFM-99-05A)	Q	LFM-99-06A RP	Q	LFM-03-07	Q
			6/22/2017		6/22/2017		6/22/2017		6/21/2017		8/1/2017	
MADEP Extractable Petroleum Hydrocarbons (EPH) and Target PAH												
C9-C18 Aliphatic	µg/L	700	96	U	94	U	94	U	94	U	94	U
C19-C36 Aliphatic	µg/L	14,000	96	U	94	U	94	U	94	U	94	U
C11-C22 Aromatic Hydrocarbons	µg/L	200	96	U	94	U	94	U	94	U	94	U
PAH Compounds	µg/L	NS	ND		ND		ND		ND		ND	
MADEP Volatile Petroleum Hydrocarbons (VPH) and BTEX												
C5-C8 Aliphatics	µg/L	300	100	U	100	U	100	U	100	U	100	U
C9-C12 Aliphatics	µg/L	700	100	U	100	U	100	U	100	U	100	U
C9-C10 Aromatics	µg/L	200	100	U	100	U	100	U	100	U	100	U
Methyl tert-butyl ether	µg/L	70	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Benzene	µg/L	5.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Toluene	µg/L	1,000	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Ethylbenzene	µg/L	700	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
m,p -Xylenes	µg/L	10,000	10	U	10	U	10	U	10	U	10	U
o -Xylene	µg/L	10,000	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Naphthalene	µg/L	140	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Pesticides (SW846 8081B)												
All Compounds			ND		ND		ND		ND		ND	
Total Metals (Select List)												
Arsenic, Total	µg/L	10	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Barium, Total	µg/L	2,000	**12**		**14**		**14**		**9.1**	**J**	**77**	
Cadmium, Total	µg/L	5.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Chromium, Total	µg/L	100	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U
Copper, Total	µg/L	1,300	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Iron, Total	µg/L	NS	50	U	50	U	**23**	**J**	**82**	**J**	**1,900**	
Lead, Total	µg/L	15	10	U	10	U	10	U	10	U	10	U
Manganese, Total	µg/L	NS	3.0	U	3.0	U	3.0	U	**6.9**	**J**	**110**	
Selenium, Total	µg/L	50	20	U	20	U	20	U	20	U	20	U
Silver, Total	µg/L	100	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U
Mercury	µg/L	2.0	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U

Table 6-2
Devens Consolidation Landfill Groundwater Analytical Results, June/August 2017
Main Post, Former Devens Army Installation, Massachusetts

	Units	Monitoring Criteria	LFM-99-02B	Q	LFM-99-05A	Q	LFM-DUP01 (LFM-99-05A)	Q	LFM-99-06A RP	Q	LFM-03-07	Q
			6/22/2017		6/22/2017		6/22/2017		6/21/2017		8/1/2017	
General Chemistry												
Cyanide, Total	mg/L	0.20	0.005	U	0.005	U	0.005	U	0.005	U	**0.0033**	**J**
Nitrate/Nitrite (as N)	mg/L	NS	**0.47**		**2.1**		**2.10**		**0.95**		**1.7**	
Chemical Oxygen Demand	mg/L	NS	**5.4**	**J**	10	U	10	U	**5.7**	**J**	**7.5**	**J**
Chloride	mg/L	NS	**320**		**170**		**160**		**420**		**380**	
Sulfate	mg/L	NS	**16**		**20**		**20**		**24**		**22**	
Alkalinity as CaCO3	mg/L	NS	**60**		**82**		**82**		**74**		**96**	
TDS	mg/L	NS	**630**		**440**		**450**		**880**		**860**	
Water Quality Parameters												
Temperature	°Celcius	NS	**10.52**		**10.02**		**10.02**		**11.84**		**14.61**	
ORP	mV	NS	**172.6**		**209.7**		**209.7**		**172.3**		**57.9**	
pH	Std units	NS	**6.55**		**5.86**		**5.86**		**6.10**		**6.04**	
Specific Conductance	µS/cm	NS	**844**		**540**		**540**		**1,158**		**1,181**	
Dissolved Oxygen	mg/L	NS	**9.39**		**6.37**		**6.37**		**7.57**		**5.74**	
Turbidity	NTU	NS	**7.57**		**8.73**		**8.73**		**13.0**		**4.88**	

Notes:

0.333	= Detection
0.333	= Above monitoring criteria

J = Estimated Result
NS = No Standard
Q = Qualifier
U = Non detect
µg/L = microgram per liter
mg/L = milligram per lter

Table 6-3
Devens Consolidation Landfill Groundwater Analytical Results, October/December 2017
Main Post, Former Devens Army Installation, Massachusetts

	Units	Monitoring Criteria	LFM-99-02B	Q	LFM-99-05A	Q	LFM-DUP01 LFM-99-05A	Q	LFM-99-06RF	Q	LFM-03-07	Q
			10/26/2017		10/27/2017		10/13/2016		10/26/2017		12/4/2017	
MADEP Extractable Petroleum Hydrocarbons (EPH) and Target PAH												
C9-C18 Aliphatic Hydrocarbons	µg/L	700	96	U	100	U	110	U	95	U	95	U
C19-C36 Aliphatic Hydrocarbons	µg/L	14,000	96	U	100	U	110	U	95	U	95	U
C11-C22 Aromatic Hydrocarbons	µg/L	200	96	U	100	U	110	U	95	U	95	U
Naphthalene	µg/L	140	1.9	U	2.1	U	2.2	U	1.9	U	1.9	U
MADEP Volatile Petroleum Hydrocarbons (VPH) and BTEX												
C5-C8 Aliphatics	µg/L	300	100	U	100	U	100	U	100	U	100	U
C9-C12 Aliphatics	µg/L	700	100	U	100	U	100	U	100	U	100	U
C9-C10 Aromatics	µg/L	200	100	U	100	U	100	U	100	U	100	U
Methyl tert-butyl ether	µg/L	70	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Benzene	µg/L	5.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Toluene	µg/L	1,000	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Ethylbenzene	µg/L	700	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
m,p -Xylenes	µg/L	10,000	10	U	10	U	10	U	10	U	10	U
o -Xylene	µg/L	10,000	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Naphthalene	µg/L	140	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Pesticides (SW846 8081B)												
All Compounds			ND		ND		ND		ND		ND	
Total Metals (Select List)												
Arsenic, Total	µg/L	10	3.0	U	3.0	UJ	**4.3**	**J**	3.0	U	3.0	U
Barium, Total	µg/L	2,000	**19**		**24**	**J**	**31**	**J**	**10**		**18**	
Cadmium, Total	µg/L	5.0	0.4	U	0.4	UJ	0.4	UJ	0.4	U	0.4	U
Chromium, Total	µg/L	100	4.0	U	4.0	UJ	**3.5**	**J**	4.0	U	4.0	U
Copper, Total	µg/L	NS	4.0	U	4.0	UJ	4.0	UJ	4.0	U	4.0	U
Iron, Total	µg/L	NS	75	U	**64**	**J**	**1,500**	**J**	75	U	75	U

Table 6-3
Devens Consolidation Landfill Groundwater Analytical Results, October/December 2017
Main Post, Former Devens Army Installation, Massachusetts

	Units	Monitoring Criteria	LFM-99-02B	Q	LFM-99-05A	Q	LFM-DUP01 LFM-99-05A	Q	LFM-99-06RF	Q	LFM-03-07	Q
			10/26/2017		10/27/2017		10/13/2016		10/26/2017		12/4/2017	
Lead, Total	µg/L	15	2.5	U	2.5	UJ	**3.8**	**J**	2.5	U	2.5	U
Manganese, Total	µg/L	NS	5.0	U	**2.7**	**J**	**91**	**J**	**7.7**		**2.3**	J
Selenium, Total	µg/L	50	2.5	U	2.5	UJ	2.5	UJ	2.5	U	2.5	U
Silver, Total	µg/L	100	**0.56**	**J**	0.3	UJ	0.3	UJ	0.3	U	0.3	U
Mercury	µg/L	2.0	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
General Chemistry												
Cyanide, Total	mg/L	0.20	0.005	U	0.005	U	**0.0038**	**J**	0.005	U	0.005	U
Nitrate/Nitrite (as N)	mg/L	NS	**0.78**		**3.3**		**3.3**		**1.7**		**2.7**	
Chemical Oxygen Demand	mg/L	NS	10	U	10	U	10	U	10	U	**6.2**	J
Chloride	mg/L	NS	**440**		**270**		**270**		**390**		**250**	
Sulfate	mg/L	NS	**21**		**23**		**23**		**34**		**36**	
Alkalinity as CaCO3	mg/L	NS	**87**		**78**		**79**		**140**		**130**	
TDS	mg/L	NS	**790**		**550**		**550**		**810**		**600**	
Field Parameters												
Temperature	°Celcius	NS	**11.16**		**10.87**		**10.87**		**12.99**		**10.57**	
ORP	mV	NS	**111.1**		**138.9**		**138.9**		**105.9**		**115.0**	
pH	Std units	NS	**6.72**		**6.42**		**6.42**		**6.82**		**6.17**	
Specific Conductance	µS/cm	NS	**1,371**		**912**		**912**		**1,327**		**71**	
Dissolved Oxygen	mg/L	NS	**3.18**		**2.85**		**2.85**		**2.86**		**4.17**	
Turbidity	NTU	NS	**2.59**		**4.39**		**4.39**		**5.03**		**3.80**	

Notes:

0.333	= Detection
0.333	= Above monitoring criteria

J = Estimated Result
NS = No Standard
Q = Qualifier
U = Non detect
µg/L = microgram per liter
mg/L = milligram per lter

Table 6-4
Devens Consolidation Landfill Leachate Analytical Results, October 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

MassDevelopment Industrial Wastewater Discharge Permit No. 017 (Summary)

Analytical Fraction	Parameter	Limitations (mg/L)	Fall 2017 - Annual Sampling Event
			Date Sampled: 10/27/2017
			Concentrations (mg/L)
Metals composite	Arsenic	0.20	0.003 U
	Cadmium	0.045	0.0004 U
	Chromium	0.40	0.004 U
	Copper	0.75	**0.0021 J**
	Lead	0.20	0.0025 U
	Nickel	0.60	**0.0028 J**
	Silver	0.30	0.003 U
	Zinc	0.70	0.0020 U
	Mercury	0.001	0.0002 U
TTO	Total Toxic Organics	5.00	ND
TSS	Total Suspended Solids	400	**5.2**
Cyanide	Cyanide (total)	NL	0.005 UJ
TPH	TPH (DRO)	NL	**2.80**
Phenols	Phenols (total)	NL	0.05 U
pH *grab sample*	pH (units)	5.5 – 9.5	**7.7**

Notes:
Detections are bolded.
mg/L = milligram per liter
NL = No limit
U = The target analyte was not detected at or above the laboratory reporting limit.
J = Estimated result
TTO = Total Toxic Organics (sum of VOCs, SVOCs, Pesticides and PCBs)
VOCs = Volatile Organic Compounds
SVOCs = SemiVolatile Organic Compounds
PCBs = Polychlorinated Biphenyls
TSS = Total Suspended Solids
TPH = Total Petroleum Hydrocarbons

Table 6-5
Devens Consolidation Landfill Leachate Annual Discharge Quantities
Main Post, Former Fort Devens Army Installation, Massachusetts

Period	Discharge Quantities (Gallons)															
	2002 [1]	2003 [2]	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Annual Total	1,259,866	960,394	473,802	414,858	390,085	277,626	304,547	237,983	217,155	353,618	204,483	225,768	237,752	190,403	209,849	261,989
Total Leachate Discharge Quantity (2002-2017)																**6,220,178**

Notes:
[1] Startup during April to June period.
[2] April to June period is estimated due to broken meter.

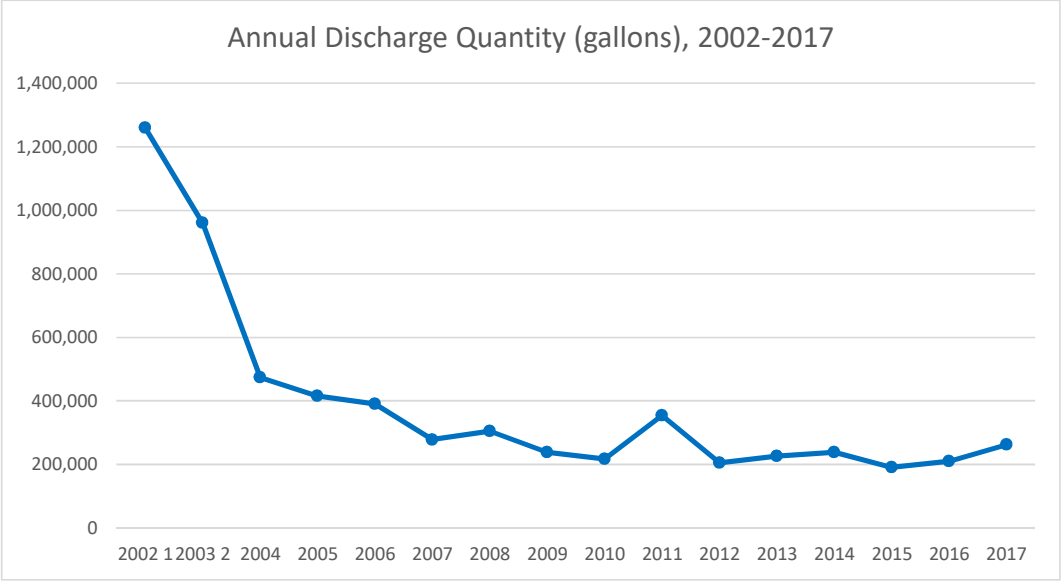

Table 6-6
Devens Consolidation Landfill Historical Groundwater Data, LFM-99-02B
Main Post, Former Devens Army Installation, Massachusetts

LFM-99-02B	Units	Monitoring Criteria	Spring 2003	Q	Fall 2003	Q	Spring 2004	Q	Fall 2004	Q	Spring 2005	Q	Fall 2005	Q	Spring 2006	Q	Spring 2007	Q	Spring 2008	Q	Fall 2008	Q	Spring 2009	Q	Fall 2009	Q	Spring 2010	Q	Fall 2010	Q	Spring 2011	Q	Fall 2011	Q	Spring 2012	Q	Fall 2012	Q
Extractable Petroleum Hydrocarbons (EPH)																																						
Naphthalene	µg/L	140	1.0	U	5.1	U	2.4	U	2.1	U	10.0	U	0.400	U	0.2	U	0.46	U	0.412	U	0.430	U	10	U	NA		0.419	U	0.400	U	0.400	U	0.400	U	**0.148**	**J**
Pesticides																																						
Aldrin	µg/L	0.50	0.0064	U	0.0067	U	0.0076	U	0.0076	U	0.05	UJ	0.200	UJ	0.05	U	0.0217	U	0.021	UJ	0.021	UJ	0.200	UJ	NA		0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
Dieldrin	µg/L	0.10	0.013	U	0.0013	U	0.015	U	0.014	U	0.1	U	0.040	UJ	0.05	U	0.0435	U	0.043	UJ	0.042	UJ	0.040	UJ	NA		0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
alpha-Chlordane	µg/L	2.0	0.0064	U	0.0067	U	0.0076	U	0.071	U	0.05	U	0.020	UJ	0.05	U	0.0217	U	0.021	UJ	0.021	UJ	0.020	UJ	NA		0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
gamma-Chlordane	µg/L	2.0	0.0064	U	**0.0053**	**J**	0.0076	U	0.071	U	0.05	U	0.020	UJ	0.05	U	0.0217	U	0.021	UJ	0.021	UJ	0.020	UJ	NA		0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
Chlordane	µg/L	2.0	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
gamma-BHC (Lindane)	µg/L	0.20	0.0064	U	0.0067	U	0.0076	U	0.0076	U	0.05	U	0.020	UJ	0.05	U	0.0217	U	0.021	UJ	0.021	UJ	0.020	UJ	NA		0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
Total Metals																																						
Arsenic	µg/L	10	5.0	U	50.0	U	5.0	U	5.0	U	4.2	U	**5.0**	**J**	2.5	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U	**2**	**J**	5	U	5	U
Chromium	µg/L	100	**28**		**1.7**	**J**	**0.96**	**J**	**1.07**	**J**	12.0	U	NA		10.0	U	10.0	U	10	U	10	U	5	U	**40**		10	U	10	U	10	U	10	U	10	U	10	U
Iron	µg/L	NS	NA		100	U	**17**	**J**	100	U	38.0	U	**32**	**J**	50.0	U	50.0	U	50	U	**28**	**J**	50	U	**380**		50	U	50	U	50	U	50	U	50	U	50	U
Lead	µg/L	15	5.0	U	**8.5**	**J**	5.0	U	5.0	U	**3.1**		10	U	2.5	U	10.0	U	10	U	10	U	**10**	**J**	10	U	10	U	10	U	10	U	**3**	**J**	10	U	10	U
Manganese	µg/L	NS	NA		**2.4**	**J**	**1.5**	**J**	**12.7**	**J**	**5.2**	**J**	10	U	10.0	U	**1.1**	**J**	10	U	10	U	10	U	**9.1**	**J**	10	U	10	U	10	U	10	U	10	U	10	U
General Chemistry																																						
Total Cyanide	mg/L	0.20	0.01	U	**0.004**	**J**	0.01	U	**0.005**	**J**	0.01	U	0.005	U	0.05	U	0.01	UJ	0.005	U	0.005	U	0.005	U	NA		**0.0011**	**J**	0.005	U	0.005	U	0.005	U	**0.002**	**J**	**0.002**	**J**
Nitrate/Nitrite (as N)	mg/L	NS	**0.21**		**1.4**		**0.66**		**0.796**		**0.36**	**J**	0.64	U	**0.45**		**0.5**		**0.43**	**J**	**1.9**		**0.92**		NA		**0.41**		**0.54**		**0.43**		**0.76**		0.22	U	**0.49**	
Chemical Oxygen Demand	mg/L	NS	**170**		50.0	U	**15**	**J**	50.0	U	20.0	U	20	U	10.0	U	20.0	U	20	U	**12**	**J**	20	U	NA		**20**		20	U	**8**	**J**	20	U	20	U	20	U
Water Quality Parameters																																						
pH	std	NS	**6.20**		**6.38**		**6.09**		**6.38**		**5.97**		**6.17**		**6.32**		**6.15**		**6.32**		**7.00**		**5.57**		**6.22**		**6.71**		**6.35**		**6.10**		**6.03**		**6.25**		**6.29**	
Oxidation-Reduction Potential	mV	NS	NA		**204.7**		**243.3**		**308.4**		**266.3**		**311.3**		**223.6**		**200.8**		**160.7**		**55.2**		**215.4**		**113**		**-232.2**		**163.6**		**150.1**		**142.2**		**135.5**		**196.3**	
Turbidity	NTU	NS	NA		**0.40**		**0.80**		**0.55**		**0.37**		**3.8**		**0.18**		**0.00**		**2.80**		**2.0**		**0.0**		**0.0**		**2.2**		**0.39**		**0.00**		**2.57**		**0.33**		**0.00**	

Notes:

0.333	= Detection
0.333	= Above monitoring criteria

J = Estimated result
NA = Not analyzed
NS = No Standard
Q = Qualifier
U = Non-detect
UJ = Estimated non-detect
µg/L = microgram per liter
mg/L = milligram per liter

Table 6-6
Devens Consolidation Landfill Historical Groundwater Data, LFM-99-02B
Main Post, Former Devens Army Installation, Massachusetts

LFM-99-02B	Units	Monitoring Criteria	Spring 2013	Q	Fall 2013	Q	Spring 2014	Q	Fall 2014	Q	Spring 2015	Q	Fall 2015	Q	Spring 2016	Q	Fall 2016	Q	Spring 2017	Q	Fall 2017	Q
Extractable Petroleum Hydrocarbons (EPH)																						
Naphthalene	µg/L	140	0.400	U	0.400	U	0.400	U	1.0	U	5.100	U	4.300	U	2.0	U	2.3	U	1.9	U	1.9	U
Pesticides																						
Aldrin	µg/L	0.50	0.020	U	0.020	U	0.020	U	0.010	U	0.026	U	0.051	U	0.013	U	0.019	U	0.017	U	0.017	U
Dieldrin	µg/L	0.10	0.040	U	0.040	U	0.040	U	0.010	U	0.026	U	0.051	U	0.007	U	0.010	U	0.0096	U	0.0096	U
alpha-Chlordane	µg/L	2.0	0.020	U	0.020	U	0.020	U	0.054	U	NA		NA		NA		NA		NA		NA	
gamma-Chlordane	µg/L	2.0	0.020	U	0.020	U	0.020	U	0.054	U	NA		NA		NA		NA		NA		NA	
Chlordane	µg/L	2.0	NA		NA		NA		NA		0.130	U	0.530	U	0.16	U	0.31	U	0.29	U	0.29	U
gamma-BHC (Lindane)	µg/L	0.20	0.020	U	0.020	U	0.020	U	0.011	U	0.026	U	0.051	U	0.007	U	0.010	U	0.0096	U	0.0096	U
Total Metals																						
Arsenic	µg/L	10	5	U	5	U	3	U	3	U	2.0	U	4.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Chromium	µg/L	100	10	U	10	U	10	U	10	U	5.0	U	10	U	4.0	U	**6.0**	**J**	4.0	U	4.0	U
Iron	µg/L	NS	50	U	50	U	50	U	50	U	50	U	100	U	50	U	**28**		50	U	75	U
Lead	µg/L	15	10	U	10	U	10	U	10	U	2.5	U	5.0	U	10	U	10	U	10	U	2.5	U
Manganese	µg/L	NS	10	U	10	U	10	U	10	U	7.5	U	15	U	3.0	U	**2.0**	**J**	3.0	U	5.0	U
General Chemistry																						
Total Cyanide	mg/L	0.20	0.005	U	0.005	U	**0.0001**	**J**	0.0041	U	0.0011	U	**0.0082**	**J**	0.005	U	**0.0082**	**J**	0.005	U	0.005	U
Nitrate/Nitrite (as N)	mg/L	NS	**0.069**	**J**	**0.51**		**0.52**		**0.36**		**0.390**		**0.630**		**0.60**		**0.630**		**0.47**		**0.78**	
Chemical Oxygen Demand	mg/L	NS	**15**	**J**	20	U	**4.1**	**J**	10	U	15	U	20	U	10	U	20	U	**5.4**	**J**	10	U
Water Quality Parameters																						
pH	std	NS	**5.87**		**6.45**		**6.00**		**6.51**		**6.07**				**6.16**		**6.44**		**6.55**		**6.72**	
Oxidation-Reduction Potential	mV	NS	**303.3**		**101.8**		**200.3**		**113.3**		**248.5**				**197.0**		**77.8**		**172.6**		**111.1**	
Turbidity	NTU	NS	**0.00**		**0.79**		**0.69**		**0.88**		**1.65**				**0.36**		**1.73**		**7.57**		**2.59**	

Notes:

0.333	= Detection
0.333	= Above monitoring criteria

J = Estimated result
NA = Not analyzed
NS = No Standard
Q = Qualifier
U = Non-detect
UJ = Estimated non-detect
µg/L = microgram per liter
mg/L = milligram per liter

Table 6-7
Devens Consolidation Landfill Historical Groundwater Data, LFM-99-05A
Main Post, Former Fort Devens Army Installation, Massachusetts

LFM-99-05A	Units	Monitoring Criteria	Spring 2003	Q	Fall 2003	Q	Spring 2004	Q	Fall 2004	Q	Spring 2005	Q	Spring 2006	Q	Spring 2007	Q	Spring 2008	Q	Fall 2008	Q	Spring 2009	Q	Fall 2009	Q	Winter 2010	Q	Spring 2010	Q	Fall 2010	Q
Extractable Petroleum Hydrocarbons (EPH)																														
Naphthalene	µg/L	140	1.0	U	5.1	U	2.4	U	2.1	U	10.0	U	0.2	BJ	0.421	U	0.408	U	0.430	U	0.4	U	0.421	U	NA		0.426	U	0.400	U
Pesticides																														
Aldrin	µg/L	0.50	0.0064	U	0.0067	U	0.0072	U	0.0072	U	0.05	U	0.05	U	0.0215	U	0.020	UJ	0.021	U	0.022	U	0.022	U	NA		0.021	U	0.021	U
Dieldrin	µg/L	0.10	0.013	U	0.013	U	0.014	U	0.014	U	0.1	U	0.05	U	0.043	U	0.040	UJ	0.042	U	0.044	U	0.044	U	NA		0.043	U	0.041	U
alpha-Chlordane	µg/L	2.0	0.0064	U	0.0067	U	0.0072	U	0.0072	U	0.05	U	0.05	U	0.0215	U	0.020	UJ	0.021	U	0.022	UJ	0.022	UJ	NA		0.021	U	0.021	U
gamma-Chlordane	µg/L	2.0	0.0064	U	0.0067	U	0.0072	U	0.0072	U	0.05	U	0.05	U	0.0215	U	0.020	UJ	0.021	U	0.022	U	0.022	U	NA		0.021	U	0.021	U
Chlordane	µg/L	2.0	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
gamma BHC (Lindane)	µg/L	0.20	0.0064	U	0.0067	U	0.0072	U	0.0072	U	0.05	U	0.05	U	0.0215	U	0.020	UJ	0.021	U	0.022	U	0.022	U	NA		0.021	U	0.021	U
Metals (Total)																														
Arsenic	µg/L	10	**7.5**		**6.9**	**J**	5.0	U	5.0	U	**4.2**	**J**	2.5	U	**2.4**	**J**	5.0	U	5.0	U	**2**	**J**	5.0	U	5	U	5	U	**4.6**	**J**
Chromium	µg/L	100	10.0	U	**1.6**	**J**	**7.7**	**J**	**1.37**	**J**	**6**	**J**	10.0	U	10.0	U	10	U	10	U	**20**		NA		**40**		10	U	10	U
Iron	µg/L	NS	NA		**96**	**J**	**130**		**33.3**	**J**	**666**		**93.2**		**70**		50	U	**70**		**510**		**20**	**J**	**380**		**70**		**480**	
Lead	µg/L	15	**9.3**		**9.5**	**J**	5.0	U	5.0	U	2.9	U	2.5	U	10.0	U	10	U	10	U	**2**	**J**	10	U	10	U	10	U	10	U
Manganese	µg/L	NS	NA		**3.6**	**J**	**8.5**	**J**	**2.1**	**J**	**33.9**		10.0	U	**3.9**	**J**	10	U	**2.4**	**J**	**21**		10	U	**9.1**	**J**	10	U	**12.0**	
General Chemistry																														
Total Cyanide	mg/L	0.20	0.01	U	**0.004**	**J**	0.01	U	**0.009**	**J**	0.01	U	0.05	U	0.01	UJ	0.005	U	0.005	UJ	**0.002**	**J**	0.005	U	NA		0.005	U	0.005	U
Nitrate/Nitrite (as N)	mg/L	NS	**1.6**		**1.4**		**1.4**		**1.34**		**1**		**0.4**		**0.46**		**0.60**	**J**	**0.57**		**0.55**		**0.46**	**J**	NA		**0.64**		**0.49**	**J**
Chemical Oxygen Demand	mg/L	NS	**100**		50.0	U	**13**	**J**	**12**	**J**	20.0	U	10.0	U	11.0	U	20	U	20	U	**8.1**	**J**	20	U	NA		20	U	24	U
Water Quality Parameters																														
pH	std units	NS	**6.10**		**6.11**		**5.97**		**5.84**		**6.17**		**6.24**		**5.81**		**6.09**		**6.93**		**6.08**		**5.89**		**6.37**		**6.23**		**6.05**	
Oxidation-Reduction Potential	mV	NS	NA		**231.2**		**199.2**		**154.7**		**141.3**		**205.9**		**220.0**		**116.1**		**61.8**		**122**		**173.7**		**68.7**		**-223**		**180.6**	
Turbidity	NTU	NS	NA		**4.43**		**2.59**		**2.50**		**26.2**		**2.51**		**3.60**		**0.58**		**2.33**		**4.1**		**4.67**		**6.2**		**1.7**		**2.8**	

Notes:

0.333 = Detection

0.333 = Above monitoring criteria

J = Estimated result

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µg/L = microgram per liter

mg/L = milligram per liter

Table 6-7
Devens Consolidation Landfill Historical Groundwater Data, LFM-99-05A
Main Post, Former Fort Devens Army Installation, Massachusetts

LFM-99-05A	Units	Monitoring Criteria	Spring 2011	Q	Fall 2011	Q	Spring 2012	Q	Fall 2012	Q	Spring 2013	Q	Fall 2013	Q	Spring 2014	Q	Fall 2014	Q	Spring 2015	Q	Fall 2015	Q	Spring 2016	Q	Fall 2016	Q	Spring 2017	Q	Fall 2017	Q
Extractable Petroleum Hydrocarbons (EPH)																														
Naphthalene	µg/L	140	0.400	U	0.400	U	0.400	U	0.400	U	0.400	U	0.400	U	4.000	U	1.000	U	3.300	U	4.00	U	1.9	U	**3.20**		1.9	U	2.1	U
Pesticides																														
Aldrin	µg/L	0.50	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.010	U	0.026	U	0.050	U	0.012	U	0.019	U	0.017	U	0.018	U
Dieldrin	µg/L	0.10	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.010	U	0.026	U	0.050	U	0.007	U	0.011	U	0.0096	U	0.0100	U
alpha-Chlordane	µg/L	2.0	0.020	U	0.020	U	0.200	U	0.200	U	0.200	U	0.020	U	0.020	U	0.051	U	NA		NA		NA		NA		NA		NA	
gamma-Chlordane	µg/L	2.0	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.051	U	NA		NA		NA		NA		NA		NA	
Chlordane	µg/L	2.0	NA		NA		NA		NA		NA		NA		NA		NA		0.130	U	0.500	U	0.15	U	0.32	U	0.29	U	0.30	U
gamma BHC (Lindane)	µg/L	0.20	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.010	U	0.026	U	0.050	U	0.007	U	0.011	U	0.0096	U	0.0100	U
Metals (Total)																														
Arsenic	µg/L	10	5	U	**3**	**J**	5	U	5.0	U	5	U	5.0	U	5	U	3	U	**2.3**	J	4.0	U	**1.7**	**J**	3.0	U	3.0	U	3.0	UJ
Chromium	µg/L	100	10	U	10	U	10	U	10	U	10	U	10	U	10	U	5	U	5.0	U	10.0	U	4.0	U	4.0	U	4.0	U	4.0	UJ
Iron	µg/L	NS	**50**	**J**	**20**	**J**	50	U	**110**		50	U	**80**		**260**	**J**	50	U	**118**		**378**		**300**		**94**		50	U	**64**	**J**
Lead	µg/L	15	10	U	**2**	**J**	10	U	10	U	10	U	10	U	**2**	**J**	2.5	U	2.5	U	5.0	U	10	U	10.0	U	10	U	2.5	UJ
Manganese	µg/L	NS	10	U	10	U	10	U	**6.0**	**J**	10	U	**3.0**	**J**	**20**		7.5	U	7.5	U	**10.4**	**J**	**11**		**5.1**	**J**	3.0	U	**2.7**	**J**
General Chemistry																														
Total Cyanide	mg/L	0.20	0.005	U	0.005	U	**0.002**	**J**	**0.004**	**J**	0.005	U	0.005	U	**0.0020**	**J**	0.0041	U	0.0011	U	0.0100	U	0.005	U	0.0050	U	0.005	U	0.005	U
Nitrate/Nitrite (as N)	mg/L	NS	**0.51**		**0.42**		**0.38**		**0.38**		**0.43**		**0.47**		**0.6**		**0.46**		**1.1**		**1.9**		**2.9**		**3.8**		**2.1**		**3.3**	
Chemical Oxygen Demand	mg/L	NS	**34**		20	U	20	U	**11**	**J**	**13**	**J**	20	U	20	U	10	U	15	U	20	U	10	U	10	U	10	U	10	U
Water Quality Parameters																														
pH	std units	NS	**5.56**		**6.16**		**6.51**		**6.44**		**6.3**		**6.46**		**4.83**		**6.43**		**6.21**		**6.40**		**8.11**		**6.35**		**5.86**		**6.42**	
Oxidation-Reducation Potential	mV	NS	**238**		**-255.1**		**106.4**		**195.9**		**219.6**		**145.4**		**235.6**		**181**		**218**		**134**		**-173.9**		**81.4**		**209.7**		**138.9**	
Turbidity	NTU	NS	**3.1**		**2.40**		**3.02**		**3.90**		**2.4**		**3.70**		**18.90**		**3.21**		**131**		**15**		**7.4**		**8.5**		**8.7**		**4.4**	

Notes:

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0.333 = Above monitoring criter

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Q = Qualifier

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µg/L = microgram per liter

mg/L = milligram per liter

Table 6-8
Devens Consolidation Landfill Historical Groundwater Data, LFM-03-07
Main Post, Former Fort Devens Army Installation, Massachusetts

LFM-99-07/ LFM-03-07 (5/22/06)	Units	Monitoring Criteria	Spring 2003	Q	Fall 2003	Q	Spring 2004	Q	Fall 2004	Q	Spring 2005	Q	Spring 2006	Q	Spring 2007	Q	Spring 2008	Q	Fall 2008	Q	Spring 2009	Q	Fall 2009	Q	Spring 2010	Q	Fall 2010	Q	Spring 2011	Q	Fall 2011	Q	Spring 2012	Q	Fall 2012	Q	Spring 2013	Q
Extractable Petroleum Hydrocarbons (EPH)																																						
Naphthalene	µg/L	140	1.0	U	5.4	U	2.4	U	2.1	U	10.0	U	0.2	BJ	0.46	U	0.417	U	0.426	U	10	U	NA		0.412	U	0.400	U	0.400	U	0.400	U	0.400	U	Not sampled		0.400	U
Pesticides																																						
Aldrin	µg/L	0.50	0.0064	U	0.0067	U	0.0067	U	0.0070	U	0.05	UJ	0.05	U	0.020	U	0.024	UJ	0.021	U	0.023	U	NA		0.021	U	0.020	U	0.020	U	0.020	U	0.020	U	Not sampled		0.020	U
Dieldrin	µg/L	0.10	0.013	U	0.0013	U	0.015	U	0.014	U	0.1	U	0.05	U	0.040	U	0.048	UJ	0.043	U	0.046	U	NA		0.042	U	0.040	U	0.040	U	0.040	U	0.040	U			0.040	U
alpha-Chlordane	µg/L	2.0	0.0064	U	0.0067	U	0.0067	U	0.0070	U	0.05	U	0.05	U	0.020	U	0.024	UJ	0.021	U	0.023	U	NA		0.021	U	0.020	U	0.020	U	0.020	U	0.020	U			0.020	U
gamma-Chlordane	µg/L	2.0	0.0064	U	**0.0053**	**J**	0.0067	U	0.0070	U	0.05	U	0.05	U	0.020	U	0.024	UJ	0.021	U	0.023	U	NA		0.021	U	0.020	U	0.020	U	0.020	U	0.020	U			0.020	U
Chlordane	µg/L	2.0	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA				NA	
gamma-BHC (Lindane)	µg/L	0.20	0.0064	U	0.0067	U	0.0067	U	0.0070	U	0.05	U	0.05	U	0.020	U	0.024	UJ	0.021	U	0.023	U	NA		0.021	U	0.020	U	0.020	U	0.020	U	0.020	U			0.020	U
Metals (Total)																																						
Arsenic	µg/L	10	**7.9**		***29.0***	***J***	5.0	U	**1.7**	**J**	4.2	U	2.5	U	**2.3**	**J**	5.0	U	5.0	U	5.0	U	NA		**3.3**	**J**	**2.5**	**J**	5	U	**4.0**	**J**	5	U	Not sampled		5	U
Chromium	µg/L	100	10	U	**35.0**		**8.10**	**J**	**5.38**	**J**	**7.4**	**J**	10.0	U	10.0	U	10	U	10	U	**2**	**J**	NA		**4.0**	**J**	**2.0**		10	U	10	U	10	U			10	U
Iron	µg/L	NS	NA		**17000**	**J**	**620**		25	U	**630.0**		50.0	U	50.0	U	50	U	50	U	50	U	NA		**230**		**730**		**20**	**J**	50	U	50	U			50	U
Lead	µg/L	15	13.0	U	***17.0***	***J***	5.0	U	5.0	U	2.9	U	2.5	U	10.0	U	10	U	10	U	**1.9**	**J**	NA		10	U	10	U	10	U	**3.0**	**J**	10	U			10	U
Manganese	µg/L	NS	NA		**200.0**	**J**	**14.0**	**J**	**10.0**	**J**	**22.8**		**0.7**	**J**	**0.7**	**J**	10	U	10	U	10	U	NA		**4.4**	**J**	**10**		10	U	10	U	10	U			10	U
Zinc	µg/L	5,000	NA		**42.0**		**6.2**	**J**	**5.95**	**J**	1.6	U	1.7	U	1.7	U	NA		NA		NA		NA		NA		NA		NA		NA		NA				NA	
General Chemistry																																						
Total Cyanide	mg/L	0.20	0.01	U	**0.004**	**J**	0.01	U	0.010	B	0.01	U	0.05	U	0.01	UJ	0.005	U	0.005	U	0.005	U	NA		**0.0001**	**J**	0.005	U	0.005	U	0.005	U	0.005	U	Not sampled		0.005	U
Nitrate/Nitrite (as N)	mg/L	NS	**1.30**		**2.0**		**0.90**		**1.80**		**1.20**	**J**	**1.47**		**0.9**		**1.30**	**J**	**0.9**		**1.00**		NA		**1.10**		**0.98**		**0.96**		**0.93**		**1.0**				**0.87**	
Chemical Oxygen Demand	mg/L	NS	**86**		**26.0**	**J**	**18**	**J**	50.0	U	31.0	U	10.0	U	18.0	UJ	12	J	20	U	20	U	NA		**9.2**	**J**	20	U	20	U	26	U	20	U			**18**	**J**
Water Quality Parameters																																						
pH	std units	NS	**6.00**		**6.27**		**5.54**		**6.15**		**6.15**		**6.22**		**6.06**		**8.14**		**5.95**		**5.96**		NA		**6.37**		**6.38**		**5.84**		**6.14**		**6.52**		Not sampled		**5.76**	
Oxidation-Reducation Potential	mV	NS	NA		**365.5**		**345.3**		**279.0**		**237.5**		**230.3**		**169.0**		**130.0**		**146.0**		**125.1**		NA		**-249.8**		**109.0**		**372.9**		**121.5**		**105.6**				**284.3**	
Turbidity	NTU	NS	NA		**10.90**		**3.52**		**11.70**		**0.25**		**0.49**		**0.50**		**2.00**		**3.4**		**3.2**		NA		**2.0**		**13.90**		**0.59**		**0.46**		**0.00**				**0.25**	

Notes:

0.333	= Detection
0.333	= Above monitoring criteria

J = Estimated result
NA = Not analyzed
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Q = Qualifier
U = Non-detect
UJ = Estimated non-detect
µg/L = microgram per liter
mg/L = milligram per liter

Table 6-8
Devens Consolidation Landfill Historical Groundwater Data, LFM-03-07
Main Post, Former Fort Devens Army Installation, Massachusetts

LFM-99-07/ LFM-03-07 (5/22/06)	Units	Monitoring Criteria	Fall 2013	Q	Spring 2014	Q	Fall 2014	Q	Spring 2015	Q	Fall 2015	Q	Spring 2016	Q	Fall 2016	Q	Spring 2017	Q	Fall 2017	Q
Extractable Petroleum Hydrocarbons (EPH)																				
Naphthalene	µg/L	140	Not sampled		0.400	U	Not sampled		5.10	U	Not sampled		Not sampled		Not sampled		1.9	U	1.9	U
Pesticides																				
Aldrin	µg/L	0.50	Not sampled		0.020	U	Not sampled		0.026	U	Not sampled		Not sampled		Not sampled		0.017	U	0.017	U
Dieldrin	µg/L	0.10			0.040	U			0.026	U							0.0096	U	0.0096	U
alpha-Chlordane	µg/L	2.0			0.020	U			NA								NA		NA	
gamma-Chlordane	µg/L	2.0			0.020	U			NA								NA		NA	
Chlordane	µg/L	2.0			NA				0.130	U							0.29	U	0.29	U
gamma-BHC (Lindane)	µg/L	0.20			0.020	U			0.026	U							0.0096	U	0.0096	U
Metals (Total)																				
Arsenic	µg/L	10	Not sampled		3	U	Not sampled		**2.7**	**J**	Not sampled		Not sampled		Not sampled		3.0	U	3.0	U
Chromium	µg/L	100			10	U			5.0	U							4.0	U	4.0	U
Iron	µg/L	NS			**20**	**J**			50	U							**1,900**		75	U
Lead	µg/L	15			10	U			2.5	U							10	U	2.5	U
Manganese	µg/L	NS			10	U			7.5	U							**110**		**2.3**	J
Zinc	µg/L	5,000			NA				10	U							NA		NA	
General Chemistry																				
Total Cyanide	mg/L	0.20	Not sampled		**0.0001**	**J**	Not sampled		**0.0018**	**J**	Not sampled		Not sampled		Not sampled		**0.0033**	**J**	0.005	U
Nitrate/Nitrite (as N)	mg/L	NS			**0.99**				**0.930**								**1.7**		**2.7**	
Chemical Oxygen Demand	mg/L	NS			**11**				15	U							**7.5**	**J**	**6.2**	**J**
Water Quality Parameters																				
pH	std units	NS	Not sampled		**6.27**		Not sampled		**6.16**		Not sampled		Not sampled		Not sampled		**6.04**		**6.17**	
Oxidation-Reducation Potential	mV	NS			**198.7**				**135.5**								**57.9**		**115.0**	
Turbidity	NTU	NS			**0.80**				**0.94**								**4.88**		**3.80**	

Notes:

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APPENDIX A
GROUNDWATER FIELD ANALYSIS FORMS AND PHOTOLOGS

A.1

Spring 2017 LTM Event



AOC 57

KGS

Groundwater Water Level Measurement Sheet

Project/Site Name: Fort Devens/AOC57 **Date :** 6/19/17

Field Team Member: WBA **Weather:** clear

Water Level Meter Model: Solinst DT= Dedicated Tubing / DP= Dedicated Pump

Area	Well ID	Time	DTW (ft bTOC)	DTB (ft bTOC)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition
Area 2	57M-03-01X	1321	14.06	20.83	N	Y	Y	2" DT
Area 2	57M-03-02X	1334	4.78	13.37	N	Y	Y	2" DT
Area 2	57M-03-03X	1300	9.69	11.15	N	Y	Y	2" DT
Area 2	57M-03-04X	1229	2.15	12.28	N	Y	Y	2" DT
Area 2	57M-03-05X	1240	2.64	12.06	N	Y	Y	2" DT
Area 2	57M-03-06X	1250	2.64	13.92	N	Y	Y	2" DT
Area 2	57M-95-05X	1205	9.38	22.38	N	Y	Y	4"
Area 2	57M-95-06X	1324	11.72	24.33	N	Y	Y	4"
Area 2	57M-95-07X	1216	2.54	13.91	N	Y	Y	4"
Area 2	57WP-05-01	unable to locate due to vegetation						
Area 2	57WP-06-02	1257	0.87	24.37	N	Y	Y	1.5" Steel
Area 3	57M-96-10X	1358	Dry	7.09	N	Y	Y	2"
Area 3	57M-96-12X	1415	4.94	14.92	N	Y	Y	2"
Area 3	57M-96-13X	1423	4.82	14.82	N	Y	Y	2"
Area 3	57P-98-03X	unable to locate						
Area 3	57P-98-04X	1431	3.62	6.62	N/A	N/A	N	1" stickup
Area 3	57WP-06-03	1405	0.58	16.22	N/A	N/A	Y	1.5" steel
Area 3	57M-96-11X	1402	2.93	14.48	Y	Y	Y	2" DT
Area 3	57M-95-03X	1354	10.84	19.09	Y	Y	Y	4" DT
Area 3	57M-SW-1	N/A	N/A	N/A	N/A	N/A	N/A	Surface water sample

☆ Update 6/26 ☆ 57P-98-03X located 1" pvc, no cap

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 57M-95-03X

Project: AOC 57 Date: 6/26/17

Location: Fort Devens Massachusetts Sampler: LLA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)			

Well Information

Diameter	4"
Material	PVC
Depth to water (ft-bgs)	10.84
Depth to bottom (ft bgs)	19.09
Screen Interval (ft-bgs)	9.49-19.49
Total volume purged (gal)	3.0

Sampling Type

Purging Method peristaltic Tubing type poly w/ teflon Dedicated pump (Y/N) Tubing

Purge start/stop time 835 Tubing diameter 1/4" Air source MP

Field Instrument (Model/S/N) YSI 556 MPS 07G100122

LaMotte 2020WE A02735

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
835	200	11.12	9.21	6.29	168	3.15	113.9	8.23	clear
840	↓	11.12	9.21	6.31	153	2.63	97.6	5.97	↓
845		11.12	9.10	6.71	127	1.76	66.6	4.97	
850		11.12	9.09	6.82	124	1.57	41.6	4.88	
855		11.12	9.03	6.83	130	1.35	31.2	4.87	
900		11.12	9.07	6.83	131	1.27	28.7	4.86	
905	↓	11.12	9.09	6.83	132	1.24	26.7	4.84	↓

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot Per EPA Region 1 Low Flow SOP V3, 1/19/10

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): N MS/MSD (Y/N): Y

Filter Size: .45 Dup ID/Time: N/A

Sample Collection Time: 910 57M-95-03X-SPR17 @910

Comments: 57M-95-03X-MS-SPR17

57M-95-03X-MSD-SPR17

LLA

Signature

6/26/17

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 57M-96-11X

Project: A0C57 Date: 6/26/17

Location: Fort Devens Massachusetts Sampler: KGS

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft-bgs)	2.93
Depth to bottom (ft bgs)	14.48
Screen Interval (ft-bgs)	4.2 - 14.2
Total volume purged (gal)	3.0

Sampling Type

Purging Method geotech Tubing type poly w/teflon Dedicated pump (Y/N) Tubing

Purge start/stop time 940 Tubing diameter 1/4" Air source N/A

Field Instrument (Model/S/N) YSI 556 MPS 07610 0122

LaMotte 2020WE A02735

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
940	200	4.38	10.09	6.95	366	1.65	-23.7	17.7	Clear
945	↓	4.37	10.07	7.01	361	1.41	-30.7	12.3	↓
950	↓	4.43	10.07	7.00	359	1.21	-34.6	11.2	↓
955	↓	4.43	10.19	7.03	355	1.13	-35.7	10.4	↓
1000	↓	4.43	10.16	7.01	354	1.07	-38.0	9.79	↓
1005	↓	4.43	10.14	7.00	353	1.06	-38.3	9.67	↓
1010	↓	4.43	10.13	7.00	352	1.05	-38.7	9.66	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot Per EPA Region 1 Low Flow SOP V3, 1/19/10

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): Y MS/MSD (Y/N): N

Filter Size: .45 Dup ID/Time: 57M-DUP-L-SPR17 @1020

Sample Collection Time: 1015

57M-96-11X-SPR17 @ 1015

Comments:

[signature] 6/26/17

Signature Date

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devins
Calibrated By: [illegible]

Instrument: LaMotte 2020we
Serial Number: A02735

Date	Pre-Cal 0 NTU AM	~~Pre-Cal~~ 0 NTU AM (Postcal)	~~Post-Cal~~ 10 NTU AM (Precal)	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	~~Pre-Cal~~ 0 NTU PM (Postcal)	~~Post-Cal~~ 10 NTU PM (Precal)	Post-Cal 10 NTU PM
6/21/17	0.09	0.00	10.19	10.00	0.03	0.00	9.97	10.00
6/22/17	0.03	0.00	10.13	10.00	0.04	0.00	9.99	10.00
6/26/17	0.07	0.00	10.06	10.00	0.02	0.00	10.03	10.00
6/28/17	0.02	0.00	10.09	10.00	0.03	0.00	10.06	10.00

Signature: [signature]

Date: 6/28/17

KGS

Field Instrument Calibration Log

Date: 6/26/17 **Weather:** 80's

Project/Site Name: Devons **Instrument:** YSI 556 MPS

Calibrated By: MA **Serial Number:** 07b100122

Parameters	Solution Expiration Date	Morning Calibration Time 710		Cal. Temperature °C	Afternoon Calibration Time 1500		Cal. Temperature °C
Specific Conductivity (1.413 µS/cm°)	12/31/18	1.379	1.413	16.89	1.369		17.03
pH (7)	12/31/18	6.98	7.00		7.03		
pH (4)	12/31/18	3.96	4.00		4.09		
pH (10)	12/31/18	9.86	10.00		10.12		
ORP (240 mv)	5/24/18	237.2	240.0		238.6		
Dissolved Oxygen (%)	N/A	96.4%	100.0%		103.1%		
Dissolved Oxygen (mg/L)	-						
Barometric Pressure (mmHg)	-						

Notes:

Signature: [signature] **Date:** 6/26/17

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AOC 57 Synoptic Photolog Spring 2017

EVENT DATE: 06/19/2017

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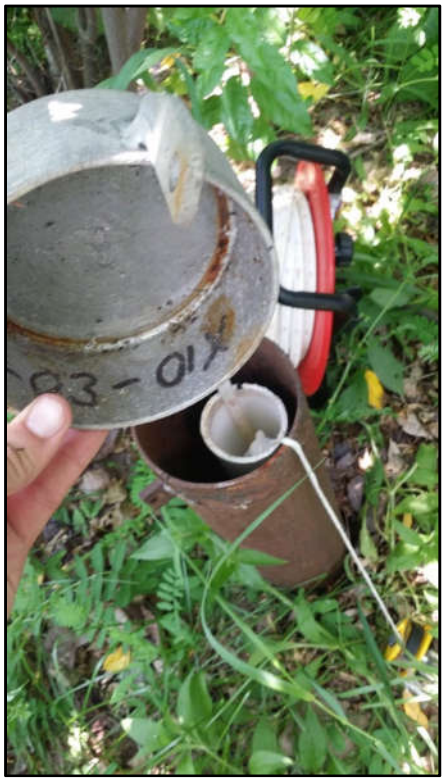


57M-03-01X



57M-03-03X



57M-03-02X



57M-03-04X



57M-03-05X



57M-95-02X



57M-03-06X



57M-95-05X



57M-95-06X



57M-95-03X



57WP-06-02



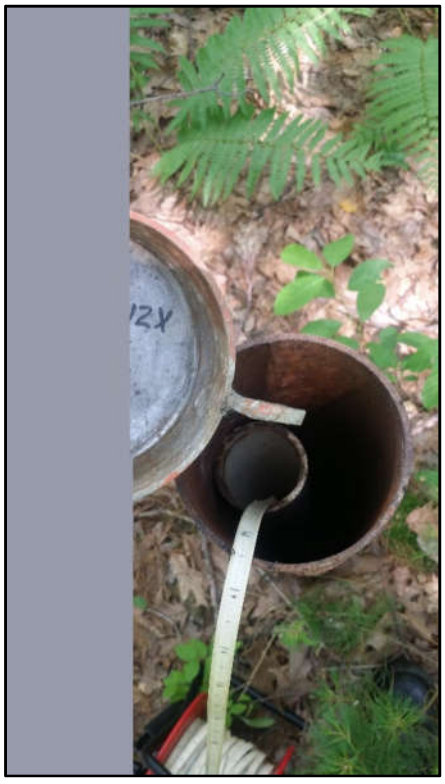
57M-96-10X



57M-96-11X



57M-96-13X



57M-96-12X



57P-98-04X



57WP-06-03

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AOC 32/43A

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Project/Site Name: Fort Devens/AOC32/43A **Date :** 7/7/17

Field Team Member: MH **Weather:** light rain

Water Level Meter Model: Micro Mero Dipper DT = Dedicated Tubing DP = Dedicated Pump

Well ID	Time	DTW (ft bTOC)	DTB (ft bTOC)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition
32M-92-01X	1014	17.12	25.81	✓	✓	✓	4" DT
32M-92-03X	1008	1907	35.23	ADD	✓	✓	4"
32Z-99-02X (32M-92-02X)	1055	23.72	30.21	ADD	✓	ADD	1" DT
32Z-01-05XOB	825	19.14	35.21	✓	✓	✓	2" (1/2) Bolts (Broken)
32Z-01-06XBR	1023	17.47	28.42	ADD	✓	✓	2" DT
32Z-01-07XOB	1019	17.54	24.83	ADD	✓	✓	DT, 2"
32Z-01-08XOB	1011	17.77	24.22	✓	✓	✓	2" DT
32Z-01-09XOB	831	25.16	32.89	✓	✓	✓	2" DT
32Z-01-10XBR	1003	17.68	21.96	✓	✓	✓	2"
32Z-01-11XBR	927	Dry	16.87	✓	✓	✓	2"
32Z-01-12XBR	919	19.83	36.59	✓	✓	✓	2"
SHL-15	1015	17.28	25.47	ADD	✓	✓	DT, 4"
SHL-25	1033	25.44	35.91	✓	✓	✓	4", DT
32M-01-14XBR	1026	21.78	~~35.89~~	✓	✓	✓	2", DP
32M-01-15XBR	934	1986	44.00	✓	✓	✓	2"
32M-01-16XBR	958	21.28	27.77	✓	✓	✓	2" DT
32M-01-13XBR	943	17.72	22.86	✓	✓	✓	2" DP
32M-01-14XOB	1029	23.84	29.83	✓	✓	✓	2", DP
32M-01-17XBR	933	24.09	53.96	✓	✓	✓	2" DP
32M-01-18XBR	938	1627	23.53	✓	✓	✓	2"
43M-01-16XOB	913	23.86	33.67	✓	✓	✓	
43M-01-16XBR	909	23.76	27.77	✓	✓	✓	2" DT
43M-01-17XOB	853	25.38	31.18	✓	✓	✓	2" ~~(1/2) Bolts (broken)~~
43M-01-17XBR	852	25.53	53.96	✓	✓	✓	~~DP~~ 2"
43M-01-20XOB	846	2524	33.09	✓	✓	✓	2"
43M-01-20XBR	843	25.07	70.12	✓	✓	✓	2" (1/2) Bolts (Broken)

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-13XBR

Project: AOC 32 Date: 6/26/17

Location: Fort Devens Massachusetts Sampler: MM

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft-bgs)	15.16
Depth to bottom (ft bgs)	22.78
Screen Interval (ft-bgs)	13.25–23.25
Total volume purged (gal)	2.0

Sampling Type

Purging Method geotech Tubing type poly w/teflon Dedicated pump (Y/N) Y (Pump failure)

Purge start/stop time 1235 Tubing diameter 1/4" Air source N/A

Field Instrument (Model/S/N) YSI 556 MPS 07b1 00122

Lamotte 2020we A02735

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1235	75	17.64	14.58	7.04	1635	2.66	64.0	15.1	clear
1240		17.91	15.09	7.01	1680	3.97	73.1	12.1	
1245		18.15	15.43	7.00	1678	4.26	75.9	12.1	
1250		18.41	15.34	7.00	1661	4.79	87.1	9.69	
1255		18.61	15.20	6.96	1659	4.88	91.1	9.71	
1300	↓	18.99	15.31	6.97	1658	4.87	92.6	9.78	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot Per EPA Region 1 Low Flow SOP V3, 1/19/10

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 1.45 Dup ID/Time: N/A

Sample Collection Time: 1305 32M-01-13XBR-SPR17 @ 1305

Comments:

M. E

Signature

6/26/17

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-18XBR

Project: AOC 37 Date: 6/26/17

Location: Fort Devens Massachusetts Sampler: WH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft-bgs)	15.37
Depth to bottom (ft bgs)	23.58
Screen Interval (ft-bgs)	13.74-23.74
Total volume purged (gal)	3.0

Sampling Type

Purging Method geotech ~~Bladder pump~~ Tubing type poly w/ teflon Dedicated pump (Y/N) N

Purge start/stop time 1340 Tubing diameter 1/4" Air source N/A

Field Instrument (Model/S/N) YSI 556 MPS 07G100122

LaMotte 2020WE A02735

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1340	100	16.64	13.92	7.28	667	6.35	122.4	15.4	Clear
1345	↓	16.73	14.79	7.09	839	5.68	128.7	12.7	↓
1350		16.79	14.81	7.08	846	5.52	132.7	12.1	
1355		16.84	14.79	7.07	847	5.49	133.3	12.0	
1400	↓	16.93	14.87	7.06	850	5.42	134.4	11.9	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot Per EPA Region 1 Low Flow SOP V3, 1/19/10

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): Y MS/MSD (Y/N): N

Filter Size: .45 Dup ID/Time: 32M-DUP-1-SPR17 @ 1410

Sample Collection Time: 1405 32M-01-18XBR-SPR17 @ 1405

Comments:

Signature

6/26/17

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-14XOB

Project: AOC 32 Date: 6/28/17

Location: Fort Devens Massachusetts Sampler: VMA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft-bgs)	23.47
Depth to bottom (ft bgs)	29.78
Screen Interval (ft-bgs)	19.52-29.52
Total volume purged (gal)	3.0

Sampling Type

Purging Method: Bladder pump Tubing type: poly w/teflon Dedicated pump (Y/N): Pump

Purge start/stop time: ~~1000~~ 1020 Tubing diameter: 1/4"x1/4" Air source: Nitrogen

Field Instrument (Model/S/N): YSI 556 MPS 07B100122 LaMotte 2020WE A02735

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1020	160	24.28	11.48	6.60	360	2.06	127.9	19.7	Clear
1025	1	24.59	11.71	6.67	366	2.13	96.7	14.1	1
1030		24.83	11.60	6.69	375	1.83	72.1	13.7	
1035		25.09	11.65	6.71	377	1.59	54.3	11.6	
1040		25.21	11.63	6.72	379	1.52	52.6	11.4	
1045	↓	25.59	11.71	6.73	381	1.47	51.3	11.2	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot — Per EPA Region 1 Low Flow SOP V3, 1/19/10

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: .45 Dup ID/Time: N/A

Sample Collection Time: 1050 32M-01-14XOB-SB17 @ 1050

Comments:

Signature

6/28/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-17X

Project: AOC 32 Date: 6/28/17

Location: Fort Devens Massachusetts Sampler: MK

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft-bgs)	23.64
Depth to bottom (ft bgs)	53.94
Screen Interval (ft-bgs)	~~[illegible]~~ 43.79 - 53.79 ft BTOC
Total volume purged (gal)	3.0

Sampling Type

Purging Method: Bladder pump Tubing type: poly w/teflon Dedicated pump (Y/N): Y

Purge start/stop time: 1205 Tubing diameter: 1/4" x 1/4" Air source: Nitrogen

Field Instrument (Model/S/N): YSI 556 MPS 07B1 00122

LaMotte 2020WE A02735

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1205	300	24.13	12.49	7.13	730	2.35	81.1	18.7	clear
1210	↓	24.13	12.33	7.18	731	2.09	79.7	12.3	↓
1215		24.13	12.28	7.17	731	1.97	76.8	11.3	
1220		24.13	12.31	7.17	732	1.94	75.5	11.1	
1225	↓	24.13	12.34	7.16	733	1.93	75.1	11.4	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot Per EPA Region 1 Low Flow SOP V3, 1/19/10

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): N MS/MSD (Y/N): Y

Filter Size: .45 Dup ID/Time: N/A

Sample Collection Time: 1230 32M-01-17X-SPR17 @ 1230

Comments: 32M-01-17X-MS-SPR17

32M-01-17X-MSD-SPR17

MK

Signature

6/28/17

Date

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devins
Calibrated By: [illegible]

Instrument: LaMotte 2020we
Serial Number: A02735

Date	Pre-Cal 0 NTU AM	~~Pre-Cal~~ 0 NTU AM (Postcal)	~~Post-Cal~~ 10 NTU AM (Precal)	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	~~Pre-Cal~~ 0 NTU PM (Postcal)	~~Post-Cal~~ 10 NTU PM (Precal)	Post-Cal 10 NTU PM
6/21/17	0.09	0.00	10.19	10.00	0.03	0.00	9.97	10.00
6/22/17	0.03	0.00	10.13	10.00	0.04	0.00	9.99	10.00
6/26/17	0.07	0.00	10.06	10.00	0.02	0.00	10.03	10.00
6/28/17	0.02	0.00	10.09	10.00	0.03	0.00	10.06	10.00

Signature: [signature]

Date: 6/28/17

KGS

Field Instrument Calibration Log

Date: 6/26/17 **Weather:** 80's

Project/Site Name: Devons **Instrument:** YSI 556 MPS

Calibrated By: MA **Serial Number:** 07b100122

Parameters	Solution Expiration Date	Morning Calibration Time 710		Cal. Temperature °C	Afternoon Calibration Time 1500		Cal. Temperature °C
Specific Conductivity (1.413 µS/cm°)	12/31/18	1.379	1.413	16.89	1.369		17.03
pH (7)	12/31/18	6.98	7.00		7.03		
pH (4)	12/31/18	3.96	4.00		4.09		
pH (10)	12/31/18	9.86	10.00		10.12		
ORP (240 mv)	5/24/18	237.2	240.0		238.6		
Dissolved Oxygen (%)	N/A	96.4%	100.0%		103.1%		
Dissolved Oxygen (mg/L)	-						
Barometric Pressure (mmHg)	-						

Notes:

Signature: [signature] **Date:** 6/26/17

KGS

Field Instrument Calibration Log

Date: 6/28/17 **Weather:** 80's

Project/Site Name: Devers **Instrument:** YSI 556 MPS

Calibrated By: KKA **Serial Number:** 07b100122

Parameters	Solution Expiration Date	Morning Calibration Time 945		Cal. Temperature °C	Afternoon Calibration Time 1245		Cal. Temperature °C
Specific Conductivity (1.413 µS/cm[c])	12/31/18	1.396	1.413	17.07	1.420		17.47
pH (7)	12/31/18	6.87	7.00		7.03		
pH (4)	12/31/18	4.03	4.00		4.06		
pH (10)	12/31/18	9.96	10.01		10.07		
ORP (240 mv)	5/24/18	237.2	240.0		236.1		
Dissolved Oxygen (%)	N/A	106.9%	100.1%		101.3%		
Dissolved Oxygen (mg/L)	—						
Barometric Pressure (mmHg)	—						

Notes:

Signature: [signature] **Date:** 6/28/17

AOC 32 Synoptic Photolog Spring 2017

EVENT DATE: 06/19/2017

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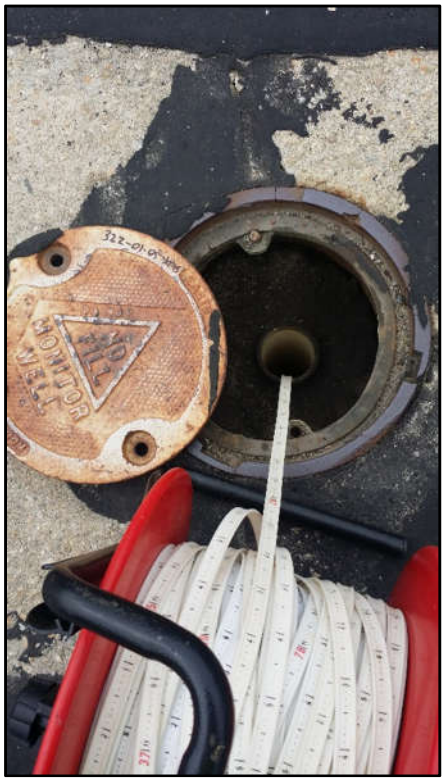
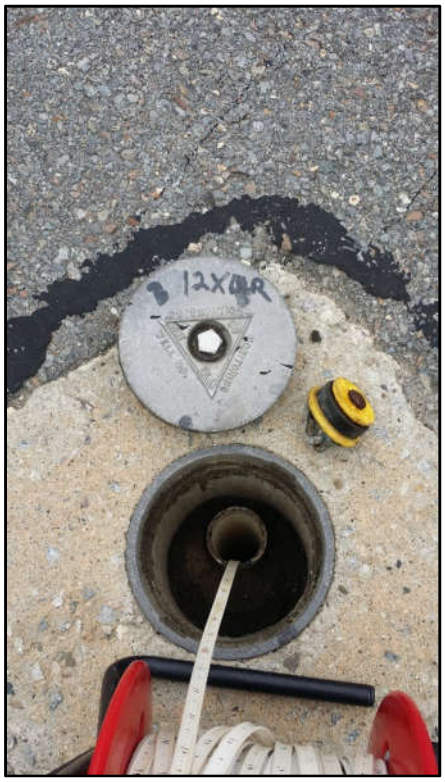


32Z-01-05XOB



32M-01-14XOB



32Z-01-12XBR



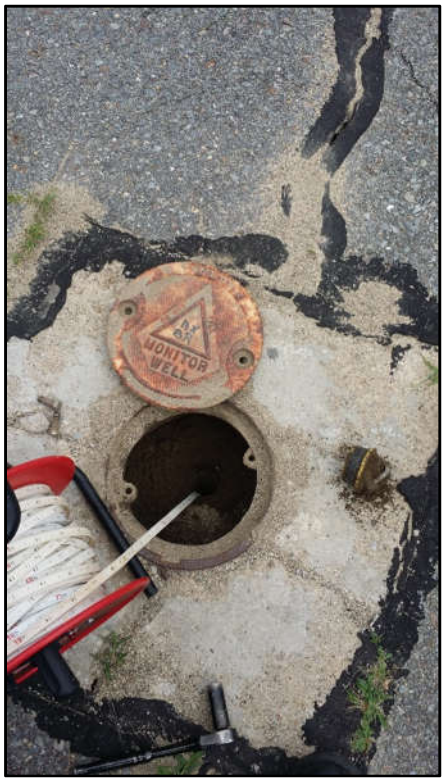
32M-01-18XBR



32Z-01-10XBR



32Z-01-09XOB



32Z-01-11XBR



32Z-01-07X



32M-92-03X



32M-01-13XBR



32Z-01-06X



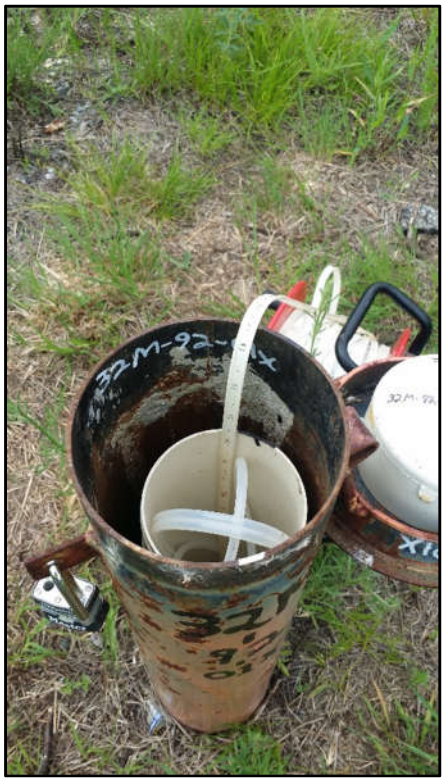
32Z-01-08XOB



32M-01-14XBR



SHL-25



32M-92-01X



32Z-99-02X



32M-01-16XBR



SHL-15



32M-01-17XBR



32M-01-15XBR

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KGS
DCL

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Project/Site Name: Fort Devens/DCL **Date :** 6/21/17

Field Team Member: MA **Weather:** clear

Water Level Meter Model: 200' solinst

DT= Dedicated tubing

Well ID	Time	DTW (ft bTOC)	DTB (ft bTOC)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Notes:
LFM-99-01B	822	25.11	34.43	N	Y	Y	2"	sample if DTW <6.5 ft-bgs
LFM-99-02B	831	17.47	26.37	Y	Y	Y	2", DT	
LFM-99-03B	815	39.77	50.37	N	Y	Y	2"	sample if DTW <7.9 ft-bgs
LFM-99-05A	755	21.12	30.57	✓	✓	✓	2"	
LFM-99-05B	759	18.33	58.41	✓	✓	✓	2"	sample if DTW <2.4 ft-bgs
LFM-99-06ARR	903	14.40	34.76	✓	✓	✓	2", DT	
LFM-03-07	Covered	/ destroyed						likely inaccessible

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

KGS

Well Identification: LFM-06ARP

Project: Devens DCL
Location: Fort Devens Massachusetts
Date: 6/21/17
Sampler: [illegible]

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft-bgs)	14.40
Depth to bottom (ft bgs)	34.76
Screen Interval (ft-bgs)	~~10.09-19.39~~ ~~17.5-32.5~~ 20.2-35.2 ft BTOC
Total volume purged (gal)	4.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 920
Tubing type: Poly w/teflon
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: N/A
Field Instrument (Model/S/N): YSI 556 MPS 07610 0122
Lamotte 2020VE A02735

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
920	200	14.77	12.09	6.22	1172	8.65	200.6	21.2	Clear
925	↓	14.77	12.03	6.24	1171	7.91	193.4	19.7	↓
930	↓	14.77	12.01	6.27	1170	7.75	181.4	18.7	↓
935	↓	14.77	11.90	6.14	1168	7.69	179.4	13.9	↓
940	↓	14.77	11.87	6.12	1163	7.61	176.1	13.4	↓
945	↓	14.77	11.86	6.11	1160	7.58	174.2	13.1	↓
950	↓	14.77	11.84	6.10	1158	7.57	172.3	13.0	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Per EPA Region 1 Low Flow SOP V3, 1/19/10

Sampling Details

Field Filtered (Y/N): N
Duplicate (Y/N): N
MS/MSD (Y/N): Y
Filter Size: N/A
Dup ID/Time: N/A
Sample Collection Time: 955

LFM-06ARP-SPR17

Comments:

[signature]
Signature

6/21/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: LFM-99-02B

Project: DCL
Location: Fort Devens Massachusetts

Date: 6/22/17
Sampler: NH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft-bgs)	17.47
Depth to bottom (ft bgs)	26.37
Screen Interval (ft-bgs)	16.53-25.83
Total volume purged (gal)	4.0

Sampling Type

Purging Method ~~geotech~~ peristaltic
Purge start/stop time 1125

Tubing type poly w/teflon
Tubing diameter 1/4"

Dedicated pump (Y/N) Tubing
Air source N/A
Field Instrument (Model/S/N) YSI 556 MPS 07B100052
LaMotte 2020WE A02735

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1135	200	17.62	10.75	6.55	856	9.93	181.9	8.82	Clear
1140	↓	17.62	10.67	6.55	853	9.57	179.7	7.99	↓
1145		17.62	10.61	6.56	848	9.43	175.1	7.63	
1150		17.62	10.53	6.55	846	9.41	173.4	7.59	
1155	↓	17.62	10.52	6.55	844	9.39	172.6	7.57	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Per EPA Region 1 Low Flow SOP V3, 1/19/10

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Sample Collection Time: 1200

Duplicate (Y/N): N
Dup ID/Time: N/A

MS/MSD (Y/N): N

Comments: LFM-99-02B-SR17 @1200

NH
Signature

6/22/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: LFM-99-05A

Project: DEA
Location: Fort Devens Massachusetts

Date: 6/22/17
Sampler: MA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present	✓		✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft-bgs)	21.12
Depth to bottom (ft bgs)	30.57
Screen Interval (ft-bgs)	20.68-29.78
Total volume purged (gal)	4.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 830
Tubing type: poly w/ teflon
Tubing diameter: 1/4"
Dedicated pump (Y/N): Y
Air source: N/A
Field Instrument (Model/S/N): YSI 556 MPS 07B100122
LaMotte 2020we A02235

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
830	200	21.17	10.21	5.48	574	6.55	240.6	10.41	clear
835	↓	21.17	10.03	5.57	545	6.42	230.1	9.78	↓
840		21.17	10.02	5.87	542	6.40	223.1	8.90	
845		21.17	10.03	5.89	541	6.39	214.1	8.77	
850		21.17	10.03	5.87	540	6.38	211.6	8.76	
855	↓	21.17	10.02	5.86	540	6.37	209.7	8.73	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Per EPA Region 1 Low Flow SOP V3, 1/19/10

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Sample Collection Time: 900

Duplicate (Y/N): Y
Dup ID/Time: LFM-DUP-1-SPR17 @ 905

MS/MSD (Y/N): N

Comments: LFM-99-05A-SPR17 @ 900

Signature

6/22/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: LFM-03-07

Project: Devens DCL
Location: Fort Devens Massachusetts
Date: 8/11/17
Sampler: WM

Well Integrity

	Yes	No	N/A
Casing Secure	✓		✓
Concrete Pad intact	✓		✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		✓
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft-bgs)	19.89
Depth to bottom (ft bgs)	23.27
Screen Interval (ft-bgs)	10.9-20.9
Total volume purged (gal)	1.5

To p of PVC
"
"

Sampling Type

Purging Method: geotech
Purge start/stop time: 855
Tubing type: poly
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: N/A
Field Instrument (Model/S/N): YSI 556 MPS 14A 101575
Lamotte 2020WE 02405b

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
855	150	20.08	15.02	6.92	1208	6.77	69.4	33.2	Clear
900	↓	↓	15.09	6.23	1197	5.56	61.7	13.7	↓
905			14.62	6.19	1190	5.48	59.0	7.57	
910			14.63	6.12	1190	5.73	58.8	5.06	
915			14.58	6.05	1189	5.78	58.7	4.93	
920			14.59	6.06	1183	5.76	58.6	4.87	
925	↓	↓	14.61	6.04	1181	5.74	57.9	4.88	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments LFM-03-07-SPR17 @ 930

Signature

8/11/17
Date

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devins
Calibrated By: [illegible]

Instrument: LaMotte 2020we
Serial Number: A02735

Date	Pre-Cal 0 NTU AM	~~Pre-Cal~~ 0 NTU AM (Postcal)	~~Post-Cal~~ 10 NTU AM (Precal)	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	~~Pre-Cal~~ 0 NTU PM (Postcal)	~~Post-Cal~~ 10 NTU PM (Precal)	Post-Cal 10 NTU PM
6/21/17	0.09	0.00	10.19	10.00	0.03	0.00	9.97	10.00
6/22/17	0.03	0.00	10.13	10.00	0.04	0.00	9.99	10.00
6/26/17	0.07	0.00	10.06	10.00	0.02	0.00	10.03	10.00
6/28/17	0.02	0.00	10.09	10.00	0.03	0.00	10.06	10.00

Signature: [signature]

Date: 6/28/17

KGS

Field Instrument Calibration Log

Date: 6/21/17 **Weather:** 80's

Project/Site Name: DCL - Devens **Instrument:** YSI 556 MPS

Calibrated By: KGA **Serial Number:** 07G100122

Parameters	Solution Expiration Date	Morning Calibration Time 900		Cal. Temperature °C	Afternoon Calibration Time N/A		Cal. Temperature °C
Specific Conductivity (1.413 µS/cm°)	12/31/18	1.397	1.413	17.94			
pH (7)	12/31/18	6.94	7.00				
pH (4)	12/31/18	4.03	4.00				
pH (10)	12/31/18	10.09	10.00				
ORP (240 mv)	5/24/18	239.6	240.0				
Dissolved Oxygen (%)	N/A	97.6%	100.1%				
Dissolved Oxygen (mg/L)	—	—	—				
Barometric Pressure (mmHg)	—	—	—				

Notes:

Signature: [signature] **Date:** 6/21/17

KGS

Field Instrument Calibration Log

Date: 6/22/17 **Weather:** 80's

Project/Site Name: Devins **Instrument:** YSI 556 MPS

Calibrated By: MA **Serial Number:** 07b100122

Parameters	Solution Expiration Date	Morning Calibration Time 725		Cal. Temperature °C	Afternoon Calibration Time 1245		Cal. Temperature °C
Specific Conductivity (1.413 µS/cm°)	12/31/18	1.420	1.413	17.14	1.417		17.37
pH (7)	12/31/18	7.04	7.00		7.02		
pH (4)	12/31/18	3.96	4.00		4.03		
pH (10)	12/31/18	10.01	10.00		9.96		
ORP (240 mv)	5/21/18	237.6	240.1		239.7		
Dissolved Oxygen (%)	N/A	102.3%	100.2%		101.2%		
Dissolved Oxygen (mg/L)	–	–					
Barometric Pressure (mmHg)	–	–					

Notes:

Signature: MA **Date:** 6/22/17

Turbidity Instrument Calibration Log

Project/Site Name: Perry's DCL
Calibrated By: MA

Instrument: LaMotte 2020 LE
Serial Number: 024056

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
8/1/17	0.00	0.00	9.78	10.00	0.01	0.00	10.01	10.00

Signature: [signature]

Date: 8/1/17

Instrument Calibration Log

Project/Site Name: Dems DCL **Date:** 8/1/17 **Weather:** 80's

Calibrated By: WA **Instrument:** YSI 556 MPS **Serial Number:** 14K101575

Parameters	Morning Calibration	Cal. Temperature °C	Afternoon Cal. Check	Comments
Conductivity (µS/cm^c)	1.413	20.73°	1.412	
pH (7)	7.00		7.01	
pH (4)	4.00		4.02	
pH (10)	10.03		10.00	
ORP (mv)	240.1		240.0	
Dissolved Oxygen (%)	99.7%		101.%	
Zero Dissolved Oxygen (mg/L)	—		—	
Barometric Pressure (mmHg)	—		—	

Signature: [signature] Date: 8/1/17

DCL Synoptic Photolog Spring 2017

EVENT DATE: 06/04/2017

KOMAN GOVERNMENT SOLUTIONS, LLC

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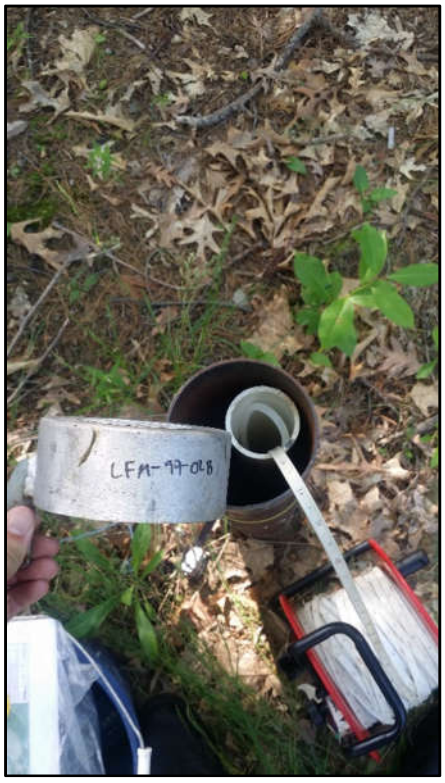
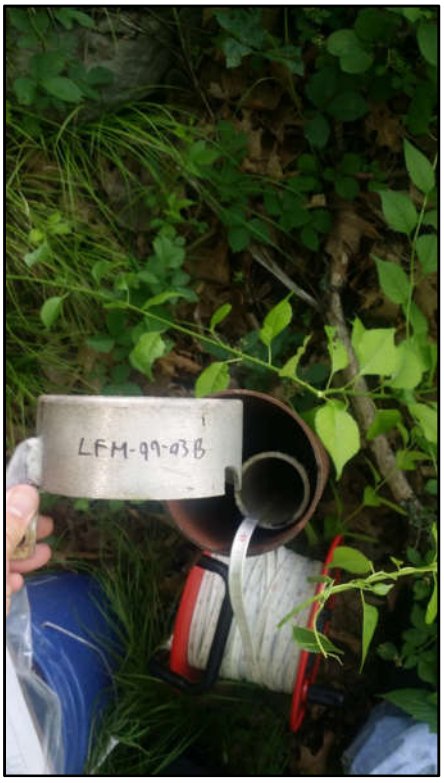


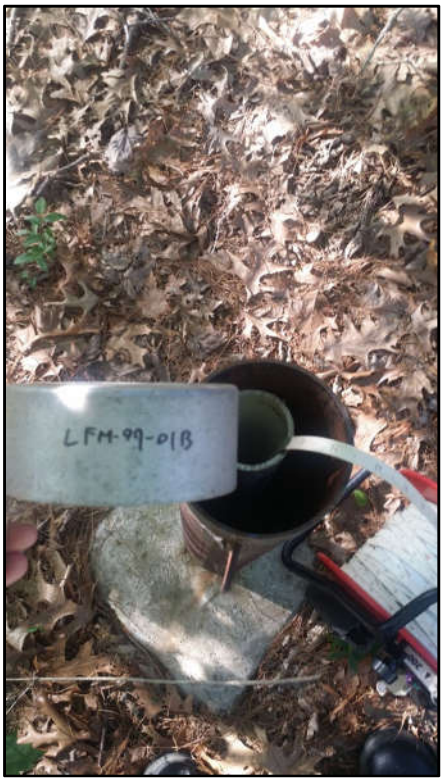
LFM-99-02B



LFM-99-03B



LFM-99-05B



LFM-99-01B



LFM-99-05A



LFM-99-06A-RP

A.2

Fall 2017 LTM Event



DCL

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Project/Site Name: Fort Devens/DCL Fall 2017 **Date :** 10/26/17

Field Team Member: IMA **Weather:** Heavy Rain

Water Level Meter Model: IP

Well ID	Time	DTW (ft bTOC)	DTB (ft bTOC)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Notes:	Spring 2017 DTW (ft bTOC)
LFM-99-01B	810	27.36	34.33	✓	N/A	✓	✓	sample if DTW <6.5 ft-bgs	25.11
LFM-99-02B	825	20.23	26.32	✓	N/A	✓	✓	Tubing	17.47
LFM-99-03B	835	44.02	50.72	✓	N/A	✓	✓	sample if DTW <7.9 ft-bgs	39.77
LFM-99-05A	905	25.32	30.48	✓	N/A	✓	✓	Tubing	21.12
LFM-99-05B	915	23.28	58.72	✓	N/A	✓	✓	sample if DTW <2.4 ft-bgs	18.33
LFM-99-06ARP	925	12.76	34.84	✓	N/A	✓	✓	Tubing	14.40
LFM-03-07	940	Dry	23.36	N/A	2/2	✓	✓	Tubing	20.08

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: LFM-99-06A-RP

Project: Devens DCL - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/26/17
Sampler: VM

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present			✓
Bolts present	✓		
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	17.76
Depth to bottom (ft BTOR)	34.84
Screen Interval (ft BTOR)	20.20 → 35.20
Total volume purged (gal)	5.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 1105 / 1135
Tubing type: poly
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: — N/A
Field Instrument (Model/S/N): YSI 650 MDS 02E0534AM / March 2100Q 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1105	200	17.86	12.22	6.87	1322	2.66	93.6	7.21	clear
1110	↓	↓	12.96	6.82	1320	2.73	99.7	6.21	↓
1115			12.97	6.80	1321	2.82	102.0	5.29	
1120			12.93	6.81	1323	2.83	103.7	5.07	
1125			12.98	6.83	1324	2.84	104.6	5.06	
1130	↓	↓	12.99	6.82	1327	2.86	105.9	5.03	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Dedicated Tubing (Y/N): Y

Comments LFM-99-06A-RP-Fall17 @ 1135 Fall 17

Signature

10/26/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: LFM-99-02B

Project: Devens DCL - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/26/17
Sampler: MH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present	✓		
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	20.23
Depth to bottom (ft BTOR)	26.32
Screen Interval (ft BTOR)	16.50 → 26.50
Total volume purged (gal)	3.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 1300/1330
Tubing type: poly
Tubing diameter: ¼"
Dedicated pump (Y/N): Tubing
Air source: N/A
Field Instrument (Model/S/N): YSI 650 MDS 02E0534AM / Mach 2 1008 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1300	200	20.17	11.31	6.82	1355	2.96	101.7	4.01	clear
1305	↓	↓	11.21	6.79	1359	2.99	106.9	2.97	↓
1310			11.19	6.74	1366	3.14	109.7	2.63	
1315			11.18	6.73	1367	3.16	109.9	2.61	
1320			11.17	6.72	1369	3.17	110.1	2.60	
1325	↓	↓	11.16	6.72	1371	3.18	111.1	2.59	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): Y

Dedicated Tubing (Y/N): Y

Comments LFM-99-02B Fall17 @ 1330 ★ MS/MSD ★

MH
Signature

10/26/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: LFM-97-05A

Project: Devens DCL - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/27/17
Sampler: MH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present	✓		
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	25.32
Depth to bottom (ft BTOR)	30.48
Screen Interval (ft BTOR)	20.70 → 30.20
Total volume purged (gal)	4.0

Sampling Type

Purging Method: Geotech
Purge start/stop time: 850 / 935
Tubing type: poly
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: —
Field Instrument (Model/S/N): YSI 609 MDS 02E0534AM / Mark 2/00Q 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
850	200	24.72	10.82	6.66	910	2.77	111.8	76.7	cloudy
855			10.84	6.51	911	2.49	121.8	57.2	cloudy
900			10.83	6.44	910	2.59	126.2	31.2	partly cloudy
905			10.82	6.44	910	2.63	128.7	15.1	
910			10.90	6.44	910	2.68	131.9	11.6	
915			10.84	6.42	911	2.76	133.7	4.51	
920			10.84	6.42	911	2.80	136.2	4.43	
925			10.86	6.42	911	2.83	137.6	4.40	
930	↓	↓	10.87	6.42	912	2.85	138.9	4.39	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): Y
Dup ID/Time: DUP-01-Fall17 @ 940 Full list
MS/MSD (Y/N): N

Dedicated Tubing (Y/N):

Comments LFM-97-05A-Fall17 @ 935 Full list

Signature

10/27/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: LFM-03-07

Project: Devens DCL - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 12/4/17
Sampler: VVK

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	20.73
Depth to bottom (ft BTOR)	23.21
Screen Interval (ft BTOR)	4.48-24.7
Total volume purged (gal)	3.10 gal

Sampling Type

Purging Method: peristaltic
Purge start/stop time: 1200 / 1225
Tubing type: Poly
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: N/A
Field Instrument (Model/S/N): YSI 556 MPS 17J100112 / Lamotte 20 Lowe 8249-4116

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1200	100	20.74	13.49	6.61	978	6.09	98.7	4.96	clear
1205	↓	↓	13.49	6.64	989	4.47	96.9	4.26	↓
1210			13.35	6.67	1001	4.21	94.1	3.76	
1215			13.41	6.66	1003	4.19	93.9	3.74	
1220	↓	↓	13.40	6.66	1009	4.13	93.7	3.72	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Dedicated Tubing (Y/N): Y

Comments LFM-03-07-Fall17 @ 1225 Full list

12/4/17
Signature / Date

KGS

Turbidity Instrument Calibration Log

Project/Site Name: DCL Fall 2017 Sampling
Calibrated By: MA

Instrument: Hach 2100Q
Serial Number: 18138

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
10/26/17	10.3 / 10.0	19.7 / 20.0	107 / 100	799 / 800	9.9 / 10.0	20.2 / 20.0	100 / 100	797 / 800
10/27/17	10.5 / 10.0	20.3 / 20.0	101 / 100	802 / 800	10.1 / 10.0	21.0 / 20.0	103 / 100	799 / 800

Signature: _____

Date: 10/27/17

KGS

Field Instrument Calibration Log

Date: 10/26/17 **Weather:** Heavy Rain

Project/Site Name: DCL Fall 2017 Sampling **Instrument:** YSI 650 MDS

Calibrated By: KA **Serial Number:** 02E0534AM

Parameters	Solution Expiration Date	Morning Calibration Time 745		Cal. Temperature °C	Afternoon Calibration Time 1605		Cal. Temperature °C
Specific Conductivity (1.413 µS/cm°)	5/18	1.430	1.413	15.87	1.410	1.413	16.24°
pH (7)	6/17	7.03	7.00		6.92	7.00	
pH (4)	2/19	3.96	4.00		3.90	4.00	
pH (10)	10/18	10.17	10.00		10.06	10.00	
ORP (240 mv)	1/22	246.1	240		239.7	240.0	
Dissolved Oxygen (%)	-						
Dissolved Oxygen (mg/L)	-						
Barometric Pressure (mmHg)	-						

Notes:

Signature: [signature] **Date:** 10/26/17

KGS

Field Instrument Calibration Log

Date: 10/27/17 **Weather:** 40's

Project/Site Name: DCL Fall 2017 Sampling **Instrument:** YSI 650 MDS

Calibrated By: MA **Serial Number:** 02E0534 AM

Parameters	Solution Expiration Date	Morning Calibration Time 715		Cal. Temperature °C	Afternoon Calibration Time 1300		Cal. Temperature °C
Specific Conductivity (1.413 µS/cm°)	5/18	1.407	1.413	14.97°	1.410	1.413	16.13°
pH (7)	6/17	6.79	7.00		7.11	7.00	
pH (4)	2/19	3.93	4.00		4.02	4.00	
pH (10)	10/18	9.89	10.00		9.97	10.00	
ORP (240 mv)	6/22	237.1	240.0		237.6	240.0	
Dissolved Oxygen (%)	-	106.2%	100.0%		102.1%	100.0%	
Dissolved Oxygen (mg/L)	-						
Barometric Pressure (mmHg)	-						

Notes:

Signature: **Date:** 10/27/17

Turbidity Instrument Calibration Log

Project/Site Name: D&L
Calibrated By: VW

Instrument: LaMotte 2020we
Serial Number: 0247-4116

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
12/4/17	0.03	0.00	10.02	10.00	0.01	0.00	9.99	10.00

Signature: VW

Date: 12/4/17

KGS

Field Instrument Calibration Log

Date: 12/4/17 **Weather:** 30's

Project/Site Name: DCL Fall 2017 Sampling **Instrument:** YSI 556 MPS

Calibrated By: [illegible] **Serial Number:** 15100112

Parameters	Solution Expiration Date	Morning Calibration Time 1140		Cal. Temperature °C	Afternoon Calibration Time 1330		Cal. Temperature °C
Specific Conductivity (1.413 µS/cm°)	6/30/18	1.411	1.413	13.79°	1.412	1.413	14.01°
pH (7)	12/31/18	7.01	7.00		7.01	7.00	
pH (4)	6/31/19	4.03	4.00		4.03	4.00	
pH (10)	12/31/18	10.00	10.00		10.01	10.00	
ORP (240 mv)	1/31/72	241.2	240.0		239.9	240.0	
Dissolved Oxygen (%)	-	97.1%	100.0%		103.2%	100.0%	
Dissolved Oxygen (mg/L)	-						
Barometric Pressure (mmHg)	-						

Notes:

Signature: [signature] **Date:** 12/4/17

DCL Synoptic Photolog
FALL 2017

EVENT DATE: 10/26/2017

KOMAN GOVERNMENT SOLUTIONS, LLC

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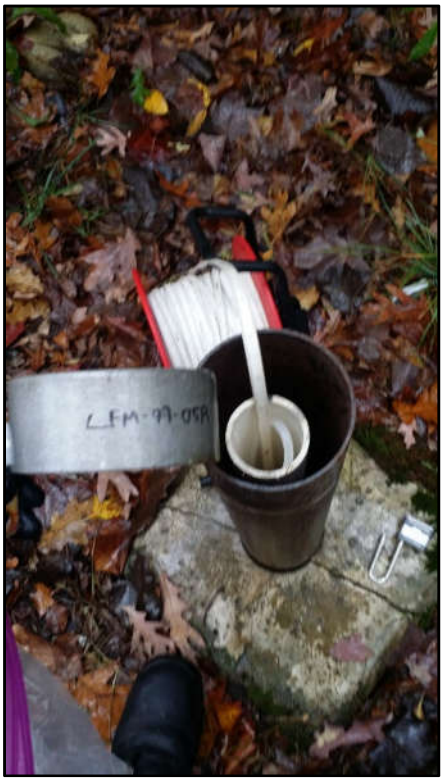
LFM-99-03B



LFM-99-05A



LFM-99-01B



LFM-03-07



LFM-99-06A-RP



LFM-99-02B



LFM-99-05B



AOC 69W

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Project/Site Name: Fort Devens/AOC69W Fall 2017 **Date :** 10/30/17

Field Team Member: MA **Weather:** Mostly rain/wind

Water Level Meter Model: 200 IP

Well ID	Time	DTW (ft bTOC)	DTB (ft bTOC)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition/Notes	2016 DTW (ft-bTOC)
69W-94-13	844	5.35	16.18	X	N/A	✓	Tubing	8.69
69W-94-14	851	6.03	15.12	X	N/A	✓	Tubing	9.47
ZWM-95-15X	1013	3.99	14.65	X	N/A	✓	Tubing	7.43
ZWM-95-18X	915	2.67	15.14	X	N/A	✓	Tubing	5.51
ZWM-99-22X	1135	5.04	14.28	N/A	2/2	✓	Tubing	8.08
ZWM-99-23X	856	4.44	15.28	X	N/A	X	Tubing	7.38
ZWM-99-24X	1030	3.96	15.78	X	N/A	✓	Tubing	7.74
ZWM-01-25X	904	4.01	16.04	X	N/A	✓	Tubing	7.37
ZWM-95-17X	1103	15.49	17.03	X	N/A	✓		7.59
ZWM-01-26X	908	5.62	16.11	X	N/A	✓	Tubing	8.79
ZWP-95-01X	1020	4.25	14.48	X	N/A	X		7.96
ZWP-95-02X	1010	2.99	14.47	X	N/A	✓		6.14
69W-94-12	835	6.46	15.65	X	N/A	✓		9.57
ZWM-95-16X	1035	6.14	15.11	N/A	✓	✓		8.07
69WP-08-01	926	2.42	12.33	X	N/A	X	Tubing	4.62
69WP-13-01	957	1.93	6.24	N/A	N/A	✓	Tubing	4.07
Willow Brook Piezometer	unable to locate / not on map							--

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-99-22X

Project: Devens AOC69W - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/30/17
Sampler: KGA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	2/2		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	5.04
Depth to bottom (ft BTOR)	14.28
Screen Interval (ft BTOR)	4.46 → 14.46
Total volume purged (gal)	4.0

Sampling Type
Purging Method: peristaltic
Purge start/stop time: 1155/1230
Tubing type: poly
Tubing diameter: ¼"
Dedicated pump (Y/N): Typhoon
Air source: N/A
Field Instrument (Model/S/N): YSI 650 MDS 07E0534AM / Mach 2 00a 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1155	200	5.04	17.39	6.59	1043	0.38	-15.6	13.7	Clear
1200	↓		17.39	6.57	1009	0.29	-29.7	13.2	
1205			17.54	6.51	983	0.26	-36.7	12.8	
1210			17.57	6.50	969	0.24	-38.6	8.41	
1215			17.60	6.48	951	0.17	-40.2	7.53	
1220			17.63	6.47	947	0.16	-41.7	7.52	
1225	✓	✓	17.64	6.47	944	0.16	-42.4	7.50	✓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details
Field Filtered (Y/N): N
Filter Size: .45
Duplicate (Y/N): Y
Dup ID/Time: DUP-01-Fall17 @ 1235
MS/MSD (Y/N): N

Dedicated Tubing: (Y/N): Y

Comments ZWM-99-22X - Fall17 @ 1230 EPH, DISS. Metals

Signature

10/30/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZMW-99-23X

Project: Devens AOC69W - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/30/17
Sampler: WH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present		✓	✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	4.14
Depth to bottom (ft BTOR)	15.28
Screen Interval (ft BTOR)	6.63 → 16.63
Total volume purged (gal)	4.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 1312 / 1340
Tubing type: Poly
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: N/A
Field Instrument (Model/S/N): YSI 650 MDS 02E0534AM / Mach Floor 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1312	200	4.15	15.82	6.48	1060	0.27	32.3	10.7	Clear
1317	↓	↓	15.97	6.47	1059	0.18	31.7	4.99	↓
1322			15.90	6.43	1057	0.16	30.2	4.08	
1327			15.90	6.44	1058	0.15	29.6	4.07	
1332			15.87	6.43	1057	0.14	28.7	3.97	
1337	✓	✓	15.86	6.43	1057	0.14	28.6	3.94	✓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y
Filter Size: .45
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Dedicated Tubing: (Y/N): Y

Comments ZMW-99-23X- Fall17 @ 1340 EPH, Diss Metals

Signature

10/30/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 2WM-01-25X

Project: Devens AOC69W - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/30/17
Sampler: MA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present			✓
Bolts present		✓	
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	4.01
Depth to bottom (ft BTOR)	16.04
Screen Interval (ft BTOR)	8.26 → 18.26
Total volume purged (gal)	4.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 1405/1440
Tubing type: Poly
Tubing diameter: ¼"
Dedicated pump (Y/N): Tubing
Air source: N/A
Field Instrument (Model/S/N): —

YSI 650 MDS 02E0534AM / Hach 2100Q 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1405	200	4.03	15.21	6.45	696	3.20	30.3	5.05	Clear
1410			15.20	6.33	677	2.87	46.9	5.03	
1415			15.18	6.28	679	2.47	64.3	5.01	
1420			15.18	6.26	704	2.25	71.1	5.00	
1425			15.16	6.26	720	2.09	76.1	4.97	
1430			15.17	6.26	723	2.06	77.7	4.95	
1435	✓	✓	15.18	6.26	726	2.03	78.9	4.94	✓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y
Filter Size: .45
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Dedicated Tubing: (Y/N): Y

Comments 2WM-01-25X-Fall17 @ 1440 EPH, Diss Metals

Signature

10/30/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 69W-94-14

Project: Devens AOC69W - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/30/17
Sampler: WBA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present		✓	✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	6.03
Depth to bottom (ft BTOR)	15.12
Screen Interval (ft BTOR)	7.98 → 17.98
Total volume purged (gal)	5.0

Sampling Type

Purging Method: Geotech
Purge start/stop time: 1510/1555
Tubing type: Poly
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: N/A
Field Instrument (Model/S/N): YSI 650 MDS 02E0534AM / Mach 2100Q 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1510	200	6.05	15.02	5.76	754	2.92	131.6	19.9	Clear
1515			15.03	5.75	802	2.79	137.9	20.6	
1520			15.06	5.74	806	2.67	142.6	21.4	
1525			15.04	5.76	839	2.53	149.2	14.9	
1530			15.02	5.72	885	2.45	152.7	12.7	
1535			15.09	5.73	891	2.42	157.9	9.20	
1540			15.11	5.74	894	2.40	163.2	8.93	
1545			15.14	5.74	896	2.39	164.9	8.90	
1550	↓	↓	15.16	5.74	899	2.37	166.6	8.88	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y
Filter Size: .45
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Dedicated Tubing: (Y/N): Y

Comments 69W-94-14-Fall17 @ 1555 EPH, Diss. Metals

Signature

10/30/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 69W-94-13

Project: Devens AOC69W - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/31/17
Sampler: MH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present		✓	✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	5.35
Depth to bottom (ft BTOR)	16.18
Screen Interval (ft BTOR)	9.09 → 19.09
Total volume purged (gal)	9.0

Sampling Type

Purging Method: Geotech
Purge start/stop time: 745 / 815
Tubing type: Poly
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: N/A
Field Instrument (Model/S/N): YSI 650 MDS 02E0534AM / Mach 2 100 Q 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
745	200	5.38	15.53	6.51	2361	2.06	156.2	6.38	clear
750	↓	↓	15.49	6.57	1927	2.41	152.7	5.99	↓
755			15.45	6.59	1696	2.67	151.9	5.97	
800			15.38	6.62	1429	2.66	142.7	5.39	
805			15.33	6.61	1419	2.63	140.8	5.31	
810	↓	↓	15.32	6.60	1418	2.66	140.2	5.30	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y
Filter Size: .45
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Dedicated Tubing: (Y/N): Y

Comments 69W-94-13-Fall17 @ 815 EPH, Diss. Metals

Signature

10/31/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZwM-95-15X

Project: Devens AOC69W - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/31/17
Sampler: MK

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present		✓	✓
Locked (stickup wells)		✓	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	3.99
Depth to bottom (ft BTOR)	14.65
Screen Interval (ft BTOR)	8.74 → 18.74
Total volume purged (gal)	4.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 901 / 935
Tubing type: poly
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: N/A
Field Instrument (Model/S/N): YSI 650 MDS 02E0534/AM / Horiba U-22 a 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
901	200	4.09	13.69	6.33	525	0.48	69.9	11.9	clear
906	↓	↓	13.80	6.21	440	0.59	80.1	8.67	↓
911			13.79	6.18	441	0.64	83.3	8.72	
916			13.83	6.12	431	0.65	93.1	8.00	
921			13.85	6.13	427	0.66	98.9	6.99	
926			13.84	6.10	420	0.67	101.0	6.97	
931	↓	↓	13.85	6.10	419	0.68	103.0	6.96	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y
Filter Size: .45
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Dedicated Tubing: (Y/N): Y

Comments ZwM-95-15X-Fall17 @ 935 EPH, diss. Metals

Signature

10/31/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-99-24X

Project: Devens AOC69W - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/31/17
Sampler: MM

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present			✓
Bolts present		✓	
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	3.96
Depth to bottom (ft BTOR)	15.78
Screen Interval (ft BTOR)	5.54 → 18.54
Total volume purged (gal)	4.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 1005 / 1045
Tubing type: poly
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: N/A
Field Instrument (Model/S/N): —

YSI 650 MDS 02E0534AM / Mach 2100 @ 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1005	200	3.99	14.95	6.13	419	2.35	128	6.52	Clear
1010	↓	↓	14.20	6.09	419	2.20	130.1	6.40	↓
1015			14.23	6.04	419	1.94	133.5	5.01	
1020			14.33	6.02	420	1.73	134.9	4.87	
1025			14.35	6.00	420	1.66	136.4	4.77	
1030			14.37	6.00	420	1.49	137.9	4.74	
1035			14.38	6.00	421	1.47	138.2	4.73	
1040	↓	↓	14.39	6.00	422	1.40	139.4	4.72	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y
Filter Size: 145
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Dedicated Tubing: (Y/N): Y

Comments ZWM-99-24X - Fall 17 @ 1045 EPH, Diss. Metals

MM
Signature

10/31/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ~~ZM~~ 2WM-95-18X

Project: Devens AOC69W - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 11/1/17
Sampler: MH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	2.67
Depth to bottom (ft BTOR)	15.14
Screen Interval (ft BTOR)	7.44 → 17.44
Total volume purged (gal)	5.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 810/840
Tubing type: poly
Tubing diameter: 1/4"
Dedicated pump (Y/N): Yes
Air source: N/A
Field Instrument (Model/S/N): YSI 650 MDS 02 E0 534/AM / Mark 2100e 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
810	200	2.67	13.14	6.19	1047	3.27	190.0	4.90	clear
815	↓	↓	13.18	6.07	1050	3.19	194.2	2.91	↓
820			13.24	6.06	1052	3.14	200.8	2.40	
825			13.25	6.02	1048	3.10	204.6	2.33	
830			13.24	6.01	1045	3.07	208.3	2.30	
835	↓	↓	13.27	6.01	1043	3.04	209.1	2.31	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y
Filter Size: .45
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): Y

Dedicated Tubing: (Y/N): Y

Comments 2WM-95-18X-Fall17 @ 840 EPH, Diss. Mets ☆ MS/MSD

Signature

11/1/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 69WP-08-01

Project: Devens AOC69W - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 11/4/17
Sampler: [illegible]

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact		✓	✓
Well gripper present		✓	
Bolts present			✓
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	Steel
Depth to water (ft BTOR)	2.42
Depth to bottom (ft BTOR)	12.33
Screen Interval (ft BTOR)	10→13
Total volume purged (gal)	4.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 950/1030
Tubing type: poly
Tubing diameter: 1/4
Dedicated pump (Y/N): Tubing
Air source: N/A
Field Instrument (Model/S/N): YSI 650MDS 02E0534 AM / Hach 2100Q 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
950	100	2.49	12.34	6.38	217	1.75	179.4	1.95	clear
955	↓	↓	12.91	6.39	211	1.62	131.7	1.80	↓
1000			12.95	6.40	210	1.44	106.4	1.87	
1005			12.97	6.40	209	1.43	83.1	1.89	
1010			13.01	6.40	207	1.41	71.9	1.79	
1015			13.13	6.40	206	1.40	63.7	1.77	
1020			13.14	6.40	209	1.40	62.1	1.76	
1025	↓	↓	13.15	6.40	203	1.37	61.9	1.75	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y
Filter Size: .45
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Dedicated Tubing: (Y/N): Y

Comments 69WP-08-01 ~Fall17 @1030 Diss. Metals

[illegible]
Signature

11/4/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 69W2-13-01

Project: Devens AOC69W - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 11/1/17
Sampler: MH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		✓
PVC casing intact			✓
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	Steel
Depth to water (ft BTOR)	1.93
Depth to bottom (ft BTOR)	6.24
Screen Interval (ft BTOR)	10.02 → 13.02
Total volume purged (gal)	4.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 1120 / 1150
Tubing type: poly
Tubing diameter: 1/4"
Dedicated pump (Y/N): Typhoon
Air source: N/A
Field Instrument (Model/S/N): YSI 650 MDS 02E0534AM / Hach 2100Q 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1120	100	1.95	11.77	6.67	626	1.39	33.8	12.9	clear
1125	↓	↓	12.09	6.59	625	1.01	29.6	11.6	↓
1130			12.14	6.56	621	0.86	23.7	11.4	
1135			12.15	6.55	624	0.84	22.9	11.3	
1140			12.10	6.55	623	0.80	21.6	11.3	
1145	↓	↓	12.13	6.55	623	0.79	21.3	11.4	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y
Filter Size: .45
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Dedicated Tubing: (Y/N): Y

Comments 69W2-13-01-Fall17 @ 1150 Diss. Metals (Mn only)

Signature

11/1/17
Date

KGS

Turbidity Instrument Calibration Log

Project/Site Name: AOC 69W Fall 2017 Sampling
Calibrated By: MA

Instrument: Hach 2100Q
Serial Number: 18138

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
10/30/17	10.3/10.0	20.9/20.0	103/100	793/800	10.9/10.0	19.7/20.0	107/100	803/800
10/31/17	10.9/10.0	19.7/20.0	106/100	799/800	9.3/10.0	19.1/20.0	101/100	804/800
11/1/17	10.0/10.0	20.7/20.0	101/100	792/800	10.3/10.0	19.7/20.0	106/100	797/800

Signature: _____

Date: 11/1/17

KGS

Field Instrument Calibration Log

Date: 10/30/17 **Weather:** Rain

Project/Site Name: AOC 69W Fall 2017 Sampling **Instrument:** YSI 650 MDS

Calibrated By: [illegible] **Serial Number:** 92E0534AM

Parameters	Solution Expiration Date	Morning Calibration Time 700		Cal. Temperature °C	Afternoon Calibration Time 1600/1615		Cal. Temperature °C
Specific Conductivity (1.413 µS/cm°)	5/18	1.431	1.413	16.02	1.409	1.413	16.27
pH (7)	6/17	7.09	7.09		6.97	7.00	
pH (4)	2/19	3.89	4.00		4.06	4.00	
pH (10)	10/18	10.03	10.00		10.00	10.00	
ORP (240 mv)	1/22	234.2	240.9		237.1	240.0	
Dissolved Oxygen (%)	-	96.1%	100.0%		101.2%	100.6%	
Dissolved Oxygen (mg/L)	-						
Barometric Pressure (mmHg)	-						

Notes:

Signature: [signature] **Date:** 10/30/17

Field Instrument Calibration Log

Date: 10/31/17 **Weather:** 40s

Project/Site Name: AOC 69W Fall 2017 Sampling **Instrument:** YSI 650MDS

Calibrated By: VLA **Serial Number:** 02E0534AM

Parameters	Solution Expiration Date	Morning Calibration Time 655		Cal. Temperature °C	Afternoon Calibration Time 1100		Cal. Temperature °C
Specific Conductivity (1.413 µS/cm°)	5/18	1.410	1.413	14.92°	1.397	1.413	16.01°
pH (7)	6/17	7.11	7.00		7.03	7.00	
pH (4)	2/19	4.09	4.00		4.01	4.00	
pH (10)	10/18	10.09	10.00		9.87	10.00	
ORP (240 mv)	1/22	246.1	240.0		236.9	240.0	
Dissolved Oxygen (%)	-	101.1%	100.0%		103.7%	100.0%	
Dissolved Oxygen (mg/L)	-						
Barometric Pressure (mmHg)	-						

Notes:

Signature: _____ **Date:** 10/31/17

Field Instrument Calibration Log

Date: 11/1/17 **Weather:** 40's

Project/Site Name: AOC 69W Fall 2017 Sampling **Instrument:** YSI 650MDS

Calibrated By: MA **Serial Number:** 02E0534AM

Parameters	Solution Expiration Date	Morning Calibration Time 709		Cal. Temperature °C	Afternoon Calibration Time 1230		Cal. Temperature °C
Specific Conductivity (1.413 µS/cm°)	5/18	1.423	1.413	15.03°	1.410	1.413	16.02°
pH (7)	6/17	7.09	7.09		6.97	7.00	
pH (4)	2/19	3.90	4.00		3.97	4.00	
pH (10)	10/18	10.02	10.00		10.02	10.00	
ORP (240 mv)	1/22	238.7	240.0		239.7	240.0	
Dissolved Oxygen (%)	-	101.2%	100.0%		102.6%	100.0%	
Dissolved Oxygen (mg/L)	-						
Barometric Pressure (mmHg)	-						

Notes:

Signature: _____ **Date:** 11/1/17

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69W Synoptic Photolog
FALL 2017

EVENT DATE: 10/30/2017

KOMAN GOVERNMENT SOLUTIONS, LLC

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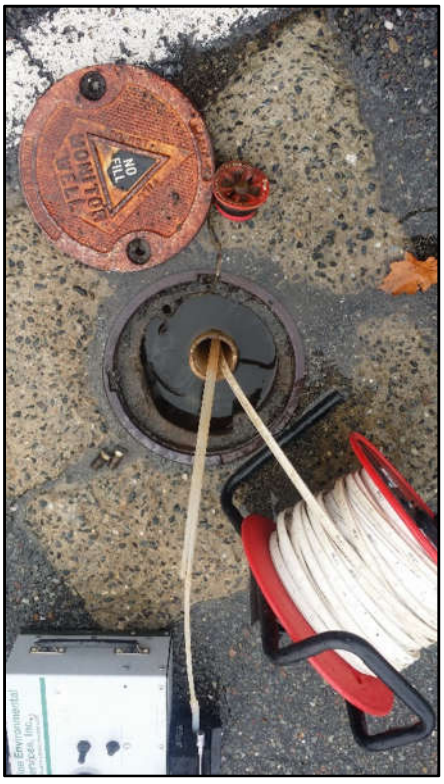
ZWP-95-01X



ZWM-95-15X



69W-94-14



ZWM-99-22X



69W-94-13



ZWM-01-26X



69WP-08-01



ZWM-99-24X



ZWM-01-25X



ZWM-99-23X



69W-94-12



ZWP-95-02X



ZWM-95-16X



ZWM-95-17X



ZWM-95-18X



69WP-13-01



AOC 43G

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Project/Site Name: Fort Devens/AOC43G Fall 2017 **Date :** 10/24/17

Field Team Member: VBL **Weather:** Rain

/ater Level Meter Model:

Well ID	Time	DTW (ft bTOC)	DTB (ft bTOC)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition/Dedicated Tubing/ Notes	2016 DTW (ft-TOC)
AAFES-2	843	25.50	33.57	✓	N/A	✓	Tubing	24.88
AAFES-5	815	23.53	29.83	N/A	2/2	✓	Tubing	23.39
AAFES-6R	848	21.87	26.68	✓	N/A	✓	Tubing	22.39
AAFES-7	924	11.41	16.97	✓	N/A	✓ no screw	Tubing	13.27
XGM-93-02X	807	39.69	37.52	N/A	2/2	✓	Tubing	30.44
XGM-94-04X	852	21.94	31.17	✓	N/A	✓	Tubing	22.12
XGM-94-07X	826	24.76	29.36	✓ locked	N/A	✓	Tubing	21.59
XGM-94-08X	903	27.82	36.06	✓	N/A	✓	Tubing	27.42
XGM-94-10X	856	26.71	34.92	✓	N/A	✓	Tubing	26.70
XGM-97-12X	804	27.22	33.87	N/A	2/2	Y	Tubing	27.31

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: XBM-93-02X

Project: Devens AOC43G - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/24/17
Sampler: MA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	2/2		
Locked (stickup wells)			✓

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	30.60
Depth to bottom (ft BTOR)	37.52
Screen Interval (ft BTOR)	28→38
Total volume purged (gal)	2.5

Sampling Type

Purging Method: Bladder pump
Purge start/stop time: 1045 / 1115
Tubing type: Dedic. lined poly
Tubing diameter: ¼" x ¼"
Dedicated pump (Y/N): Tubing (added)
Air source: N
Field Instrument (Model/S/N): YSI 650 MDS 02E0534AM / Hach 2100Q 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1045	150	31.22	15.15	6.79	1947	0.33	-42.2	31.0	partly cloudy
1050		31.30	15.12	6.78	1941	0.29	-50	29.7	
1055		31.37	15.11	6.78	1939	0.28	-52.1	28.4	
1100		31.41	15.34	6.76	1937	0.27	-53.1	27.4	
1105		31.46	15.24	6.75	1933	0.27	-54.7	27.7	
1110	✓	31.52	15.26	6.75	1932	0.26	-54.9	27.9	✓

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Dedicated Tubing in Well (Y/N): Added

Comments XBM-93-02X - Fall17 @ 1115 VPH, Total Metals, Alkalinity

Signature

10/24/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: XGM-97-12X

Project: Devens AOC43G - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/24/17
Sampler: MA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	2/2		
Locked (stickup wells)			✓

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	27.22
Depth to bottom (ft BTOR)	33.87
Screen Interval (ft BTOR)	24->34
Total volume purged (gal)	4.0

Sampling Type
Purging Method: Bladder pump
Purge start/stop time: 1225/1255
Tubing type: Dedicated bonded poly
Tubing diameter: ¼" x ¼"
Dedicated pump (Y/N): Tubing added
Air source: N
Field Instrument (Model/S/N): YSI 650 MDS 02E0534An / March 2009 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1225	200	28.79	16.43	6.83	1825	0.25	-78.3	18.7	Slight odor
1230	↓	28.90	16.42	6.81	1799	0.23	-77.7	13.2	↓
1235		28.18	16.33	6.80	1798	0.21	-77.0	13.1	
1240		29.13	16.34	6.80	1797	0.20	-76.9	13.1	
1245		29.52	16.40	6.80	1794	0.20	-76.7	13.2	
1250	↓	29.77	16.47	6.80	1793	0.19	-76.4	13.2	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details
Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): Y
Dup ID/Time: Dup-01-F1117 @ 1300
MS/MSD (Y/N): N

Dedicated Tubing in Well (Y/N): Added

Comments XGM-97-12X-F1117 @ 1300 Full list

Signature

10/24/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: AAFES-7

Project: Devens AOC43G - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/25/17
Sampler: MK

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present			✓ none
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	11.41
Depth to bottom (ft BTOR)	16.97
Screen Interval (ft BTOR)	6.7 → 16.7
Total volume purged (gal)	2.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 820/845
Tubing type: teflon lined poly
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: —
Field Instrument (Model/S/N): —

YSI 650 MDS 02E0534AM / Hach 2100R 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
820	200	14.25	15.24	6.62	1717	3.54	129.6	28.9	~~clear~~ slightly cloudy
825	100	14.41	14.86	6.51	1723	3.47	132.6	26.9	↓
830	↓	14.43	14.90	6.52	1724	3.45	136.1	27.9	↓
835	↓	14.43	14.93	6.52	1725	3.41	137.1	27.1	↓
840	↓	14.44	14.97	6.52	1726	3.40	137.6	27.3	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Dedicated Tubing in Well (Y/N): Y

Comments AAFES-7 - Fall 17 @ 845 As, Mn only

MK
Signature

10/25/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: AAFES-2

Project: Devens AOC43G - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/25/17
Sampler: VLA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	25.50
Depth to bottom (ft BTOR)	33.57
Screen Interval (ft BTOR)	18.3→33.3
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Geotech
Purge start/stop time: 930/1000
Tubing type: Teflon lined poly
Tubing diameter: ¼"
Dedicated pump (Y/N): Tubing
Air source: N/A
Field Instrument (Model/S/N): YSI 650MDS 02E0534AM / Horiba U-22 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
930	200	26.55	15.32	7.01	1451	0.42	-53.1	21.0	Slight odor
935	↓	↓	15.29	7.03	1445	0.36	-74.6	14.6	↓
940			15.27	7.06	1442	0.35	-76.7	12.9	
945			15.25	7.07	1443	0.34	-80.9	12.8	
950			15.30	7.06	1447	0.33	-81.6	12.6	
955	↓	↓	15.31	7.07	1448	0.32	-82.0	12.5	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): Y

Dedicated Tubing in Well (Y/N): Y

Comments AAFES-2-Fall17 @ 1000 MS/MSD ☆

Signature

10/25/17
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: X6M-94-04X

Project: Devens AOC43G - Fall 2017 LTM
Location: Fort Devens Massachusetts
Date: 10/25/17
Sampler: MM

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present	✓		✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	21.94
Depth to bottom (ft BTOR)	31.17
Screen Interval (ft BTOR)	20.5→30.5
Total volume purged (gal)	3.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 1040 / 1110
Tubing type: teflon lined poly
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: — N/A
Field Instrument (Model/S/N): —

YSI 650 MDS 02E0534AM / Hach 2100Q 18138

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1040	200	22.16	15.08	7.02	1571	0.44	-17.3	6.41	Clear
1045	↓	↓	15.04	7.01	1568	0.39	-8.7	5.99	↓
1050			15.11	7.00	1565	0.37	-6.4	5.96	
1055			15.17	7.00	1567	0.36	-3.1	5.94	
1100			15.16	7.03	1567	0.35	-3.0	5.92	
1105	↓	↓	15.18	7.02	1569	0.35	-1.9	5.90	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): Y

Dedicated Tubing in Well (Y/N): Y

Comments X6M-94-04X - Fall 17 @ 1110 ☆MS/MSD

Signature

10/25/17
Date

Turbidity Instrument Calibration Log

Project/Site Name: AOC 43 G Fall 2017 Sampling
Calibrated By: MA

Instrument: Hach 2100 Q
Serial Number: 18138

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
10/24/17	10.0 / 10.0	21.3 / 20.0	96 / 100	799 / 800	9.3 / 10.0	20.7 / 20.0	102 / 100	799 / 800
10/25/17	9.7 / 10.0	20.6 / 20.0	99 / 100	803 / 800	9.8 / 10.0	20.6 / 20.0	109 / 100	807 / 800

Signature: [signature]

Date: 10/25/17

KGS

Field Instrument Calibration Log

Date: 10/24/17 **Weather:** Rain

Project/Site Name: AOC 43G Fall 2017 Sampling **Instrument:** YSI 650 MDS

Calibrated By: MA **Serial Number:** 21OOR 18138

Parameters	Solution Expiration Date	Morning Calibration Time 945		Cal. Temperature °C	Afternoon Calibration Time 1330		Cal. Temperature °C
Specific Conductivity (1.413 µS/cm°)	5/18	1.397	1.413	16.29°	1.409	1.413	16.01°
pH (7)	6/17	6.97	7.00		7.01	7.00	
pH (4)	2/19	4.06	4.00		4.02	4.00	
pH (10)	10/18	9.87	10.00		10.03	10.00	
ORP (240 mv)	1/22	236.1	240.0		238.7	240.0	
Dissolved Oxygen (%)	-	92.1%	100.0%		102.1%	100.0%	
Dissolved Oxygen (mg/L)	-						
Barometric Pressure (mmHg)	-						

Notes:

Signature: _____ **Date:** 10/24/17

KGS

Field Instrument Calibration Log

Date: 10/25/17 **Weather:** Rain

Project/Site Name: AOC 43G Fall 2017 Sampling **Instrument:** YSI 650MDS

Calibrated By: VLA **Serial Number:** 02E0534AM

Parameters	Solution Expiration Date	Morning Calibration Time 715		Cal. Temperature °C	Afternoon Calibration Time 1300		Cal. Temperature °C
Specific Conductivity (1.413 µS/cm°)	5/18	1.420	1.413	16.32°	1.412	1.413	16.79
pH (7)	6/17	7.03	7.00		7.01	7.00	
pH (4)	2/19	4.07	4.00		4.03	4.00	
pH (10)	10/18	10.02	10.00		10.04	10.00	
ORP (240 mv)	1/22	238.9	240.0		237.7	240.0	
Dissolved Oxygen (%)	-	99.7%	100.0%		103.7%	100.0%	
Dissolved Oxygen (mg/L)	-						
Barometric Pressure (mmHg)	-						

Notes:

Signature: [signature] **Date:** 10/25/17

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AOC 46G Synoptic Photolog FALL 2017

EVENT DATE: 10/24/2017

KOMAN GOVERNMENT SOLUTIONS, LLC

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XGM-93-02X



XGM-94-08X



AAFES-7



XGM-94-10X



AAFES-2



AAFES-6R



XGM-97-12X



AAFES-5



XGM-94-07X



XGM-94-04X

APPENDIX B

LABORATORY ANALYTICAL REPORTS (on CD)

B.1

Spring 2017 LTM Event

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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

TestAmerica Job ID: 680-140428-1
Client Project/Site: Devens - AOC57

For:
KOMAN Government Solutions, LLC
160 East Main St
Suite 2F
Westborough, Massachusetts 01581

Attn: Laurie Ekes

Jerry Lanier

Authorized for release by:
7/13/2017 8:39:10 AM

Jerry Lanier, Project Manager I
(912)354-7858 e.3410
jerry.lanier@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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

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

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

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Job ID: 680-140428-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: Devens - AOC57

Report Number: 680-140428-1

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

RECEIPT
The samples were received on 06/29/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.8 C.

METALS (ICP) - DISSOLVED
Samples 57M-96-11X-SPR17 (680-140428-1), 57M-DUP01-SPR17 (680-140428-2), 57M-95-03X-SPR17 (680-140428-3), 57M-SW-1-SPR17 (680-140428-4) and 57M-SWDUP-SPR17 (680-140428-5) were analyzed for Metals (ICP) - Dissolved in accordance with EPA SW-846 Method 6010C. The samples were prepared on 06/30/2017 and 07/05/2017 and analyzed on 07/06/2017 and 07/07/2017.

Iron failed the recovery criteria low for the MSD of sample 57M-95-03X-SPR17MSD (680-140428-3) in batch 680-486971.

Refer to the QC report for details.

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

METALS (ICP)
Samples 57M-96-11X-SPR17 (680-140428-1), 57M-DUP01-SPR17 (680-140428-2), 57M-95-03X-SPR17 (680-140428-3), 57M-SW-1-SPR17 (680-140428-4) and 57M-SWDUP-SPR17 (680-140428-5) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 06/30/2017 and analyzed on 07/06/2017 and 07/07/2017.

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

METALS (ICPMS) - DISSOLVED
Samples 57M-96-11X-SPR17 (680-140428-1), 57M-DUP01-SPR17 (680-140428-2), 57M-95-03X-SPR17 (680-140428-3), 57M-SW-1-SPR17 (680-140428-4) and 57M-SWDUP-SPR17 (680-140428-5) were analyzed for Metals (ICPMS) - Dissolved in accordance with EPA SW-846 Method 6020A. The samples were prepared on 06/30/2017 and 07/05/2017 and analyzed on 07/04/2017 and 07/08/2017.

The interference check standard solution (ICSA) associated with batch 680-487117 had results for one or more elements at a level greater than 2 times the limit of detection (LOD).

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

METALS
Samples 57M-96-11X-SPR17 (680-140428-1), 57M-DUP01-SPR17 (680-140428-2), 57M-95-03X-SPR17 (680-140428-3),

Job ID: 680-140428-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

57M-SW-1-SPR17 (680-140428-4) and 57M-SWDUP-SPR17 (680-140428-5) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 06/30/2017 and analyzed on 07/03/2017.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC57

TestAmerica Job ID: 680-140428-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-140428-1	57M-96-11X-SPR17	Water	06/26/17 10:05	06/29/17 08:46
680-140428-2	57M-DUP01-SPR17	Water	06/26/17 10:20	06/29/17 08:46
680-140428-3	57M-95-03X-SPR17	Water	06/26/17 09:10	06/29/17 08:46
680-140428-4	57M-SW-1-SPR17	Water	06/26/17 10:55	06/29/17 08:46
680-140428-5	57M-SWDUP-SPR17	Water	06/26/17 11:00	06/29/17 08:46

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC57

TestAmerica Job ID: 680-140428-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV

Protocol References:

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

Laboratory References:

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

Qualifiers

Metals

Qualifier	Qualifier Description
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
U	Undetected at the Limit of Detection.

Glossary

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

Detection Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC57

TestAmerica Job ID: 680-140428-1

Client Sample ID: 57M-96-11X-SPR17 — Lab Sample ID: 680-140428-1

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Iron	31000		50	50	17	ug/L	1		6010C	Total/NA
Manganese	2900		10	3.0	1.0	ug/L	1		6010C	Total/NA
Iron	29000		50	50	17	ug/L	1		6010C	Dissolved
Manganese	3000		10	3.0	1.0	ug/L	1		6010C	Dissolved
Arsenic	180		3.0	3.0	1.5	ug/L	1		6020A	Total/NA
Arsenic	120		3.0	3.0	1.5	ug/L	1		6020A	Dissolved

Client Sample ID: 57M-DUP01-SPR17 — Lab Sample ID: 680-140428-2

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Iron	31000		50	50	17	ug/L	1		6010C	Total/NA
Manganese	3000		10	3.0	1.0	ug/L	1		6010C	Total/NA
Iron	30000		50	50	17	ug/L	1		6010C	Dissolved
Manganese	3100		10	3.0	1.0	ug/L	1		6010C	Dissolved
Arsenic	170		3.0	3.0	1.5	ug/L	1		6020A	Total/NA
Arsenic	120		3.0	3.0	1.5	ug/L	1		6020A	Dissolved

Client Sample ID: 57M-95-03X-SPR17 — Lab Sample ID: 680-140428-3

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Iron	5300		50	50	17	ug/L	1		6010C	Total/NA
Manganese	110		10	3.0	1.0	ug/L	1		6010C	Total/NA
Iron	5600	J	50	50	17	ug/L	1		6010C	Dissolved
Manganese	120		10	3.0	1.0	ug/L	1		6010C	Dissolved
Arsenic	27		3.0	3.0	1.5	ug/L	1		6020A	Total/NA
Arsenic	30		3.0	3.0	1.5	ug/L	1		6020A	Dissolved

Client Sample ID: 57M-SW-1-SPR17 — Lab Sample ID: 680-140428-4

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Iron	21000		50	50	17	ug/L	1		6010C	Total/NA
Manganese	1200		10	3.0	1.0	ug/L	1		6010C	Total/NA
Iron	15000		50	50	17	ug/L	1		6010C	Dissolved
Manganese	1300		10	3.0	1.0	ug/L	1		6010C	Dissolved
Arsenic	31		3.0	3.0	1.5	ug/L	1		6020A	Total/NA
Arsenic	17		3.0	3.0	1.5	ug/L	1		6020A	Dissolved

Client Sample ID: 57M-SWDUP-SPR17 — Lab Sample ID: 680-140428-5

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Iron	18000		50	50	17	ug/L	1		6010C	Total/NA
Manganese	1200		10	3.0	1.0	ug/L	1		6010C	Total/NA
Iron	16000		50	50	17	ug/L	1		6010C	Dissolved
Manganese	1300		10	3.0	1.0	ug/L	1		6010C	Dissolved
Arsenic	27		3.0	3.0	1.5	ug/L	1		6020A	Total/NA
Arsenic	18		3.0	3.0	1.5	ug/L	1		6020A	Dissolved

This Detection Summary does not include radiochemical test results.

Client Sample ID: 57M-96-11X-SPR17

Lab Sample ID: 680-140428-1

Date Collected: 06/26/17 10:05

Matrix: Water

Date Received: 06/29/17 08:46

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	31000		50	50	17	ug/L		07/07/17 00:09	1
Manganese	2900		10	3.0	1.0	ug/L		07/07/17 00:09	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	29000		50	50	17	ug/L		07/06/17 16:09	1
Manganese	3000		10	3.0	1.0	ug/L		07/06/17 16:09	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	180		3.0	3.0	1.5	ug/L		07/03/17 23:29	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	120		3.0	3.0	1.5	ug/L		07/04/17 02:39	1

Client Sample ID: 57M-DUP01-SPR17

Lab Sample ID: 680-140428-2

Date Collected: 06/26/17 10:20

Matrix: Water

Date Received: 06/29/17 08:46

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	31000		50	50	17	ug/L		07/07/17 00:35	1
Manganese	3000		10	3.0	1.0	ug/L		07/07/17 00:35	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	30000		50	50	17	ug/L		07/06/17 16:04	1
Manganese	3100		10	3.0	1.0	ug/L		07/06/17 16:04	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	170		3.0	3.0	1.5	ug/L		07/03/17 23:51	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	120		3.0	3.0	1.5	ug/L		07/04/17 02:35	1

Client Sample ID: 57M-95-03X-SPR17

Lab Sample ID: 680-140428-3

Date Collected: 06/26/17 09:10

Matrix: Water

Date Received: 06/29/17 08:46

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	5300		50	50	17	ug/L		07/06/17 23:17	1
Manganese	110		10	3.0	1.0	ug/L		07/06/17 23:17	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	5600	J	50	50	17	ug/L		07/07/17 01:11	1
Manganese	120		10	3.0	1.0	ug/L		07/07/17 01:11	1

Client Sample ID: 57M-95-03X-SPR17

Lab Sample ID: 680-140428-3

Date Collected: 06/26/17 09:10

Matrix: Water

Date Received: 06/29/17 08:46

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	27		3.0	3.0	1.5	ug/L		07/03/17 22:46	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	30		3.0	3.0	1.5	ug/L		07/08/17 13:34	1

Client Sample ID: 57M-SW-1-SPR17

Lab Sample ID: 680-140428-4

Date Collected: 06/26/17 10:55

Matrix: Water

Date Received: 06/29/17 08:46

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	21000		50	50	17	ug/L		07/07/17 00:40	1
Manganese	1200		10	3.0	1.0	ug/L		07/07/17 00:40	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	15000		50	50	17	ug/L		07/06/17 16:34	1
Manganese	1300		10	3.0	1.0	ug/L		07/06/17 16:34	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	31		3.0	3.0	1.5	ug/L		07/03/17 23:55	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	17		3.0	3.0	1.5	ug/L		07/04/17 02:52	1

Client Sample ID: 57M-SWDUP-SPR17

Lab Sample ID: 680-140428-5

Date Collected: 06/26/17 11:00

Matrix: Water

Date Received: 06/29/17 08:46

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	18000		50	50	17	ug/L		07/07/17 00:19	1
Manganese	1200		10	3.0	1.0	ug/L		07/07/17 00:19	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	16000		50	50	17	ug/L		07/06/17 15:58	1
Manganese	1300		10	3.0	1.0	ug/L		07/06/17 15:58	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	27		3.0	3.0	1.5	ug/L		07/03/17 23:38	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	18		3.0	3.0	1.5	ug/L		07/04/17 02:31	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-486825/1-A
Matrix: Water
Analysis Batch: 486971

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 486825

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	50	U	50	50	17	ug/L		07/06/17 23:06	1
Manganese	3.0	U	10	3.0	1.0	ug/L		07/06/17 23:06	1

Lab Sample ID: LCS 680-486825/2-A
Matrix: Water
Analysis Batch: 486971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 486825

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5000	5060		ug/L		101	87 - 115
Manganese	500	525		ug/L		105	90 - 114

Lab Sample ID: 680-140428-3 MS
Matrix: Water
Analysis Batch: 486971

Client Sample ID: 57M-95-03X-SPR17
Prep Type: Total/NA
Prep Batch: 486825

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5300		5000	10300		ug/L		101	87 - 115
Manganese	110		500	632		ug/L		105	90 - 114

Lab Sample ID: 680-140428-3 MSD
Matrix: Water
Analysis Batch: 486971

Client Sample ID: 57M-95-03X-SPR17
Prep Type: Total/NA
Prep Batch: 486825

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	5300		5000	10300		ug/L		100	87 - 115	0	20
Manganese	110		500	635		ug/L		106	90 - 114	0	20

Lab Sample ID: MB 680-486361/1-A
Matrix: Water
Analysis Batch: 486971

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 486361

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	50	U	50	50	17	ug/L		07/06/17 15:22	1
Manganese	3.0	U	10	3.0	1.0	ug/L		07/06/17 15:22	1

Lab Sample ID: LCS 680-486361/2-A
Matrix: Water
Analysis Batch: 486971

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 486361

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5000	5440		ug/L		109	87 - 115
Manganese	500	564		ug/L		113	90 - 114

Lab Sample ID: MB 680-486725/1-A
Matrix: Water
Analysis Batch: 486971

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 486725

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	50	U	50	50	17	ug/L		07/07/17 01:01	1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: MB 680-486725/1-A
Matrix: Water
Analysis Batch: 486971

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 486725

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	3.0	U	10	3.0	1.0	ug/L		07/07/17 01:01	1

Lab Sample ID: LCS 680-486725/2-A
Matrix: Water
Analysis Batch: 486971

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 486725

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5000	5140		ug/L		103	87 - 115
Manganese	500	532		ug/L		106	90 - 114

Lab Sample ID: 680-140428-3 MS
Matrix: Water
Analysis Batch: 486971

Client Sample ID: 57M-95-03X-SPR17
Prep Type: Dissolved
Prep Batch: 486725

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5600	J	5000	10200		ug/L		92	87 - 115
Manganese	120		500	622		ug/L		101	90 - 114

Lab Sample ID: 680-140428-3 MSD
Matrix: Water
Analysis Batch: 486971

Client Sample ID: 57M-95-03X-SPR17
Prep Type: Dissolved
Prep Batch: 486725

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	5600	J	5000	9840	J	ug/L		84	87 - 115	4	20
Manganese	120		500	611		ug/L		99	90 - 114	2	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-486365/1-A
Matrix: Water
Analysis Batch: 486575

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 486365

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		07/03/17 22:37	1

Lab Sample ID: LCS 680-486365/2-A
Matrix: Water
Analysis Batch: 486575

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 486365

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	98.3		ug/L		98	84 - 116

Lab Sample ID: 680-140428-3 MS
Matrix: Water
Analysis Batch: 486575

Client Sample ID: 57M-95-03X-SPR17
Prep Type: Total/NA
Prep Batch: 486365

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	27		100	123		ug/L		96	84 - 116

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 680-140428-3 MSD — **Client Sample ID: 57M-95-03X-SPR17**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 486575 — **Prep Batch: 486365**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	27		100	126		ug/L		99	84 - 116	2	20

Lab Sample ID: MB 680-486359/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 486580 — **Prep Batch: 486359**

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		07/04/17 11:08	1

Lab Sample ID: LCS 680-486359/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 486580 — **Prep Batch: 486359**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	105		ug/L		105	84 - 116

Lab Sample ID: MB 680-486724/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 487124 — **Prep Batch: 486724**

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		07/08/17 13:25	1

Lab Sample ID: LCS 680-486724/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 487124 — **Prep Batch: 486724**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	107		ug/L		107	84 - 116

Lab Sample ID: 680-140428-3 MS — **Client Sample ID: 57M-95-03X-SPR17**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 487124 — **Prep Batch: 486724**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	30		100	130		ug/L		100	84 - 116

Lab Sample ID: 680-140428-3 MSD — **Client Sample ID: 57M-95-03X-SPR17**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 487124 — **Prep Batch: 486724**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	30		100	128		ug/L		98	84 - 116	2	20

Metals

Prep Batch: 486359

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-1	57M-96-11X-SPR17	Dissolved	Water	3005A	
680-140428-2	57M-DUP01-SPR17	Dissolved	Water	3005A	
680-140428-4	57M-SW-1-SPR17	Dissolved	Water	3005A	
680-140428-5	57M-SWDUP-SPR17	Dissolved	Water	3005A	
MB 680-486359/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-486359/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 486361

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-1	57M-96-11X-SPR17	Dissolved	Water	3005A	
680-140428-2	57M-DUP01-SPR17	Dissolved	Water	3005A	
680-140428-4	57M-SW-1-SPR17	Dissolved	Water	3005A	
680-140428-5	57M-SWDUP-SPR17	Dissolved	Water	3005A	
MB 680-486361/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-486361/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 486365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-1	57M-96-11X-SPR17	Total/NA	Water	3010A	
680-140428-2	57M-DUP01-SPR17	Total/NA	Water	3010A	
680-140428-3	57M-95-03X-SPR17	Total/NA	Water	3010A	
680-140428-4	57M-SW-1-SPR17	Total/NA	Water	3010A	
680-140428-5	57M-SWDUP-SPR17	Total/NA	Water	3010A	
MB 680-486365/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-486365/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-140428-3 MS	57M-95-03X-SPR17	Total/NA	Water	3010A	
680-140428-3 MSD	57M-95-03X-SPR17	Total/NA	Water	3010A	

Analysis Batch: 486575

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-1	57M-96-11X-SPR17	Total/NA	Water	6020A	486365
680-140428-2	57M-DUP01-SPR17	Total/NA	Water	6020A	486365
680-140428-3	57M-95-03X-SPR17	Total/NA	Water	6020A	486365
680-140428-4	57M-SW-1-SPR17	Total/NA	Water	6020A	486365
680-140428-5	57M-SWDUP-SPR17	Total/NA	Water	6020A	486365
MB 680-486365/1-A	Method Blank	Total/NA	Water	6020A	486365
LCS 680-486365/2-A	Lab Control Sample	Total/NA	Water	6020A	486365
680-140428-3 MS	57M-95-03X-SPR17	Total/NA	Water	6020A	486365
680-140428-3 MSD	57M-95-03X-SPR17	Total/NA	Water	6020A	486365

Analysis Batch: 486580

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-1	57M-96-11X-SPR17	Dissolved	Water	6020A	486359
680-140428-2	57M-DUP01-SPR17	Dissolved	Water	6020A	486359
680-140428-4	57M-SW-1-SPR17	Dissolved	Water	6020A	486359
680-140428-5	57M-SWDUP-SPR17	Dissolved	Water	6020A	486359
MB 680-486359/1-A	Method Blank	Total Recoverable	Water	6020A	486359
LCS 680-486359/2-A	Lab Control Sample	Total Recoverable	Water	6020A	486359

Metals (Continued)

Prep Batch: 486724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-3	57M-95-03X-SPR17	Dissolved	Water	3005A	
MB 680-486724/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-486724/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
680-140428-3 MS	57M-95-03X-SPR17	Dissolved	Water	3005A	
680-140428-3 MSD	57M-95-03X-SPR17	Dissolved	Water	3005A	

Prep Batch: 486725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-3	57M-95-03X-SPR17	Dissolved	Water	3005A	
MB 680-486725/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-486725/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
680-140428-3 MS	57M-95-03X-SPR17	Dissolved	Water	3005A	
680-140428-3 MSD	57M-95-03X-SPR17	Dissolved	Water	3005A	

Prep Batch: 486825

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-1	57M-96-11X-SPR17	Total/NA	Water	3010A	
680-140428-2	57M-DUP01-SPR17	Total/NA	Water	3010A	
680-140428-3	57M-95-03X-SPR17	Total/NA	Water	3010A	
680-140428-4	57M-SW-1-SPR17	Total/NA	Water	3010A	
680-140428-5	57M-SWDUP-SPR17	Total/NA	Water	3010A	
MB 680-486825/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-486825/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-140428-3 MS	57M-95-03X-SPR17	Total/NA	Water	3010A	
680-140428-3 MSD	57M-95-03X-SPR17	Total/NA	Water	3010A	

Analysis Batch: 486971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-1	57M-96-11X-SPR17	Dissolved	Water	6010C	486361
680-140428-1	57M-96-11X-SPR17	Total/NA	Water	6010C	486825
680-140428-2	57M-DUP01-SPR17	Dissolved	Water	6010C	486361
680-140428-2	57M-DUP01-SPR17	Total/NA	Water	6010C	486825
680-140428-3	57M-95-03X-SPR17	Dissolved	Water	6010C	486725
680-140428-3	57M-95-03X-SPR17	Total/NA	Water	6010C	486825
680-140428-4	57M-SW-1-SPR17	Dissolved	Water	6010C	486361
680-140428-4	57M-SW-1-SPR17	Total/NA	Water	6010C	486825
680-140428-5	57M-SWDUP-SPR17	Dissolved	Water	6010C	486361
680-140428-5	57M-SWDUP-SPR17	Total/NA	Water	6010C	486825
MB 680-486361/1-A	Method Blank	Total Recoverable	Water	6010C	486361
MB 680-486725/1-A	Method Blank	Total Recoverable	Water	6010C	486725
MB 680-486825/1-A	Method Blank	Total/NA	Water	6010C	486825
LCS 680-486361/2-A	Lab Control Sample	Total Recoverable	Water	6010C	486361
LCS 680-486725/2-A	Lab Control Sample	Total Recoverable	Water	6010C	486725
LCS 680-486825/2-A	Lab Control Sample	Total/NA	Water	6010C	486825
680-140428-3 MS	57M-95-03X-SPR17	Dissolved	Water	6010C	486725
680-140428-3 MS	57M-95-03X-SPR17	Total/NA	Water	6010C	486825
680-140428-3 MSD	57M-95-03X-SPR17	Dissolved	Water	6010C	486725
680-140428-3 MSD	57M-95-03X-SPR17	Total/NA	Water	6010C	486825

Metals (Continued)

Analysis Batch: 487124

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-3	57M-95-03X-SPR17	Dissolved	Water	6020A	486724
MB 680-486724/1-A	Method Blank	Total Recoverable	Water	6020A	486724
LCS 680-486724/2-A	Lab Control Sample	Total Recoverable	Water	6020A	486724
680-140428-3 MS	57M-95-03X-SPR17	Dissolved	Water	6020A	486724
680-140428-3 MSD	57M-95-03X-SPR17	Dissolved	Water	6020A	486724

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC57

TestAmerica Job ID: 680-140428-1

Client Sample ID: 57M-96-11X-SPR17

Lab Sample ID: 680-140428-1

Date Collected: 06/26/17 10:05

Matrix: Water

Date Received: 06/29/17 08:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	486361	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6010C		1			486971	07/06/17 16:09	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	486825	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6010C		1			486971	07/07/17 00:09	BWR	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	486359	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6020A		1			486580	07/04/17 02:39	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	3010A			50 mL	250 mL	486365	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6020A		1			486575	07/03/17 23:29	BJB	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: 57M-DUP01-SPR17

Lab Sample ID: 680-140428-2

Date Collected: 06/26/17 10:20

Matrix: Water

Date Received: 06/29/17 08:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	486361	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6010C		1			486971	07/06/17 16:04	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	486825	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6010C		1			486971	07/07/17 00:35	BWR	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	486359	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6020A		1			486580	07/04/17 02:35	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	3010A			50 mL	250 mL	486365	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6020A		1			486575	07/03/17 23:51	BJB	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: 57M-95-03X-SPR17

Lab Sample ID: 680-140428-3

Date Collected: 06/26/17 09:10

Matrix: Water

Date Received: 06/29/17 08:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	486725	07/05/17 15:01	AJR	TAL SAV
Dissolved	Analysis	6010C		1			486971	07/07/17 01:11	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	486825	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6010C		1			486971	07/06/17 23:17	BWR	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	486724	07/05/17 15:01	AJR	TAL SAV

Client Sample ID: 57M-95-03X-SPR17

Lab Sample ID: 680-140428-3

Date Collected: 06/26/17 09:10

Matrix: Water

Date Received: 06/29/17 08:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	6020A		1			487124	07/08/17 13:34	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	3010A			50 mL	250 mL	486365	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6020A		1			486575	07/03/17 22:46	BJB	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: 57M-SW-1-SPR17

Lab Sample ID: 680-140428-4

Date Collected: 06/26/17 10:55

Matrix: Water

Date Received: 06/29/17 08:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	486361	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6010C		1			486971	07/06/17 16:34	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	486825	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6010C		1			486971	07/07/17 00:40	BWR	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	486359	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6020A		1			486580	07/04/17 02:52	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	3010A			50 mL	250 mL	486365	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6020A		1			486575	07/03/17 23:55	BJB	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: 57M-SWDUP-SPR17

Lab Sample ID: 680-140428-5

Date Collected: 06/26/17 11:00

Matrix: Water

Date Received: 06/29/17 08:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	486361	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6010C		1			486971	07/06/17 15:58	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	486825	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6010C		1			486971	07/07/17 00:19	BWR	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	486359	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6020A		1			486580	07/04/17 02:31	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	3010A			50 mL	250 mL	486365	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6020A		1			486575	07/03/17 23:38	BJB	TAL SAV
	Instrument ID: ICPMSC									

Laboratory References:

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

356325-Boston

PO #	17-636	Devens - AOC57 1024-003	**Chain of Custody Record**	Page: 1	of: 1

Company: KOMAN GS, LLC

Address: 160 East Main Street, Suite 2F, Westborough, MA

Phone: 508-366-7442 Fax: 508-366-7445

Sampled by [Print Name(s)]/Affiliation: Liam G. Anderson

Sampler(s) Signature(s):

Laboratory: Test America - Savannah

Address:

Contact: Jerry Lanier

Regulatory Facility No.

Project Name: Devens Spring 2017 LTM

Sampling QAP No.:

Approval Date:

TAT: Routine

Other:

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	Preservatives (see codes) H	H	I	S	O	I	S	N	Analyses Requested: Total Metals*-SW6010/6020 1-250 ml poly (HNO3)	Dissolved Metals*-SW6010/6020 1-250 ml poly (HNO3)	Remarks	Lab. No.
57M-96-11X-SPR17		6/26/17	1015	P	GW	2									X	X		
57M-DUP01-SPR17		6/26/17	1020	P	GW	2									X	X		
57M-95-03X-SPR17		6/26/17	910	P	GW	6									X	X	MS/MSD	
57M-SW-1-SPR17		6/26/17	1055	P	GW	2									X	X		
57M-SWDUP-SPR17		6/26/17	1100	P	GW	2									X	X		
				P	GW													
				P	GW													
				P	GW													
Shipping Details				courier pick up		0	← Total Number of Containers											

Date Out:	Via:	Item No.	Relinquished by/Affiliation	Date	Time	Received	Date	Time
Returned:	Via:			6/28/17	1400		6-28-17	1400
				6-28-17	1810			

Additional Comments:

* = Dissolved Metals include: Fe, Mn (6010); As (6020)

email logins and results to:

lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐

On ICE ☐

Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater SE = Sediment SP = Soil SW = Surface Water O = Other

PRESERVATIVE CODES H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other

COLLECTION METHOD C = Composite G=Grab P= Pumping O = Other

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-140428-1

Login Number: 140428

List Source: TestAmerica Savannah

List Number: 1

Creator: Ragnaldsen, Amy E

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC57

TestAmerica Job ID: 680-140428-1

Laboratory: TestAmerica Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	07-31-17 *
Alaska	State Program	10		06-30-18
Alaska (UST)	State Program	10	UST-104	11-05-17
Arizona	State Program	9	AZ808	12-14-17
Arkansas DEQ	State Program	6	88-0692	02-01-18
California	State Program	9	2939	06-30-17 *
Colorado	State Program	8	N/A	12-31-17
Connecticut	State Program	1	PH-0161	03-31-19
Florida	NELAP	4	E87052	06-30-18
GA Dept. of Agriculture	State Program	4	N/A	06-12-18
Georgia	State Program	4	N/A	06-30-17 *
Georgia	State Program	4	803	06-30-17 *
Guam	State Program	9	15-005r	04-16-18
Hawaii	State Program	9	N/A	06-30-17 *
Illinois	NELAP	5	200022	11-30-17
Indiana	State Program	5	N/A	06-30-17 *
Iowa	State Program	7	353	06-30-17 *
Kentucky (DW)	State Program	4	90084	12-31-17
Kentucky (UST)	State Program	4	18	06-30-18
Kentucky (WW)	State Program	4	90084	12-31-17
L-A-B	DoD ELAP		L2463	09-22-19
L-A-B	ISO/IEC 17025		L2463.01	09-22-19
Louisiana	NELAP	6	30690	06-30-18
Louisiana (DW)	NELAP	6	LA160019	12-31-17
Maine	State Program	1	GA00006	09-24-18
Maryland	State Program	3	250	12-31-17
Massachusetts	State Program	1	M-GA006	06-30-18
Michigan	State Program	5	9925	06-30-17 *
Mississippi	State Program	4	N/A	06-30-18
Nebraska	State Program	7	TestAmerica-Savannah	06-30-17 *
New Jersey	NELAP	2	GA769	06-30-18
New Mexico	State Program	6	N/A	06-30-17 *
New York	NELAP	2	10842	03-31-18
North Carolina (DW)	State Program	4	13701	07-31-17 *
North Carolina (WW/SW)	State Program	4	269	12-31-17
Oklahoma	State Program	6	9984	08-31-17 *
Pennsylvania	NELAP	3	68-00474	06-30-17 *
Puerto Rico	State Program	2	GA00006	12-31-17
South Carolina	State Program	4	98001	06-30-17 *
Tennessee	State Program	4	TN02961	06-30-18
Texas	NELAP	6	T104704185-16-9	11-30-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		SAV 3-04	06-14-20 *
Virginia	NELAP	3	460161	06-14-17 *
Washington	State Program	10	C805	06-10-17 *
West Virginia (DW)	State Program	3	9950C	12-31-17
West Virginia DEP	State Program	3	094	06-30-18
Wisconsin	State Program	5	999819810	08-31-17 *
Wyoming	State Program	8	8TMS-L	06-30-16 *

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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

TestAmerica Job ID: 680-140428-2
Client Project/Site: Devens - AOC32/43A

For:
KOMAN Government Solutions, LLC
160 East Main St
Suite 2F
Westborough, Massachusetts 01581

Attn: Laurie Ekes

Jerry Lanier

Authorized for release by:
7/17/2017 2:39:31 PM

Jerry Lanier, Project Manager I
(912)354-7858 e.3410
jerry.lanier@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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

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

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

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Job ID: 680-140428-2

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: Devens - AOC32/43A

Report Number: 680-140428-2

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

RECEIPT

The samples were received on 06/29/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.8 C.

VOLATILE ORGANIC COMPOUNDS (GC/MS)

Samples 32M-01-13XBR-SPR17 (680-140428-6), 32M-01-14XOB-SPR17 (680-140428-7), 32M-01-17XBR-SPR17 (680-140428-8), 32M-01-18XBR-SPR17 (680-140428-9), 32M-DUP01-SPR17 (680-140428-10) and Trip Blank (680-140428-11) were analyzed for Volatile Organic Compounds (GC/MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 07/09/2017, 07/10/2017 and 07/12/2017.

The continuing calibration verification (CCV) associated with batch 680-487148 recovered above the upper control limit for 2,2-Dichloropropane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

The continuing calibration verification (CCV) associated with batch 680-487148 recovered above the upper control limit for Vinyl acetate. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: (CCV 680-487148/3).

Refer to the QC report for details.

Samples 32M-01-18XBR-SPR17 (680-140428-9)[5X] and 32M-DUP01-SPR17 (680-140428-10)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with analytical batch 680-487148.

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

METALS (ICP) - DISSOLVED

Samples 32M-01-13XBR-SPR17 (680-140428-6), 32M-01-14XOB-SPR17 (680-140428-7), 32M-01-17XBR-SPR17 (680-140428-8), 32M-01-18XBR-SPR17 (680-140428-9) and 32M-DUP01-SPR17 (680-140428-10) were analyzed for Metals (ICP) - Dissolved in accordance with EPA SW-846 Method 6010C. The samples were prepared on 06/30/2017 and 07/07/2017 and analyzed on 07/06/2017 and 07/11/2017.

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

Job ID: 680-140428-2 (Continued)

Laboratory: TestAmerica Savannah (Continued)

METALS (ICP)

Samples 32M-01-13XBR-SPR17 (680-140428-6), 32M-01-14XOB-SPR17 (680-140428-7), 32M-01-17XBR-SPR17 (680-140428-8), 32M-01-18XBR-SPR17 (680-140428-9) and 32M-DUP01-SPR17 (680-140428-10) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 06/30/2017 and analyzed on 07/06/2017 and 07/07/2017.

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

METALS (ICPMS) - DISSOLVED

Samples 32M-01-13XBR-SPR17 (680-140428-6), 32M-01-14XOB-SPR17 (680-140428-7), 32M-01-17XBR-SPR17 (680-140428-8), 32M-01-18XBR-SPR17 (680-140428-9) and 32M-DUP01-SPR17 (680-140428-10) were analyzed for Metals (ICPMS) - Dissolved in accordance with EPA SW-846 Method 6020A. The samples were prepared on 06/30/2017 and 07/07/2017 and analyzed on 07/04/2017 and 07/10/2017.

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

METALS

Samples 32M-01-13XBR-SPR17 (680-140428-6), 32M-01-14XOB-SPR17 (680-140428-7), 32M-01-17XBR-SPR17 (680-140428-8), 32M-01-18XBR-SPR17 (680-140428-9) and 32M-DUP01-SPR17 (680-140428-10) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 06/30/2017 and analyzed on 07/03/2017.

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

Subcontract Work

Method MA VPH: This method was subcontracted to Katahdin Analytical Services Inc. The subcontract laboratory certification is different from that of the facility issuing the final report.

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC32/43A

TestAmerica Job ID: 680-140428-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-140428-6	32M-01-13XBR-SPR17	Water	06/26/17 13:05	06/29/17 08:46
680-140428-7	32M-01-14XOB-SPR17	Water	06/28/17 10:50	06/29/17 08:46
680-140428-8	32M-01-17XBR-SPR17	Water	06/28/17 12:30	06/29/17 08:46
680-140428-9	32M-01-18XBR-SPR17	Water	06/26/17 14:05	06/29/17 08:46
680-140428-10	32M-DUP01-SPR17	Water	06/26/17 14:10	06/29/17 08:46
680-140428-11	Trip Blank	Water	06/28/17 00:00	06/29/17 08:46

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC32/43A

TestAmerica Job ID: 680-140428-2

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
MA VPH	MADEP VPH Volatile Petroleum Hydrocarbon	NONE	

Protocol References:

NONE = NONE

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

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

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

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
D	The reported value is from a dilution.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

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

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC32/43A

TestAmerica Job ID: 680-140428-2

Client Sample ID: 32M-01-13XBR-SPR17
Date Collected: 06/26/17 13:05
Date Received: 06/29/17 08:46

Lab Sample ID: 680-140428-6
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	10	U	10	10	7.0	ug/L		07/09/17 21:59	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		07/09/17 21:59	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		07/09/17 21:59	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		07/09/17 21:59	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 21:59	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		07/09/17 21:59	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		07/09/17 21:59	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		07/09/17 21:59	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		07/09/17 21:59	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		07/09/17 21:59	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		07/09/17 21:59	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 21:59	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		07/09/17 21:59	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		07/09/17 21:59	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		07/09/17 21:59	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		07/09/17 21:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		07/09/17 21:59	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		07/09/17 21:59	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		07/09/17 21:59	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		07/09/17 21:59	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 21:59	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		07/09/17 21:59	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		07/09/17 21:59	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		07/09/17 21:59	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		07/09/17 21:59	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		07/09/17 21:59	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.50	ug/L		07/09/17 21:59	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		07/09/17 21:59	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		07/09/17 21:59	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		07/09/17 21:59	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		07/09/17 21:59	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 21:59	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		07/09/17 21:59	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		07/09/17 21:59	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		07/09/17 21:59	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 21:59	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		07/09/17 21:59	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		07/09/17 21:59	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		07/09/17 21:59	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 21:59	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		07/09/17 21:59	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		07/09/17 21:59	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		07/09/17 21:59	1
Naphthalene	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 21:59	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/09/17 21:59	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		07/09/17 21:59	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		07/09/17 21:59	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		07/09/17 21:59	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		07/09/17 21:59	1

Client Sample ID: 32M-01-13XBR-SPR17

Lab Sample ID: 680-140428-6

Date Collected: 06/26/17 13:05

Matrix: Water

Date Received: 06/29/17 08:46

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		07/09/17 21:59	1
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 21:59	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		07/09/17 21:59	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		07/09/17 21:59	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		07/09/17 21:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 21:59	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		07/09/17 21:59	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 21:59	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 21:59	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 21:59	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		07/09/17 21:59	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		07/09/17 21:59	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		07/09/17 21:59	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		07/09/17 21:59	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/09/17 21:59	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		07/09/17 21:59	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		07/09/17 21:59	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		07/09/17 21:59	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		07/09/17 21:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*85 - 114*		*07/09/17 21:59*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 119*		*07/09/17 21:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*07/09/17 21:59*	*1*
Toluene-d8 (Surr)	*99*		*89 - 112*		*07/09/17 21:59*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**64**		10	3.0	1.0	ug/L		07/07/17 00:55	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**52**		10	3.0	1.0	ug/L		07/06/17 16:39	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**1.7**	**J**	3.0	3.0	1.5	ug/L		07/03/17 23:59	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		07/04/17 02:57	1

Client Sample ID: 32M-01-14XOB-SPR17

Lab Sample ID: 680-140428-7

Date Collected: 06/28/17 10:50

Matrix: Water

Date Received: 06/29/17 08:46

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	10	U	10	10	7.0	ug/L		07/12/17 11:51	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		07/12/17 11:51	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 11:51	1

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC32/43A

TestAmerica Job ID: 680-140428-2

Client Sample ID: 32M-01-14XOB-SPR17
Date Collected: 06/28/17 10:50
Date Received: 06/29/17 08:46

Lab Sample ID: 680-140428-7
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		07/12/17 11:51	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:51	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		07/12/17 11:51	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		07/12/17 11:51	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		07/12/17 11:51	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		07/12/17 11:51	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		07/12/17 11:51	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		07/12/17 11:51	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:51	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 11:51	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		07/12/17 11:51	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		07/12/17 11:51	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		07/12/17 11:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		07/12/17 11:51	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		07/12/17 11:51	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		07/12/17 11:51	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		07/12/17 11:51	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 11:51	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		07/12/17 11:51	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		07/12/17 11:51	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		07/12/17 11:51	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		07/12/17 11:51	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		07/12/17 11:51	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 11:51	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		07/12/17 11:51	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		07/12/17 11:51	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		07/12/17 11:51	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		07/12/17 11:51	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 11:51	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		07/12/17 11:51	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		07/12/17 11:51	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		07/12/17 11:51	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:51	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		07/12/17 11:51	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		07/12/17 11:51	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		07/12/17 11:51	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:51	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		07/12/17 11:51	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		07/12/17 11:51	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		07/12/17 11:51	1
Naphthalene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:51	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/12/17 11:51	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		07/12/17 11:51	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		07/12/17 11:51	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		07/12/17 11:51	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		07/12/17 11:51	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		07/12/17 11:51	1
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 11:51	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		07/12/17 11:51	1

Client Sample ID: 32M-01-14XOB-SPR17

Lab Sample ID: 680-140428-7

Date Collected: 06/28/17 10:50

Matrix: Water

Date Received: 06/29/17 08:46

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		07/12/17 11:51	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		07/12/17 11:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 11:51	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		07/12/17 11:51	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:51	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:51	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 11:51	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		07/12/17 11:51	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		07/12/17 11:51	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		07/12/17 11:51	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		07/12/17 11:51	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/12/17 11:51	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		07/12/17 11:51	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		07/12/17 11:51	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 11:51	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		07/12/17 11:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*85 - 114*		*07/12/17 11:51*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*07/12/17 11:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*07/12/17 11:51*	*1*
Toluene-d8 (Surr)	*101*		*89 - 112*		*07/12/17 11:51*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**2900**		10	3.0	1.0	ug/L		07/07/17 00:29	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**2900**		10	3.0	1.0	ug/L		07/06/17 16:50	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**33**		3.0	3.0	1.5	ug/L		07/03/17 23:46	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**30**		3.0	3.0	1.5	ug/L		07/04/17 03:05	1

Client Sample ID: 32M-01-17XBR-SPR17

Lab Sample ID: 680-140428-8

Date Collected: 06/28/17 12:30

Matrix: Water

Date Received: 06/29/17 08:46

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	10	U	10	10	7.0	ug/L		07/12/17 12:13	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		07/12/17 12:13	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 12:13	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		07/12/17 12:13	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 12:13	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		07/12/17 12:13	1

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC32/43A

TestAmerica Job ID: 680-140428-2

Client Sample ID: 32M-01-17XBR-SPR17
Date Collected: 06/28/17 12:30
Date Received: 06/29/17 08:46

Lab Sample ID: 680-140428-8
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		07/12/17 12:13	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		07/12/17 12:13	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		07/12/17 12:13	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		07/12/17 12:13	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		07/12/17 12:13	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 12:13	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 12:13	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		07/12/17 12:13	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		07/12/17 12:13	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		07/12/17 12:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		07/12/17 12:13	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		07/12/17 12:13	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		07/12/17 12:13	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		07/12/17 12:13	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 12:13	1
1,3-Dichlorobenzene	**0.56**	**J**	1.0	1.0	0.43	ug/L		07/12/17 12:13	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		07/12/17 12:13	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		07/12/17 12:13	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		07/12/17 12:13	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		07/12/17 12:13	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 12:13	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		07/12/17 12:13	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		07/12/17 12:13	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		07/12/17 12:13	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		07/12/17 12:13	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 12:13	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		07/12/17 12:13	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		07/12/17 12:13	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		07/12/17 12:13	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 12:13	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		07/12/17 12:13	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		07/12/17 12:13	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		07/12/17 12:13	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 12:13	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		07/12/17 12:13	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		07/12/17 12:13	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		07/12/17 12:13	1
Naphthalene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 12:13	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/12/17 12:13	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		07/12/17 12:13	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		07/12/17 12:13	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		07/12/17 12:13	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		07/12/17 12:13	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		07/12/17 12:13	1
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 12:13	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		07/12/17 12:13	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		07/12/17 12:13	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		07/12/17 12:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 12:13	1

Client Sample ID: 32M-01-17XBR-SPR17

Lab Sample ID: 680-140428-8
Date Collected: 06/28/17 12:30
Matrix: Water
Date Received: 06/29/17 08:46

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		07/12/17 12:13	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 12:13	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 12:13	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 12:13	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		07/12/17 12:13	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		07/12/17 12:13	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		07/12/17 12:13	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		07/12/17 12:13	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/12/17 12:13	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		07/12/17 12:13	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		07/12/17 12:13	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 12:13	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		07/12/17 12:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*85 - 114*		*07/12/17 12:13*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*07/12/17 12:13*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*07/12/17 12:13*	*1*
Toluene-d8 (Surr)	*101*		*89 - 112*		*07/12/17 12:13*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**3.9**	**J**	10	3.0	1.0	ug/L		07/06/17 23:53	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**1.3**	**J**	10	3.0	1.0	ug/L		07/11/17 16:05	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**2.6**	**J**	3.0	3.0	1.5	ug/L		07/03/17 23:07	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		07/10/17 15:25	1

Client Sample ID: 32M-01-18XBR-SPR17

Lab Sample ID: 680-140428-9
Date Collected: 06/26/17 14:05
Matrix: Water
Date Received: 06/29/17 08:46

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	50	U	50	50	35	ug/L		07/09/17 22:21	5
Benzene	5.0	U	5.0	5.0	2.2	ug/L		07/09/17 22:21	5
Bromobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 22:21	5
Bromoform	5.0	U	5.0	5.0	2.2	ug/L		07/09/17 22:21	5
Bromomethane	25	U	25	25	13	ug/L		07/09/17 22:21	5
2-Butanone (MEK)	50	U	50	50	17	ug/L		07/09/17 22:21	5
Carbon disulfide	10	U	10	10	2.2	ug/L		07/09/17 22:21	5
Carbon tetrachloride	2.5	U	5.0	2.5	1.7	ug/L		07/09/17 22:21	5
Chlorobenzene	**170**	**D**	5.0	2.5	1.3	ug/L		07/09/17 22:21	5

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC32/43A

TestAmerica Job ID: 680-140428-2

Client Sample ID: 32M-01-18XBR-SPR17
Date Collected: 06/26/17 14:05
Date Received: 06/29/17 08:46

Lab Sample ID: 680-140428-9
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chlorobromomethane	5.0	U	5.0	5.0	2.3	ug/L		07/09/17 22:21	5
Chlorodibromomethane	2.5	U	5.0	2.5	1.6	ug/L		07/09/17 22:21	5
Chloroethane	25	U	25	25	13	ug/L		07/09/17 22:21	5
Chloroform	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 22:21	5
Chloromethane	5.0	U	5.0	5.0	2.0	ug/L		07/09/17 22:21	5
2-Chlorotoluene	2.5	U	5.0	2.5	1.4	ug/L		07/09/17 22:21	5
4-Chlorotoluene	5.0	U	5.0	5.0	2.3	ug/L		07/09/17 22:21	5
cis-1,2-Dichloroethene	5.0	U	5.0	5.0	2.1	ug/L		07/09/17 22:21	5
cis-1,3-Dichloropropene	5.0	U	5.0	5.0	2.0	ug/L		07/09/17 22:21	5
1,2-Dibromo-3-Chloropropane	10	U	25	10	5.5	ug/L		07/09/17 22:21	5
Dibromomethane	5.0	U	5.0	5.0	1.8	ug/L		07/09/17 22:21	5
1,2-Dichlorobenzene	**390**	**D**	5.0	5.0	1.9	ug/L		07/09/17 22:21	5
1,3-Dichlorobenzene	**70**	**D**	5.0	5.0	2.2	ug/L		07/09/17 22:21	5
1,4-Dichlorobenzene	**46**	**D**	5.0	5.0	2.3	ug/L		07/09/17 22:21	5
Dichlorobromomethane	5.0	U	5.0	5.0	2.2	ug/L		07/09/17 22:21	5
Dichlorodifluoromethane	5.0	U	5.0	5.0	3.0	ug/L		07/09/17 22:21	5
1,1-Dichloroethane	5.0	U	5.0	5.0	1.9	ug/L		07/09/17 22:21	5
1,2-Dichloroethane	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 22:21	5
1,1-Dichloroethene	5.0	U	5.0	5.0	1.8	ug/L		07/09/17 22:21	5
1,2-Dichloroethene, Total	5.0	U	10	5.0	3.7	ug/L		07/09/17 22:21	5
1,2-Dichloropropane	5.0	U	5.0	5.0	3.4	ug/L		07/09/17 22:21	5
1,3-Dichloropropane	5.0	U	5.0	5.0	1.7	ug/L		07/09/17 22:21	5
2,2-Dichloropropane	5.0	U	5.0	5.0	1.9	ug/L		07/09/17 22:21	5
1,1-Dichloropropene	5.0	U	5.0	5.0	1.7	ug/L		07/09/17 22:21	5
Ethylbenzene	2.5	U	5.0	2.5	1.7	ug/L		07/09/17 22:21	5
Ethylene Dibromide	5.0	U	5.0	5.0	2.2	ug/L		07/09/17 22:21	5
Hexachlorobutadiene	25	U	25	25	13	ug/L		07/09/17 22:21	5
2-Hexanone	25	U	50	25	10	ug/L		07/09/17 22:21	5
Isopropylbenzene	5.0	U	5.0	5.0	1.8	ug/L		07/09/17 22:21	5
4-Isopropyltoluene	5.0	U	5.0	5.0	2.4	ug/L		07/09/17 22:21	5
Methylene Chloride	25	U	25	25	13	ug/L		07/09/17 22:21	5
4-Methyl-2-pentanone (MIBK)	25	U	50	25	11	ug/L		07/09/17 22:21	5
Methyl tert-butyl ether	2.5	U	50	2.5	1.5	ug/L		07/09/17 22:21	5
m-Xylene & p-Xylene	5.0	U	5.0	5.0	1.8	ug/L		07/09/17 22:21	5
Naphthalene	25	U	25	25	13	ug/L		07/09/17 22:21	5
n-Butylbenzene	5.0	U	5.0	5.0	2.4	ug/L		07/09/17 22:21	5
N-Propylbenzene	5.0	U	5.0	5.0	1.9	ug/L		07/09/17 22:21	5
o-Xylene	2.5	U	5.0	2.5	1.2	ug/L		07/09/17 22:21	5
sec-Butylbenzene	5.0	U	5.0	5.0	2.1	ug/L		07/09/17 22:21	5
Styrene	2.5	U	5.0	2.5	1.4	ug/L		07/09/17 22:21	5
tert-Butylbenzene	5.0	U	5.0	5.0	2.3	ug/L		07/09/17 22:21	5
1,1,1,2-Tetrachloroethane	5.0	U	5.0	5.0	1.9	ug/L		07/09/17 22:21	5
1,1,2,2-Tetrachloroethane	5.0	U	5.0	5.0	3.1	ug/L		07/09/17 22:21	5
Tetrachloroethene	5.0	U	5.0	5.0	3.7	ug/L		07/09/17 22:21	5
Toluene	5.0	U	5.0	5.0	2.4	ug/L		07/09/17 22:21	5
trans-1,2-Dichloroethene	5.0	U	5.0	5.0	1.9	ug/L		07/09/17 22:21	5
trans-1,3-Dichloropropene	5.0	U	5.0	5.0	2.1	ug/L		07/09/17 22:21	5
1,2,3-Trichlorobenzene	25	U	25	25	13	ug/L		07/09/17 22:21	5
1,2,4-Trichlorobenzene	25	U	25	25	13	ug/L		07/09/17 22:21	5

Client Sample ID: 32M-01-18XBR-SPR17

Lab Sample ID: 680-140428-9

Date Collected: 06/26/17 14:05

Matrix: Water

Date Received: 06/29/17 08:46

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	5.0	U	5.0	5.0	1.9	ug/L		07/09/17 22:21	5
1,1,2-Trichloroethane	2.5	U	5.0	2.5	1.7	ug/L		07/09/17 22:21	5
Trichloroethene	5.0	U	5.0	5.0	2.4	ug/L		07/09/17 22:21	5
Trichlorofluoromethane	5.0	U	5.0	5.0	2.1	ug/L		07/09/17 22:21	5
1,2,3-Trichloropropane	5.0	U	5.0	5.0	2.0	ug/L		07/09/17 22:21	5
1,2,4-Trimethylbenzene	5.0	U	5.0	5.0	2.4	ug/L		07/09/17 22:21	5
1,3,5-Trimethylbenzene	2.5	U	5.0	2.5	1.6	ug/L		07/09/17 22:21	5
Vinyl acetate	10	U	10	10	4.1	ug/L		07/09/17 22:21	5
Vinyl chloride	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 22:21	5
Xylenes, Total	2.5	U	10	2.5	1.2	ug/L		07/09/17 22:21	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*85 - 114*		*07/09/17 22:21*	*5*
Dibromofluoromethane (Surr)	*107*		*80 - 119*		*07/09/17 22:21*	*5*
1,2-Dichloroethane-d4 (Surr)	*103*		*81 - 118*		*07/09/17 22:21*	*5*
Toluene-d8 (Surr)	*100*		*89 - 112*		*07/09/17 22:21*	*5*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**2300**		10	3.0	1.0	ug/L		07/07/17 00:14	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**2700**		10	3.0	1.0	ug/L		07/06/17 16:55	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**4.7**		3.0	3.0	1.5	ug/L		07/03/17 23:33	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**2.4**	**J**	3.0	3.0	1.5	ug/L		07/04/17 03:10	1

Client Sample ID: 32M-DUP01-SPR17

Lab Sample ID: 680-140428-10

Date Collected: 06/26/17 14:10

Matrix: Water

Date Received: 06/29/17 08:46

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	10	U	10	10	7.0	ug/L		07/09/17 22:42	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		07/09/17 22:42	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		07/09/17 22:42	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		07/09/17 22:42	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 22:42	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		07/09/17 22:42	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		07/09/17 22:42	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		07/09/17 22:42	1
Chlorobenzene	**180**		1.0	0.50	0.26	ug/L		07/09/17 22:42	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		07/09/17 22:42	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		07/09/17 22:42	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 22:42	1

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC32/43A

TestAmerica Job ID: 680-140428-2

Client Sample ID: 32M-DUP01-SPR17
Date Collected: 06/26/17 14:10
Date Received: 06/29/17 08:46

Lab Sample ID: 680-140428-10
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		07/09/17 22:42	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		07/09/17 22:42	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		07/09/17 22:42	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		07/09/17 22:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		07/09/17 22:42	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		07/09/17 22:42	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		07/09/17 22:42	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		07/09/17 22:42	1
1,3-Dichlorobenzene	**83**		1.0	1.0	0.43	ug/L		07/09/17 22:42	1
1,4-Dichlorobenzene	**52**		1.0	1.0	0.46	ug/L		07/09/17 22:42	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		07/09/17 22:42	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		07/09/17 22:42	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		07/09/17 22:42	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.50	ug/L		07/09/17 22:42	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		07/09/17 22:42	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		07/09/17 22:42	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		07/09/17 22:42	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		07/09/17 22:42	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 22:42	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		07/09/17 22:42	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		07/09/17 22:42	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		07/09/17 22:42	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 22:42	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		07/09/17 22:42	1
Isopropylbenzene	**0.79**	**J**	1.0	1.0	0.35	ug/L		07/09/17 22:42	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		07/09/17 22:42	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 22:42	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		07/09/17 22:42	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		07/09/17 22:42	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		07/09/17 22:42	1
Naphthalene	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 22:42	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/09/17 22:42	1
N-Propylbenzene	**0.52**	**J**	1.0	1.0	0.38	ug/L		07/09/17 22:42	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		07/09/17 22:42	1
sec-Butylbenzene	**0.58**	**J**	1.0	1.0	0.42	ug/L		07/09/17 22:42	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		07/09/17 22:42	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		07/09/17 22:42	1
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 22:42	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		07/09/17 22:42	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		07/09/17 22:42	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		07/09/17 22:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 22:42	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		07/09/17 22:42	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 22:42	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 22:42	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 22:42	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		07/09/17 22:42	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		07/09/17 22:42	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		07/09/17 22:42	1

Client Sample ID: 32M-DUP01-SPR17

Lab Sample ID: 680-140428-10
Date Collected: 06/26/17 14:10
Matrix: Water
Date Received: 06/29/17 08:46

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		07/09/17 22:42	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/09/17 22:42	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		07/09/17 22:42	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		07/09/17 22:42	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		07/09/17 22:42	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		07/09/17 22:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*85 - 114*		*07/09/17 22:42*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 119*		*07/09/17 22:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*07/09/17 22:42*	*1*
Toluene-d8 (Surr)	*105*		*89 - 112*		*07/09/17 22:42*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2-Dichlorobenzene	**410**	**D**	5.0	5.0	1.9	ug/L		07/10/17 19:13	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*85 - 114*		*07/10/17 19:13*	*5*
Dibromofluoromethane (Surr)	*114*		*80 - 119*		*07/10/17 19:13*	*5*
1,2-Dichloroethane-d4 (Surr)	*117*		*81 - 118*		*07/10/17 19:13*	*5*
Toluene-d8 (Surr)	*105*		*89 - 112*		*07/10/17 19:13*	*5*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**1800**		10	3.0	1.0	ug/L		07/07/17 00:24	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**2900**		10	3.0	1.0	ug/L		07/06/17 16:44	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**4.4**		3.0	3.0	1.5	ug/L		07/03/17 23:42	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**3.3**		3.0	3.0	1.5	ug/L		07/04/17 03:01	1

Client Sample ID: Trip Blank

Lab Sample ID: 680-140428-11
Date Collected: 06/28/17 00:00
Matrix: Water
Date Received: 06/29/17 08:46

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	10	U	10	10	7.0	ug/L		07/12/17 11:08	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		07/12/17 11:08	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 11:08	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		07/12/17 11:08	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:08	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		07/12/17 11:08	1

Client Sample ID: Trip Blank
Date Collected: 06/28/17 00:00
Date Received: 06/29/17 08:46

Lab Sample ID: 680-140428-11
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		07/12/17 11:08	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		07/12/17 11:08	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		07/12/17 11:08	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		07/12/17 11:08	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		07/12/17 11:08	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:08	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 11:08	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		07/12/17 11:08	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		07/12/17 11:08	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		07/12/17 11:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		07/12/17 11:08	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		07/12/17 11:08	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		07/12/17 11:08	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		07/12/17 11:08	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 11:08	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		07/12/17 11:08	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		07/12/17 11:08	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		07/12/17 11:08	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		07/12/17 11:08	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		07/12/17 11:08	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 11:08	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		07/12/17 11:08	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		07/12/17 11:08	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		07/12/17 11:08	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		07/12/17 11:08	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 11:08	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		07/12/17 11:08	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		07/12/17 11:08	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		07/12/17 11:08	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:08	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		07/12/17 11:08	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		07/12/17 11:08	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		07/12/17 11:08	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:08	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		07/12/17 11:08	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		07/12/17 11:08	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		07/12/17 11:08	1
Naphthalene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:08	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/12/17 11:08	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		07/12/17 11:08	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		07/12/17 11:08	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		07/12/17 11:08	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		07/12/17 11:08	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		07/12/17 11:08	1
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 11:08	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		07/12/17 11:08	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		07/12/17 11:08	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		07/12/17 11:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 11:08	1

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC32/43A

TestAmerica Job ID: 680-140428-2

Client Sample ID: Trip Blank
Date Collected: 06/28/17 00:00
Date Received: 06/29/17 08:46

Lab Sample ID: 680-140428-11
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		07/12/17 11:08	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:08	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 11:08	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 11:08	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		07/12/17 11:08	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		07/12/17 11:08	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		07/12/17 11:08	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		07/12/17 11:08	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/12/17 11:08	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		07/12/17 11:08	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		07/12/17 11:08	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 11:08	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		07/12/17 11:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*85 - 114*		*07/12/17 11:08*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 119*		*07/12/17 11:08*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*07/12/17 11:08*	*1*
Toluene-d8 (Surr)	*102*		*89 - 112*		*07/12/17 11:08*	*1*

Surrogate Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC32/43A

TestAmerica Job ID: 680-140428-2

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	12DCE	TOL
Lab Sample ID	Client Sample ID	(85-114)	(80-119)	(81-118)	(89-112)
680-140428-6	32M-01-13XBR-SPR17	100	103	100	99
680-140428-7	32M-01-14XOB-SPR17	97	102	100	101
680-140428-8	32M-01-17XBR-SPR17	100	102	100	101
680-140428-8 MS	32M-01-17XBR-SPR17	95	97	93	102
680-140428-8 MSD	32M-01-17XBR-SPR17	94	98	93	102
680-140428-9	32M-01-18XBR-SPR17	99	107	103	100
680-140428-10	32M-DUP01-SPR17	97	103	100	105
680-140428-10 - DL	32M-DUP01-SPR17	99	114	117	105
680-140428-11	Trip Blank	99	101	102	102
LCS 680-487091/4	Lab Control Sample	95	103	100	102
LCS 680-487148/4	Lab Control Sample	98	102	97	101
LCS 680-487395/4	Lab Control Sample	95	102	101	103
LCSD 680-487091/5	Lab Control Sample Dup	97	104	102	104
LCSD 680-487148/5	Lab Control Sample Dup	99	102	100	105
LCSD 680-487395/5	Lab Control Sample Dup	94	96	93	101
MB 680-487091/9	Method Blank	100	102	99	100
MB 680-487148/9	Method Blank	99	103	103	101
MB 680-487395/9	Method Blank	98	103	98	100

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

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

Lab Sample ID: MB 680-487091/9
Matrix: Water
Analysis Batch: 487091

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	10	U	10	10	7.0	ug/L		07/09/17 16:32	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		07/09/17 16:32	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		07/09/17 16:32	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		07/09/17 16:32	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 16:32	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		07/09/17 16:32	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		07/09/17 16:32	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		07/09/17 16:32	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		07/09/17 16:32	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		07/09/17 16:32	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		07/09/17 16:32	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 16:32	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		07/09/17 16:32	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		07/09/17 16:32	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		07/09/17 16:32	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		07/09/17 16:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		07/09/17 16:32	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		07/09/17 16:32	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		07/09/17 16:32	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		07/09/17 16:32	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 16:32	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		07/09/17 16:32	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		07/09/17 16:32	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		07/09/17 16:32	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		07/09/17 16:32	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		07/09/17 16:32	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.50	ug/L		07/09/17 16:32	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		07/09/17 16:32	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		07/09/17 16:32	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		07/09/17 16:32	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		07/09/17 16:32	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 16:32	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		07/09/17 16:32	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		07/09/17 16:32	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		07/09/17 16:32	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 16:32	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		07/09/17 16:32	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		07/09/17 16:32	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		07/09/17 16:32	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 16:32	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		07/09/17 16:32	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		07/09/17 16:32	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		07/09/17 16:32	1
Naphthalene	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 16:32	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/09/17 16:32	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		07/09/17 16:32	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		07/09/17 16:32	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		07/09/17 16:32	1

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

Lab Sample ID: MB 680-487091/9
Matrix: Water
Analysis Batch: 487091

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Styrene	0.50	U	1.0	0.50	0.27	ug/L		07/09/17 16:32	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		07/09/17 16:32	1
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 16:32	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		07/09/17 16:32	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		07/09/17 16:32	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		07/09/17 16:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 16:32	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		07/09/17 16:32	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 16:32	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/09/17 16:32	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/09/17 16:32	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		07/09/17 16:32	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		07/09/17 16:32	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		07/09/17 16:32	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		07/09/17 16:32	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/09/17 16:32	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		07/09/17 16:32	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		07/09/17 16:32	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		07/09/17 16:32	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		07/09/17 16:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*85 - 114*		*07/09/17 16:32*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*07/09/17 16:32*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*81 - 118*		*07/09/17 16:32*	*1*
Toluene-d8 (Surr)	*100*		*89 - 112*		*07/09/17 16:32*	*1*

Lab Sample ID: LCS 680-487091/4
Matrix: Water
Analysis Batch: 487091

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	250	255		ug/L		102	39 - 160
Benzene	50.0	52.2		ug/L		104	79 - 120
Bromobenzene	50.0	49.7		ug/L		99	80 - 120
Bromoform	50.0	53.8		ug/L		108	66 - 130
Bromomethane	50.0	53.3		ug/L		107	53 - 141
2-Butanone (MEK)	250	262		ug/L		105	56 - 143
Carbon disulfide	50.0	53.4		ug/L		107	64 - 133
Carbon tetrachloride	50.0	53.3		ug/L		107	72 - 136
Chlorobenzene	50.0	50.6		ug/L		101	82 - 118
Chlorobromomethane	50.0	54.5		ug/L		109	78 - 123
Chlorodibromomethane	50.0	49.1		ug/L		98	74 - 126
Chloroethane	50.0	51.8		ug/L		104	60 - 138
Chloroform	50.0	52.0		ug/L		104	79 - 124
Chloromethane	50.0	53.3		ug/L		107	50 - 139
2-Chlorotoluene	50.0	51.5		ug/L		103	79 - 122
4-Chlorotoluene	50.0	49.8		ug/L		100	78 - 122

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

Lab Sample ID: LCS 680-487091/4
Matrix: Water
Analysis Batch: 487091

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	50.0	53.6		ug/L		107	78 - 123
cis-1,3-Dichloropropene	50.0	57.2		ug/L		114	75 - 124
1,2-Dibromo-3-Chloropropane	50.0	53.4		ug/L		107	62 - 128
Dibromomethane	50.0	53.6		ug/L		107	79 - 123
1,2-Dichlorobenzene	50.0	51.5		ug/L		103	80 - 119
1,3-Dichlorobenzene	50.0	50.2		ug/L		100	80 - 119
1,4-Dichlorobenzene	50.0	50.9		ug/L		102	79 - 118
Dichlorobromomethane	50.0	57.9		ug/L		116	79 - 125
Dichlorodifluoromethane	50.0	47.5		ug/L		95	32 - 152
1,1-Dichloroethane	50.0	53.1		ug/L		106	77 - 125
1,2-Dichloroethane	50.0	51.4		ug/L		103	73 - 128
1,1-Dichloroethene	50.0	50.3		ug/L		101	71 - 131
1,2-Dichloroethene, Total	100	107		ug/L		107	79 - 121
1,2-Dichloropropane	50.0	55.8		ug/L		112	78 - 122
1,3-Dichloropropane	50.0	51.9		ug/L		104	80 - 119
2,2-Dichloropropane	50.0	52.2		ug/L		104	60 - 139
1,1-Dichloropropene	50.0	53.6		ug/L		107	79 - 125
Ethylbenzene	50.0	50.8		ug/L		102	79 - 121
Ethylene Dibromide	50.0	52.2		ug/L		104	75 - 127
Hexachlorobutadiene	50.0	52.8		ug/L		106	66 - 134
2-Hexanone	250	256		ug/L		102	57 - 139
Isopropylbenzene	50.0	50.2		ug/L		100	72 - 131
4-Isopropyltoluene	50.0	50.8		ug/L		102	77 - 127
Methylene Chloride	50.0	52.0		ug/L		104	74 - 124
4-Methyl-2-pentanone (MIBK)	250	265		ug/L		106	67 - 130
Methyl tert-butyl ether	50.0	54.8		ug/L		110	71 - 124
m-Xylene & p-Xylene	50.0	50.7		ug/L		101	80 - 121
Naphthalene	50.0	50.7		ug/L		101	61 - 128
n-Butylbenzene	50.0	53.0		ug/L		106	75 - 128
N-Propylbenzene	50.0	47.9		ug/L		96	76 - 126
o-Xylene	50.0	52.0		ug/L		104	78 - 122
sec-Butylbenzene	50.0	50.9		ug/L		102	77 - 126
Styrene	50.0	49.5		ug/L		99	78 - 123
tert-Butylbenzene	50.0	51.8		ug/L		104	78 - 124
1,1,1,2-Tetrachloroethane	50.0	56.2		ug/L		112	78 - 124
1,1,2,2-Tetrachloroethane	50.0	49.4		ug/L		99	71 - 121
Tetrachloroethene	50.0	50.6		ug/L		101	74 - 129
Toluene	50.0	52.8		ug/L		106	80 - 121
trans-1,2-Dichloroethene	50.0	53.9		ug/L		108	75 - 124
trans-1,3-Dichloropropene	50.0	54.0		ug/L		108	73 - 127
1,2,3-Trichlorobenzene	50.0	59.8		ug/L		120	69 - 129
1,2,4-Trichlorobenzene	50.0	50.2		ug/L		100	69 - 130
1,1,1-Trichloroethane	50.0	52.0		ug/L		104	74 - 131
1,1,2-Trichloroethane	50.0	54.6		ug/L		109	80 - 119
Trichloroethene	50.0	52.1		ug/L		104	79 - 123
Trichlorofluoromethane	50.0	48.9		ug/L		98	65 - 141
1,2,3-Trichloropropane	50.0	50.6		ug/L		101	73 - 122
1,2,4-Trimethylbenzene	50.0	50.4		ug/L		101	76 - 124

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

Lab Sample ID: LCS 680-487091/4
Matrix: Water
Analysis Batch: 487091

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,3,5-Trimethylbenzene			50.0	50.6		ug/L		101	75 - 124		
Vinyl acetate			100	118		ug/L		118	54 - 146		
Vinyl chloride			50.0	52.1		ug/L		104	58 - 137		
Xylenes, Total			100	103		ug/L		103	79 - 121		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*85 - 114*
Dibromofluoromethane (Surr)	*103*		*80 - 119*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*
Toluene-d8 (Surr)	*102*		*89 - 112*

Lab Sample ID: LCSD 680-487091/5
Matrix: Water
Analysis Batch: 487091

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone			250	263		ug/L		105	39 - 160	3	20
Benzene			50.0	53.0		ug/L		106	79 - 120	2	20
Bromobenzene			50.0	48.5		ug/L		97	80 - 120	3	20
Bromoform			50.0	54.9		ug/L		110	66 - 130	2	20
Bromomethane			50.0	56.2		ug/L		112	53 - 141	5	20
2-Butanone (MEK)			250	270		ug/L		108	56 - 143	3	20
Carbon disulfide			50.0	54.7		ug/L		109	64 - 133	3	20
Carbon tetrachloride			50.0	54.3		ug/L		109	72 - 136	2	20
Chlorobenzene			50.0	50.9		ug/L		102	82 - 118	1	20
Chlorobromomethane			50.0	53.9		ug/L		108	78 - 123	1	20
Chlorodibromomethane			50.0	50.5		ug/L		101	74 - 126	3	20
Chloroethane			50.0	52.3		ug/L		105	60 - 138	1	20
Chloroform			50.0	53.6		ug/L		107	79 - 124	3	20
Chloromethane			50.0	53.9		ug/L		108	50 - 139	1	20
2-Chlorotoluene			50.0	51.0		ug/L		102	79 - 122	1	20
4-Chlorotoluene			50.0	48.9		ug/L		98	78 - 122	2	20
cis-1,2-Dichloroethene			50.0	54.1		ug/L		108	78 - 123	1	20
cis-1,3-Dichloropropene			50.0	57.9		ug/L		116	75 - 124	1	20
1,2-Dibromo-3-Chloropropane			50.0	54.7		ug/L		109	62 - 128	2	20
Dibromomethane			50.0	53.4		ug/L		107	79 - 123	0	20
1,2-Dichlorobenzene			50.0	52.3		ug/L		105	80 - 119	2	20
1,3-Dichlorobenzene			50.0	50.0		ug/L		100	80 - 119	0	20
1,4-Dichlorobenzene			50.0	51.3		ug/L		103	79 - 118	1	20
Dichlorobromomethane			50.0	58.0		ug/L		116	79 - 125	0	20
Dichlorodifluoromethane			50.0	48.1		ug/L		96	32 - 152	1	20
1,1-Dichloroethane			50.0	55.1		ug/L		110	77 - 125	4	20
1,2-Dichloroethane			50.0	52.7		ug/L		105	73 - 128	2	20
1,1-Dichloroethene			50.0	51.3		ug/L		103	71 - 131	2	20
1,2-Dichloroethene, Total			100	109		ug/L		109	79 - 121	2	20
1,2-Dichloropropane			50.0	55.6		ug/L		111	78 - 122	0	20
1,3-Dichloropropane			50.0	52.3		ug/L		105	80 - 119	1	20
2,2-Dichloropropane			50.0	52.1		ug/L		104	60 - 139	0	20

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

Lab Sample ID: LCSD 680-487091/5
Matrix: Water
Analysis Batch: 487091

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloropropene			50.0	54.0		ug/L		108	79 - 125	1	20
Ethylbenzene			50.0	50.6		ug/L		101	79 - 121	1	20
Ethylene Dibromide			50.0	54.2		ug/L		108	75 - 127	4	20
Hexachlorobutadiene			50.0	54.3		ug/L		109	66 - 134	3	20
2-Hexanone			250	276		ug/L		110	57 - 139	8	20
Isopropylbenzene			50.0	49.7		ug/L		99	72 - 131	1	20
4-Isopropyltoluene			50.0	51.5		ug/L		103	77 - 127	1	20
Methylene Chloride			50.0	54.6		ug/L		109	74 - 124	5	20
4-Methyl-2-pentanone (MIBK)			250	277		ug/L		111	67 - 130	4	20
Methyl tert-butyl ether			50.0	56.5		ug/L		113	71 - 124	3	20
m-Xylene & p-Xylene			50.0	49.4		ug/L		99	80 - 121	3	20
Naphthalene			50.0	52.8		ug/L		106	61 - 128	4	20
n-Butylbenzene			50.0	53.5		ug/L		107	75 - 128	1	20
N-Propylbenzene			50.0	49.1		ug/L		98	76 - 126	3	20
o-Xylene			50.0	51.9		ug/L		104	78 - 122	0	20
sec-Butylbenzene			50.0	50.5		ug/L		101	77 - 126	1	20
Styrene			50.0	49.1		ug/L		98	78 - 123	1	20
tert-Butylbenzene			50.0	50.5		ug/L		101	78 - 124	3	20
1,1,1,2-Tetrachloroethane			50.0	56.2		ug/L		112	78 - 124	0	20
1,1,2,2-Tetrachloroethane			50.0	51.4		ug/L		103	71 - 121	4	20
Tetrachloroethene			50.0	50.4		ug/L		101	74 - 129	0	20
Toluene			50.0	52.6		ug/L		105	80 - 121	0	20
trans-1,2-Dichloroethene			50.0	55.3		ug/L		111	75 - 124	3	20
trans-1,3-Dichloropropene			50.0	56.3		ug/L		113	73 - 127	4	20
1,2,3-Trichlorobenzene			50.0	59.6		ug/L		119	69 - 129	0	20
1,2,4-Trichlorobenzene			50.0	50.9		ug/L		102	69 - 130	1	20
1,1,1-Trichloroethane			50.0	52.1		ug/L		104	74 - 131	0	20
1,1,2-Trichloroethane			50.0	56.4		ug/L		113	80 - 119	3	20
Trichloroethene			50.0	52.7		ug/L		105	79 - 123	1	20
Trichlorofluoromethane			50.0	49.4		ug/L		99	65 - 141	1	20
1,2,3-Trichloropropane			50.0	52.6		ug/L		105	73 - 122	4	20
1,2,4-Trimethylbenzene			50.0	50.1		ug/L		100	76 - 124	1	20
1,3,5-Trimethylbenzene			50.0	49.9		ug/L		100	75 - 124	1	20
Vinyl acetate			100	121		ug/L		121	54 - 146	2	20
Vinyl chloride			50.0	54.7		ug/L		109	58 - 137	5	20
Xylenes, Total			100	101		ug/L		101	79 - 121	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*85 - 114*
Dibromofluoromethane (Surr)	*104*		*80 - 119*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*
Toluene-d8 (Surr)	*104*		*89 - 112*

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

Lab Sample ID: MB 680-487148/9
Matrix: Water
Analysis Batch: 487148

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	10	U	10	10	7.0	ug/L		07/10/17 13:15	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		07/10/17 13:15	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		07/10/17 13:15	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		07/10/17 13:15	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		07/10/17 13:15	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		07/10/17 13:15	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		07/10/17 13:15	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		07/10/17 13:15	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		07/10/17 13:15	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		07/10/17 13:15	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		07/10/17 13:15	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		07/10/17 13:15	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		07/10/17 13:15	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		07/10/17 13:15	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		07/10/17 13:15	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		07/10/17 13:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		07/10/17 13:15	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		07/10/17 13:15	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		07/10/17 13:15	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		07/10/17 13:15	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		07/10/17 13:15	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		07/10/17 13:15	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		07/10/17 13:15	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		07/10/17 13:15	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		07/10/17 13:15	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		07/10/17 13:15	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.50	ug/L		07/10/17 13:15	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		07/10/17 13:15	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		07/10/17 13:15	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		07/10/17 13:15	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		07/10/17 13:15	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		07/10/17 13:15	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		07/10/17 13:15	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		07/10/17 13:15	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		07/10/17 13:15	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		07/10/17 13:15	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		07/10/17 13:15	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		07/10/17 13:15	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		07/10/17 13:15	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		07/10/17 13:15	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		07/10/17 13:15	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		07/10/17 13:15	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		07/10/17 13:15	1
Naphthalene	5.0	U	5.0	5.0	2.5	ug/L		07/10/17 13:15	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/10/17 13:15	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		07/10/17 13:15	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		07/10/17 13:15	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		07/10/17 13:15	1

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

Lab Sample ID: MB 680-487148/9
Matrix: Water
Analysis Batch: 487148

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Styrene	0.50	U	1.0	0.50	0.27	ug/L		07/10/17 13:15	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		07/10/17 13:15	1
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/10/17 13:15	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		07/10/17 13:15	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		07/10/17 13:15	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		07/10/17 13:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		07/10/17 13:15	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		07/10/17 13:15	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/10/17 13:15	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/10/17 13:15	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/10/17 13:15	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		07/10/17 13:15	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		07/10/17 13:15	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		07/10/17 13:15	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		07/10/17 13:15	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/10/17 13:15	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		07/10/17 13:15	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		07/10/17 13:15	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		07/10/17 13:15	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		07/10/17 13:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*85 - 114*		*07/10/17 13:15*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 119*		*07/10/17 13:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*81 - 118*		*07/10/17 13:15*	*1*
Toluene-d8 (Surr)	*101*		*89 - 112*		*07/10/17 13:15*	*1*

Lab Sample ID: LCS 680-487148/4
Matrix: Water
Analysis Batch: 487148

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	250	243		ug/L		97	39 - 160
Benzene	50.0	51.5		ug/L		103	79 - 120
Bromobenzene	50.0	49.8		ug/L		100	80 - 120
Bromoform	50.0	52.4		ug/L		105	66 - 130
Bromomethane	50.0	57.2		ug/L		114	53 - 141
2-Butanone (MEK)	250	261		ug/L		104	56 - 143
Carbon disulfide	50.0	55.6		ug/L		111	64 - 133
Carbon tetrachloride	50.0	55.3		ug/L		111	72 - 136
Chlorobenzene	50.0	49.9		ug/L		100	82 - 118
Chlorobromomethane	50.0	54.7		ug/L		109	78 - 123
Chlorodibromomethane	50.0	49.0		ug/L		98	74 - 126
Chloroethane	50.0	53.4		ug/L		107	60 - 138
Chloroform	50.0	51.5		ug/L		103	79 - 124
Chloromethane	50.0	53.6		ug/L		107	50 - 139
2-Chlorotoluene	50.0	50.3		ug/L		101	79 - 122
4-Chlorotoluene	50.0	48.4		ug/L		97	78 - 122

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

Lab Sample ID: LCS 680-487148/4
Matrix: Water
Analysis Batch: 487148

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	50.0	53.0		ug/L		106	78 - 123
cis-1,3-Dichloropropene	50.0	55.6		ug/L		111	75 - 124
1,2-Dibromo-3-Chloropropane	50.0	49.6		ug/L		99	62 - 128
Dibromomethane	50.0	53.3		ug/L		107	79 - 123
1,2-Dichlorobenzene	50.0	51.7		ug/L		103	80 - 119
1,3-Dichlorobenzene	50.0	51.5		ug/L		103	80 - 119
1,4-Dichlorobenzene	50.0	51.2		ug/L		102	79 - 118
Dichlorobromomethane	50.0	57.2		ug/L		114	79 - 125
Dichlorodifluoromethane	50.0	51.7		ug/L		103	32 - 152
1,1-Dichloroethane	50.0	54.3		ug/L		109	77 - 125
1,2-Dichloroethane	50.0	51.1		ug/L		102	73 - 128
1,1-Dichloroethene	50.0	51.9		ug/L		104	71 - 131
1,2-Dichloroethene, Total	100	107		ug/L		107	79 - 121
1,2-Dichloropropane	50.0	56.2		ug/L		112	78 - 122
1,3-Dichloropropane	50.0	51.8		ug/L		104	80 - 119
2,2-Dichloropropane	50.0	59.6		ug/L		119	60 - 139
1,1-Dichloropropene	50.0	57.3		ug/L		115	79 - 125
Ethylbenzene	50.0	51.7		ug/L		103	79 - 121
Ethylene Dibromide	50.0	51.3		ug/L		103	75 - 127
Hexachlorobutadiene	50.0	56.7		ug/L		113	66 - 134
2-Hexanone	250	268		ug/L		107	57 - 139
Isopropylbenzene	50.0	51.5		ug/L		103	72 - 131
4-Isopropyltoluene	50.0	53.5		ug/L		107	77 - 127
Methylene Chloride	50.0	51.7		ug/L		103	74 - 124
4-Methyl-2-pentanone (MIBK)	250	260		ug/L		104	67 - 130
Methyl tert-butyl ether	50.0	54.2		ug/L		108	71 - 124
m-Xylene & p-Xylene	50.0	50.7		ug/L		101	80 - 121
Naphthalene	50.0	50.4		ug/L		101	61 - 128
n-Butylbenzene	50.0	58.0		ug/L		116	75 - 128
N-Propylbenzene	50.0	48.5		ug/L		97	76 - 126
o-Xylene	50.0	51.3		ug/L		103	78 - 122
sec-Butylbenzene	50.0	52.5		ug/L		105	77 - 126
Styrene	50.0	49.3		ug/L		99	78 - 123
tert-Butylbenzene	50.0	51.2		ug/L		102	78 - 124
1,1,1,2-Tetrachloroethane	50.0	53.4		ug/L		107	78 - 124
1,1,2,2-Tetrachloroethane	50.0	50.1		ug/L		100	71 - 121
Tetrachloroethene	50.0	53.7		ug/L		107	74 - 129
Toluene	50.0	51.3		ug/L		103	80 - 121
trans-1,2-Dichloroethene	50.0	54.3		ug/L		109	75 - 124
trans-1,3-Dichloropropene	50.0	55.2		ug/L		110	73 - 127
1,2,3-Trichlorobenzene	50.0	58.0		ug/L		116	69 - 129
1,2,4-Trichlorobenzene	50.0	50.4		ug/L		101	69 - 130
1,1,1-Trichloroethane	50.0	52.5		ug/L		105	74 - 131
1,1,2-Trichloroethane	50.0	52.9		ug/L		106	80 - 119
Trichloroethene	50.0	52.2		ug/L		104	79 - 123
Trichlorofluoromethane	50.0	54.4		ug/L		109	65 - 141
1,2,3-Trichloropropane	50.0	51.8		ug/L		104	73 - 122
1,2,4-Trimethylbenzene	50.0	50.2		ug/L		100	76 - 124

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

Lab Sample ID: LCS 680-487148/4
Matrix: Water
Analysis Batch: 487148

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,3,5-Trimethylbenzene	50.0	50.3		ug/L		101	75 - 124
Vinyl acetate	100	131		ug/L		131	54 - 146
Vinyl chloride	50.0	57.4		ug/L		115	58 - 137
Xylenes, Total	100	102		ug/L		102	79 - 121

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*
Dibromofluoromethane (Surr)	*102*		*80 - 119*
1,2-Dichloroethane-d4 (Surr)	*97*		*81 - 118*
Toluene-d8 (Surr)	*101*		*89 - 112*

Lab Sample ID: LCSD 680-487148/5
Matrix: Water
Analysis Batch: 487148

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	250	257		ug/L		103	39 - 160	5	20
Benzene	50.0	52.8		ug/L		106	79 - 120	2	20
Bromobenzene	50.0	50.9		ug/L		102	80 - 120	2	20
Bromoform	50.0	54.0		ug/L		108	66 - 130	3	20
Bromomethane	50.0	52.4		ug/L		105	53 - 141	9	20
2-Butanone (MEK)	250	274		ug/L		110	56 - 143	5	20
Carbon disulfide	50.0	56.5		ug/L		113	64 - 133	2	20
Carbon tetrachloride	50.0	55.7		ug/L		111	72 - 136	1	20
Chlorobenzene	50.0	50.8		ug/L		102	82 - 118	2	20
Chlorobromomethane	50.0	54.5		ug/L		109	78 - 123	0	20
Chlorodibromomethane	50.0	49.3		ug/L		99	74 - 126	1	20
Chloroethane	50.0	53.3		ug/L		107	60 - 138	0	20
Chloroform	50.0	51.6		ug/L		103	79 - 124	0	20
Chloromethane	50.0	53.5		ug/L		107	50 - 139	0	20
2-Chlorotoluene	50.0	52.2		ug/L		104	79 - 122	4	20
4-Chlorotoluene	50.0	50.7		ug/L		101	78 - 122	5	20
cis-1,2-Dichloroethene	50.0	53.2		ug/L		106	78 - 123	0	20
cis-1,3-Dichloropropene	50.0	57.6		ug/L		115	75 - 124	4	20
1,2-Dibromo-3-Chloropropane	50.0	50.3		ug/L		101	62 - 128	1	20
Dibromomethane	50.0	54.1		ug/L		108	79 - 123	2	20
1,2-Dichlorobenzene	50.0	52.3		ug/L		105	80 - 119	1	20
1,3-Dichlorobenzene	50.0	51.3		ug/L		103	80 - 119	0	20
1,4-Dichlorobenzene	50.0	51.8		ug/L		104	79 - 118	1	20
Dichlorobromomethane	50.0	57.0		ug/L		114	79 - 125	0	20
Dichlorodifluoromethane	50.0	51.7		ug/L		103	32 - 152	0	20
1,1-Dichloroethane	50.0	55.4		ug/L		111	77 - 125	2	20
1,2-Dichloroethane	50.0	51.6		ug/L		103	73 - 128	1	20
1,1-Dichloroethene	50.0	52.0		ug/L		104	71 - 131	0	20
1,2-Dichloroethene, Total	100	108		ug/L		108	79 - 121	1	20
1,2-Dichloropropane	50.0	56.2		ug/L		112	78 - 122	0	20
1,3-Dichloropropane	50.0	52.6		ug/L		105	80 - 119	2	20
2,2-Dichloropropane	50.0	58.9		ug/L		118	60 - 139	1	20

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

Lab Sample ID: LCSD 680-487148/5
Matrix: Water
Analysis Batch: 487148

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloropropene			50.0	57.8		ug/L		116	79 - 125	1	20
Ethylbenzene			50.0	52.6		ug/L		105	79 - 121	2	20
Ethylene Dibromide			50.0	52.5		ug/L		105	75 - 127	2	20
Hexachlorobutadiene			50.0	58.0		ug/L		116	66 - 134	2	20
2-Hexanone			250	275		ug/L		110	57 - 139	3	20
Isopropylbenzene			50.0	51.9		ug/L		104	72 - 131	1	20
4-Isopropyltoluene			50.0	53.9		ug/L		108	77 - 127	1	20
Methylene Chloride			50.0	52.0		ug/L		104	74 - 124	0	20
4-Methyl-2-pentanone (MIBK)			250	275		ug/L		110	67 - 130	6	20
Methyl tert-butyl ether			50.0	55.3		ug/L		111	71 - 124	2	20
m-Xylene & p-Xylene			50.0	51.3		ug/L		103	80 - 121	1	20
Naphthalene			50.0	51.9		ug/L		104	61 - 128	3	20
n-Butylbenzene			50.0	56.9		ug/L		114	75 - 128	2	20
N-Propylbenzene			50.0	49.9		ug/L		100	76 - 126	3	20
o-Xylene			50.0	53.4		ug/L		107	78 - 122	4	20
sec-Butylbenzene			50.0	53.4		ug/L		107	77 - 126	2	20
Styrene			50.0	51.0		ug/L		102	78 - 123	3	20
tert-Butylbenzene			50.0	52.7		ug/L		105	78 - 124	3	20
1,1,1,2-Tetrachloroethane			50.0	54.9		ug/L		110	78 - 124	3	20
1,1,2,2-Tetrachloroethane			50.0	51.4		ug/L		103	71 - 121	3	20
Tetrachloroethene			50.0	54.7		ug/L		109	74 - 129	2	20
Toluene			50.0	53.5		ug/L		107	80 - 121	4	20
trans-1,2-Dichloroethene			50.0	55.1		ug/L		110	75 - 124	1	20
trans-1,3-Dichloropropene			50.0	56.5		ug/L		113	73 - 127	2	20
1,2,3-Trichlorobenzene			50.0	59.9		ug/L		120	69 - 129	3	20
1,2,4-Trichlorobenzene			50.0	51.0		ug/L		102	69 - 130	1	20
1,1,1-Trichloroethane			50.0	52.7		ug/L		105	74 - 131	0	20
1,1,2-Trichloroethane			50.0	56.4		ug/L		113	80 - 119	6	20
Trichloroethene			50.0	53.1		ug/L		106	79 - 123	2	20
Trichlorofluoromethane			50.0	57.0		ug/L		114	65 - 141	5	20
1,2,3-Trichloropropane			50.0	53.8		ug/L		108	73 - 122	4	20
1,2,4-Trimethylbenzene			50.0	50.8		ug/L		102	76 - 124	1	20
1,3,5-Trimethylbenzene			50.0	52.0		ug/L		104	75 - 124	3	20
Vinyl acetate			100	136		ug/L		136	54 - 146	4	20
Vinyl chloride			50.0	55.4		ug/L		111	58 - 137	3	20
Xylenes, Total			100	105		ug/L		105	79 - 121	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*85 - 114*
Dibromofluoromethane (Surr)	*102*		*80 - 119*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*
Toluene-d8 (Surr)	*105*		*89 - 112*

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

Lab Sample ID: MB 680-487395/9
Matrix: Water
Analysis Batch: 487395

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	10	U	10	10	7.0	ug/L		07/12/17 09:41	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		07/12/17 09:41	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 09:41	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		07/12/17 09:41	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 09:41	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		07/12/17 09:41	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		07/12/17 09:41	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		07/12/17 09:41	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		07/12/17 09:41	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		07/12/17 09:41	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		07/12/17 09:41	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 09:41	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 09:41	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		07/12/17 09:41	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		07/12/17 09:41	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		07/12/17 09:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		07/12/17 09:41	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		07/12/17 09:41	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		07/12/17 09:41	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		07/12/17 09:41	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 09:41	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		07/12/17 09:41	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		07/12/17 09:41	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		07/12/17 09:41	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		07/12/17 09:41	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		07/12/17 09:41	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 09:41	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		07/12/17 09:41	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		07/12/17 09:41	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		07/12/17 09:41	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		07/12/17 09:41	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 09:41	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		07/12/17 09:41	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		07/12/17 09:41	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		07/12/17 09:41	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 09:41	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		07/12/17 09:41	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		07/12/17 09:41	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		07/12/17 09:41	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 09:41	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		07/12/17 09:41	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		07/12/17 09:41	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		07/12/17 09:41	1
Naphthalene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 09:41	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/12/17 09:41	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		07/12/17 09:41	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		07/12/17 09:41	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		07/12/17 09:41	1

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

Lab Sample ID: MB 680-487395/9
Matrix: Water
Analysis Batch: 487395

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Styrene	0.50	U	1.0	0.50	0.27	ug/L		07/12/17 09:41	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		07/12/17 09:41	1
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 09:41	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		07/12/17 09:41	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		07/12/17 09:41	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		07/12/17 09:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 09:41	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		07/12/17 09:41	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 09:41	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		07/12/17 09:41	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		07/12/17 09:41	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		07/12/17 09:41	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		07/12/17 09:41	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		07/12/17 09:41	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		07/12/17 09:41	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		07/12/17 09:41	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		07/12/17 09:41	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		07/12/17 09:41	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		07/12/17 09:41	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		07/12/17 09:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*		*07/12/17 09:41*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 119*		*07/12/17 09:41*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*81 - 118*		*07/12/17 09:41*	*1*
Toluene-d8 (Surr)	*100*		*89 - 112*		*07/12/17 09:41*	*1*

Lab Sample ID: LCS 680-487395/4
Matrix: Water
Analysis Batch: 487395

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	250	235		ug/L		94	39 - 160
Benzene	50.0	49.7		ug/L		99	79 - 120
Bromobenzene	50.0	50.1		ug/L		100	80 - 120
Bromoform	50.0	54.7		ug/L		109	66 - 130
Bromomethane	50.0	50.4		ug/L		101	53 - 141
2-Butanone (MEK)	250	248		ug/L		99	56 - 143
Carbon disulfide	50.0	52.4		ug/L		105	64 - 133
Carbon tetrachloride	50.0	53.1		ug/L		106	72 - 136
Chlorobenzene	50.0	50.3		ug/L		101	82 - 118
Chlorobromomethane	50.0	52.7		ug/L		105	78 - 123
Chlorodibromomethane	50.0	49.7		ug/L		99	74 - 126
Chloroethane	50.0	50.3		ug/L		101	60 - 138
Chloroform	50.0	51.4		ug/L		103	79 - 124
Chloromethane	50.0	49.1		ug/L		98	50 - 139
2-Chlorotoluene	50.0	52.3		ug/L		105	79 - 122
4-Chlorotoluene	50.0	50.2		ug/L		100	78 - 122

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

Lab Sample ID: LCS 680-487395/4
Matrix: Water
Analysis Batch: 487395

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	50.0	51.7		ug/L		103	78 - 123
cis-1,3-Dichloropropene	50.0	57.5		ug/L		115	75 - 124
1,2-Dibromo-3-Chloropropane	50.0	45.3		ug/L		91	62 - 128
Dibromomethane	50.0	53.2		ug/L		106	79 - 123
1,2-Dichlorobenzene	50.0	51.7		ug/L		103	80 - 119
1,3-Dichlorobenzene	50.0	50.7		ug/L		101	80 - 119
1,4-Dichlorobenzene	50.0	50.7		ug/L		101	79 - 118
Dichlorobromomethane	50.0	53.7		ug/L		107	79 - 125
Dichlorodifluoromethane	50.0	43.5		ug/L		87	32 - 152
1,1-Dichloroethane	50.0	52.3		ug/L		105	77 - 125
1,2-Dichloroethane	50.0	51.5		ug/L		103	73 - 128
1,1-Dichloroethene	50.0	49.9		ug/L		100	71 - 131
1,2-Dichloroethene, Total	100	103		ug/L		103	79 - 121
1,2-Dichloropropane	50.0	52.2		ug/L		104	78 - 122
1,3-Dichloropropane	50.0	54.2		ug/L		108	80 - 119
2,2-Dichloropropane	50.0	57.8		ug/L		116	60 - 139
1,1-Dichloropropene	50.0	52.2		ug/L		104	79 - 125
Ethylbenzene	50.0	51.3		ug/L		103	79 - 121
Ethylene Dibromide	50.0	52.3		ug/L		105	75 - 127
Hexachlorobutadiene	50.0	56.2		ug/L		112	66 - 134
2-Hexanone	250	245		ug/L		98	57 - 139
Isopropylbenzene	50.0	51.6		ug/L		103	72 - 131
4-Isopropyltoluene	50.0	52.7		ug/L		105	77 - 127
Methylene Chloride	50.0	51.4		ug/L		103	74 - 124
4-Methyl-2-pentanone (MIBK)	250	254		ug/L		102	67 - 130
Methyl tert-butyl ether	50.0	51.6		ug/L		103	71 - 124
m-Xylene & p-Xylene	50.0	51.3		ug/L		103	80 - 121
Naphthalene	50.0	48.1		ug/L		96	61 - 128
n-Butylbenzene	50.0	56.2		ug/L		112	75 - 128
N-Propylbenzene	50.0	51.3		ug/L		103	76 - 126
o-Xylene	50.0	53.1		ug/L		106	78 - 122
sec-Butylbenzene	50.0	54.1		ug/L		108	77 - 126
Styrene	50.0	51.8		ug/L		104	78 - 123
tert-Butylbenzene	50.0	53.0		ug/L		106	78 - 124
1,1,1,2-Tetrachloroethane	50.0	54.6		ug/L		109	78 - 124
1,1,2,2-Tetrachloroethane	50.0	51.1		ug/L		102	71 - 121
Tetrachloroethene	50.0	52.6		ug/L		105	74 - 129
Toluene	50.0	51.3		ug/L		103	80 - 121
trans-1,2-Dichloroethene	50.0	51.0		ug/L		102	75 - 124
trans-1,3-Dichloropropene	50.0	58.4		ug/L		117	73 - 127
1,2,3-Trichlorobenzene	50.0	55.8		ug/L		112	69 - 129
1,2,4-Trichlorobenzene	50.0	49.8		ug/L		100	69 - 130
1,1,1-Trichloroethane	50.0	51.1		ug/L		102	74 - 131
1,1,2-Trichloroethane	50.0	54.9		ug/L		110	80 - 119
Trichloroethene	50.0	50.7		ug/L		101	79 - 123
Trichlorofluoromethane	50.0	52.4		ug/L		105	65 - 141
1,2,3-Trichloropropane	50.0	50.9		ug/L		102	73 - 122
1,2,4-Trimethylbenzene	50.0	53.5		ug/L		107	76 - 124

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

Lab Sample ID: LCS 680-487395/4
Matrix: Water
Analysis Batch: 487395

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,3,5-Trimethylbenzene			50.0	52.0		ug/L		104	75 - 124		
Vinyl acetate			100	129		ug/L		129	54 - 146		
Vinyl chloride			50.0	48.9		ug/L		98	58 - 137		
Xylenes, Total			100	104		ug/L		104	79 - 121		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*85 - 114*
Dibromofluoromethane (Surr)	*102*		*80 - 119*
1,2-Dichloroethane-d4 (Surr)	*101*		*81 - 118*
Toluene-d8 (Surr)	*103*		*89 - 112*

Lab Sample ID: LCSD 680-487395/5
Matrix: Water
Analysis Batch: 487395

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone			250	212		ug/L		85	39 - 160	10	20
Benzene			50.0	49.8		ug/L		100	79 - 120	0	20
Bromobenzene			50.0	47.2		ug/L		94	80 - 120	6	20
Bromoform			50.0	49.4		ug/L		99	66 - 130	10	20
Bromomethane			50.0	51.2		ug/L		102	53 - 141	2	20
2-Butanone (MEK)			250	228		ug/L		91	56 - 143	8	20
Carbon disulfide			50.0	51.5		ug/L		103	64 - 133	2	20
Carbon tetrachloride			50.0	52.6		ug/L		105	72 - 136	1	20
Chlorobenzene			50.0	49.0		ug/L		98	82 - 118	3	20
Chlorobromomethane			50.0	50.7		ug/L		101	78 - 123	4	20
Chlorodibromomethane			50.0	46.5		ug/L		93	74 - 126	7	20
Chloroethane			50.0	50.6		ug/L		101	60 - 138	0	20
Chloroform			50.0	49.9		ug/L		100	79 - 124	3	20
Chloromethane			50.0	50.1		ug/L		100	50 - 139	2	20
2-Chlorotoluene			50.0	49.2		ug/L		98	79 - 122	6	20
4-Chlorotoluene			50.0	47.8		ug/L		96	78 - 122	5	20
cis-1,2-Dichloroethene			50.0	50.5		ug/L		101	78 - 123	2	20
cis-1,3-Dichloropropene			50.0	55.0		ug/L		110	75 - 124	5	20
1,2-Dibromo-3-Chloropropane			50.0	43.3		ug/L		87	62 - 128	5	20
Dibromomethane			50.0	50.1		ug/L		100	79 - 123	6	20
1,2-Dichlorobenzene			50.0	50.9		ug/L		102	80 - 119	2	20
1,3-Dichlorobenzene			50.0	50.2		ug/L		100	80 - 119	1	20
1,4-Dichlorobenzene			50.0	49.8		ug/L		100	79 - 118	2	20
Dichlorobromomethane			50.0	53.5		ug/L		107	79 - 125	0	20
Dichlorodifluoromethane			50.0	45.3		ug/L		91	32 - 152	4	20
1,1-Dichloroethane			50.0	53.4		ug/L		107	77 - 125	2	20
1,2-Dichloroethane			50.0	50.1		ug/L		100	73 - 128	3	20
1,1-Dichloroethene			50.0	48.2		ug/L		96	71 - 131	3	20
1,2-Dichloroethene, Total			100	101		ug/L		101	79 - 121	2	20
1,2-Dichloropropane			50.0	51.9		ug/L		104	78 - 122	1	20
1,3-Dichloropropane			50.0	52.1		ug/L		104	80 - 119	4	20
2,2-Dichloropropane			50.0	57.4		ug/L		115	60 - 139	1	20

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

Lab Sample ID: LCSD 680-487395/5
Matrix: Water
Analysis Batch: 487395

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloropropene			50.0	51.2		ug/L		102	79 - 125	2	20
Ethylbenzene			50.0	49.7		ug/L		99	79 - 121	3	20
Ethylene Dibromide			50.0	49.6		ug/L		99	75 - 127	5	20
Hexachlorobutadiene			50.0	55.2		ug/L		110	66 - 134	2	20
2-Hexanone			250	240		ug/L		96	57 - 139	2	20
Isopropylbenzene			50.0	49.3		ug/L		99	72 - 131	4	20
4-Isopropyltoluene			50.0	52.4		ug/L		105	77 - 127	1	20
Methylene Chloride			50.0	50.7		ug/L		101	74 - 124	1	20
4-Methyl-2-pentanone (MIBK)			250	240		ug/L		96	67 - 130	6	20
Methyl tert-butyl ether			50.0	49.6		ug/L		99	71 - 124	4	20
m-Xylene & p-Xylene			50.0	49.8		ug/L		100	80 - 121	3	20
Naphthalene			50.0	46.4		ug/L		93	61 - 128	4	20
n-Butylbenzene			50.0	55.9		ug/L		112	75 - 128	1	20
N-Propylbenzene			50.0	48.0		ug/L		96	76 - 126	7	20
o-Xylene			50.0	50.1		ug/L		100	78 - 122	6	20
sec-Butylbenzene			50.0	51.3		ug/L		103	77 - 126	5	20
Styrene			50.0	48.8		ug/L		98	78 - 123	6	20
tert-Butylbenzene			50.0	49.8		ug/L		100	78 - 124	6	20
1,1,1,2-Tetrachloroethane			50.0	49.8		ug/L		100	78 - 124	9	20
1,1,2,2-Tetrachloroethane			50.0	45.8		ug/L		92	71 - 121	11	20
Tetrachloroethene			50.0	51.0		ug/L		102	74 - 129	3	20
Toluene			50.0	51.8		ug/L		104	80 - 121	1	20
trans-1,2-Dichloroethene			50.0	50.4		ug/L		101	75 - 124	1	20
trans-1,3-Dichloropropene			50.0	55.0		ug/L		110	73 - 127	6	20
1,2,3-Trichlorobenzene			50.0	54.3		ug/L		109	69 - 129	3	20
1,2,4-Trichlorobenzene			50.0	49.3		ug/L		99	69 - 130	1	20
1,1,1-Trichloroethane			50.0	50.5		ug/L		101	74 - 131	1	20
1,1,2-Trichloroethane			50.0	51.7		ug/L		103	80 - 119	6	20
Trichloroethene			50.0	51.1		ug/L		102	79 - 123	1	20
Trichlorofluoromethane			50.0	52.3		ug/L		105	65 - 141	0	20
1,2,3-Trichloropropane			50.0	47.5		ug/L		95	73 - 122	7	20
1,2,4-Trimethylbenzene			50.0	50.3		ug/L		101	76 - 124	6	20
1,3,5-Trimethylbenzene			50.0	49.9		ug/L		100	75 - 124	4	20
Vinyl acetate			100	119		ug/L		119	54 - 146	8	20
Vinyl chloride			50.0	48.9		ug/L		98	58 - 137	0	20
Xylenes, Total			100	99.9		ug/L		100	79 - 121	4	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*85 - 114*
Dibromofluoromethane (Surr)	*96*		*80 - 119*
1,2-Dichloroethane-d4 (Surr)	*93*		*81 - 118*
Toluene-d8 (Surr)	*101*		*89 - 112*

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

Lab Sample ID: 680-140428-8 MS
Matrix: Water
Analysis Batch: 487395

Client Sample ID: 32M-01-17XBR-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	10	U	250	221		ug/L		88	39 - 160
Benzene	1.0	U	50.0	50.5		ug/L		101	79 - 120
Bromobenzene	1.0	U	50.0	48.6		ug/L		97	80 - 120
Bromoform	1.0	U	50.0	51.2		ug/L		102	66 - 130
Bromomethane	5.0	U	50.0	52.3		ug/L		105	53 - 141
2-Butanone (MEK)	10	U	250	224		ug/L		89	56 - 143
Carbon disulfide	2.0	U	50.0	54.3		ug/L		109	64 - 133
Carbon tetrachloride	0.50	U	50.0	54.8		ug/L		110	72 - 136
Chlorobenzene	0.50	U	50.0	50.6		ug/L		101	82 - 118
Chlorobromomethane	1.0	U	50.0	51.7		ug/L		103	78 - 123
Chlorodibromomethane	0.50	U	50.0	46.7		ug/L		93	74 - 126
Chloroethane	5.0	U	50.0	52.2		ug/L		104	60 - 138
Chloroform	1.0	U	50.0	50.9		ug/L		102	79 - 124
Chloromethane	1.0	U	50.0	53.7		ug/L		107	50 - 139
2-Chlorotoluene	0.50	U	50.0	51.0		ug/L		102	79 - 122
4-Chlorotoluene	1.0	U	50.0	49.1		ug/L		98	78 - 122
cis-1,2-Dichloroethene	1.0	U	50.0	53.1		ug/L		106	78 - 123
cis-1,3-Dichloropropene	1.0	U	50.0	54.0		ug/L		108	75 - 124
1,2-Dibromo-3-Chloropropane	2.0	U	50.0	45.3		ug/L		91	62 - 128
Dibromomethane	1.0	U	50.0	50.3		ug/L		101	79 - 123
1,2-Dichlorobenzene	1.0	U	50.0	52.1		ug/L		104	80 - 119
1,3-Dichlorobenzene	0.56	J	50.0	50.8		ug/L		100	80 - 119
1,4-Dichlorobenzene	1.0	U	50.0	50.3		ug/L		101	79 - 118
Dichlorobromomethane	1.0	U	50.0	52.9		ug/L		106	79 - 125
Dichlorodifluoromethane	1.0	U	50.0	49.2		ug/L		98	32 - 152
1,1-Dichloroethane	1.0	U	50.0	53.5		ug/L		107	77 - 125
1,2-Dichloroethane	1.0	U	50.0	48.4		ug/L		97	73 - 128
1,1-Dichloroethene	1.0	U	50.0	51.8		ug/L		104	71 - 131
1,2-Dichloroethene, Total	1.0	U	100	107		ug/L		107	79 - 121
1,2-Dichloropropane	1.0	U	50.0	52.7		ug/L		105	78 - 122
1,3-Dichloropropane	1.0	U	50.0	49.3		ug/L		99	80 - 119
2,2-Dichloropropane	1.0	U	50.0	57.0		ug/L		114	60 - 139
1,1-Dichloropropene	1.0	U	50.0	53.1		ug/L		106	79 - 125
Ethylbenzene	0.50	U	50.0	51.7		ug/L		103	79 - 121
Ethylene Dibromide	1.0	U	50.0	48.4		ug/L		97	75 - 127
Hexachlorobutadiene	5.0	U	50.0	59.0		ug/L		118	66 - 134
2-Hexanone	5.0	U	250	238		ug/L		95	57 - 139
Isopropylbenzene	1.0	U	50.0	51.1		ug/L		102	72 - 131
4-Isopropyltoluene	1.0	U	50.0	53.6		ug/L		107	77 - 127
Methylene Chloride	5.0	U	50.0	49.5		ug/L		99	74 - 124
4-Methyl-2-pentanone (MIBK)	5.0	U	250	244		ug/L		98	67 - 130
Methyl tert-butyl ether	0.50	U	50.0	50.5		ug/L		101	71 - 124
m-Xylene & p-Xylene	1.0	U	50.0	51.2		ug/L		102	80 - 121
Naphthalene	5.0	U	50.0	47.5		ug/L		95	61 - 128
n-Butylbenzene	1.0	U	50.0	57.5		ug/L		115	75 - 128
N-Propylbenzene	1.0	U	50.0	50.5		ug/L		101	76 - 126
o-Xylene	0.50	U	50.0	52.1		ug/L		104	78 - 122
sec-Butylbenzene	1.0	U	50.0	54.0		ug/L		108	77 - 126

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

Lab Sample ID: 680-140428-8 MS
Matrix: Water
Analysis Batch: 487395

Client Sample ID: 32M-01-17XBR-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Styrene	0.50	U	50.0	49.0		ug/L		98	78 - 123
tert-Butylbenzene	1.0	U	50.0	52.8		ug/L		106	78 - 124
1,1,1,2-Tetrachloroethane	1.0	U	50.0	52.4		ug/L		105	78 - 124
1,1,2,2-Tetrachloroethane	1.0	U	50.0	47.2		ug/L		94	71 - 121
Tetrachloroethene	1.0	U	50.0	55.2		ug/L		110	74 - 129
Toluene	1.0	U	50.0	51.9		ug/L		104	80 - 121
trans-1,2-Dichloroethene	1.0	U	50.0	53.9		ug/L		108	75 - 124
trans-1,3-Dichloropropene	1.0	U	50.0	55.8		ug/L		112	73 - 127
1,2,3-Trichlorobenzene	5.0	U	50.0	53.8		ug/L		108	69 - 129
1,2,4-Trichlorobenzene	5.0	U	50.0	50.0		ug/L		100	69 - 130
1,1,1-Trichloroethane	1.0	U	50.0	52.4		ug/L		105	74 - 131
1,1,2-Trichloroethane	0.50	U	50.0	49.7		ug/L		99	80 - 119
Trichloroethene	1.0	U	50.0	51.6		ug/L		103	79 - 123
Trichlorofluoromethane	1.0	U	50.0	56.7		ug/L		113	65 - 141
1,2,3-Trichloropropane	1.0	U	50.0	49.2		ug/L		98	73 - 122
1,2,4-Trimethylbenzene	1.0	U	50.0	51.9		ug/L		104	76 - 124
1,3,5-Trimethylbenzene	0.50	U	50.0	51.4		ug/L		103	75 - 124
Vinyl acetate	2.0	U	100	118		ug/L		118	54 - 146
Vinyl chloride	1.0	U	50.0	51.9		ug/L		104	58 - 137
Xylenes, Total	0.50	U	100	103		ug/L		103	79 - 121

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*85 - 114*
Dibromofluoromethane (Surr)	*97*		*80 - 119*
1,2-Dichloroethane-d4 (Surr)	*93*		*81 - 118*
Toluene-d8 (Surr)	*102*		*89 - 112*

Lab Sample ID: 680-140428-8 MSD
Matrix: Water
Analysis Batch: 487395

Client Sample ID: 32M-01-17XBR-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	10	U	250	213		ug/L		85	39 - 160	3	20
Benzene	1.0	U	50.0	49.5		ug/L		99	79 - 120	2	20
Bromobenzene	1.0	U	50.0	50.5		ug/L		101	80 - 120	4	20
Bromoform	1.0	U	50.0	52.9		ug/L		106	66 - 130	3	20
Bromomethane	5.0	U	50.0	51.7		ug/L		103	53 - 141	1	20
2-Butanone (MEK)	10	U	250	232		ug/L		93	56 - 143	4	20
Carbon disulfide	2.0	U	50.0	54.8		ug/L		110	64 - 133	1	20
Carbon tetrachloride	0.50	U	50.0	56.1		ug/L		112	72 - 136	2	20
Chlorobenzene	0.50	U	50.0	51.7		ug/L		103	82 - 118	2	20
Chlorobromomethane	1.0	U	50.0	50.4		ug/L		101	78 - 123	3	20
Chlorodibromomethane	0.50	U	50.0	46.0		ug/L		92	74 - 126	2	20
Chloroethane	5.0	U	50.0	52.2		ug/L		104	60 - 138	0	20
Chloroform	1.0	U	50.0	50.9		ug/L		102	79 - 124	0	20
Chloromethane	1.0	U	50.0	52.3		ug/L		105	50 - 139	3	20
2-Chlorotoluene	0.50	U	50.0	52.8		ug/L		106	79 - 122	3	20
4-Chlorotoluene	1.0	U	50.0	49.4		ug/L		99	78 - 122	1	20

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

Lab Sample ID: 680-140428-8 MSD
Matrix: Water
Analysis Batch: 487395

Client Sample ID: 32M-01-17XBR-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1.0	U	50.0	50.7		ug/L		101	78 - 123	5	20
cis-1,3-Dichloropropene	1.0	U	50.0	53.4		ug/L		107	75 - 124	1	20
1,2-Dibromo-3-Chloropropane	2.0	U	50.0	47.2		ug/L		94	62 - 128	4	20
Dibromomethane	1.0	U	50.0	49.5		ug/L		99	79 - 123	2	20
1,2-Dichlorobenzene	1.0	U	50.0	51.0		ug/L		102	80 - 119	2	20
1,3-Dichlorobenzene	0.56	J	50.0	51.0		ug/L		101	80 - 119	0	20
1,4-Dichlorobenzene	1.0	U	50.0	50.3		ug/L		101	79 - 118	0	20
Dichlorobromomethane	1.0	U	50.0	52.9		ug/L		106	79 - 125	0	20
Dichlorodifluoromethane	1.0	U	50.0	50.2		ug/L		100	32 - 152	2	20
1,1-Dichloroethane	1.0	U	50.0	53.2		ug/L		106	77 - 125	1	20
1,2-Dichloroethane	1.0	U	50.0	48.1		ug/L		96	73 - 128	1	20
1,1-Dichloroethene	1.0	U	50.0	53.5		ug/L		107	71 - 131	3	20
1,2-Dichloroethene, Total	1.0	U	100	103		ug/L		103	79 - 121	3	20
1,2-Dichloropropane	1.0	U	50.0	52.1		ug/L		104	78 - 122	1	20
1,3-Dichloropropane	1.0	U	50.0	48.4		ug/L		97	80 - 119	2	20
2,2-Dichloropropane	1.0	U	50.0	56.7		ug/L		113	60 - 139	1	20
1,1-Dichloropropene	1.0	U	50.0	53.0		ug/L		106	79 - 125	0	20
Ethylbenzene	0.50	U	50.0	54.0		ug/L		108	79 - 121	4	20
Ethylene Dibromide	1.0	U	50.0	47.9		ug/L		96	75 - 127	1	20
Hexachlorobutadiene	5.0	U	50.0	61.0		ug/L		122	66 - 134	3	20
2-Hexanone	5.0	U	250	244		ug/L		98	57 - 139	3	20
Isopropylbenzene	1.0	U	50.0	53.9		ug/L		108	72 - 131	5	20
4-Isopropyltoluene	1.0	U	50.0	54.8		ug/L		110	77 - 127	2	20
Methylene Chloride	5.0	U	50.0	48.7		ug/L		97	74 - 124	2	20
4-Methyl-2-pentanone (MIBK)	5.0	U	250	248		ug/L		99	67 - 130	2	20
Methyl tert-butyl ether	0.50	U	50.0	49.1		ug/L		98	71 - 124	3	20
m-Xylene & p-Xylene	1.0	U	50.0	52.2		ug/L		104	80 - 121	2	20
Naphthalene	5.0	U	50.0	49.0		ug/L		98	61 - 128	3	20
n-Butylbenzene	1.0	U	50.0	58.8		ug/L		118	75 - 128	2	20
N-Propylbenzene	1.0	U	50.0	51.3		ug/L		103	76 - 126	2	20
o-Xylene	0.50	U	50.0	53.6		ug/L		107	78 - 122	3	20
sec-Butylbenzene	1.0	U	50.0	55.0		ug/L		110	77 - 126	2	20
Styrene	0.50	U	50.0	50.7		ug/L		101	78 - 123	3	20
tert-Butylbenzene	1.0	U	50.0	54.0		ug/L		108	78 - 124	2	20
1,1,1,2-Tetrachloroethane	1.0	U	50.0	53.7		ug/L		107	78 - 124	2	20
1,1,2,2-Tetrachloroethane	1.0	U	50.0	48.6		ug/L		97	71 - 121	3	20
Tetrachloroethene	1.0	U	50.0	54.0		ug/L		108	74 - 129	2	20
Toluene	1.0	U	50.0	52.3		ug/L		105	80 - 121	1	20
trans-1,2-Dichloroethene	1.0	U	50.0	52.7		ug/L		105	75 - 124	2	20
trans-1,3-Dichloropropene	1.0	U	50.0	52.2		ug/L		104	73 - 127	7	20
1,2,3-Trichlorobenzene	5.0	U	50.0	57.0		ug/L		114	69 - 129	6	20
1,2,4-Trichlorobenzene	5.0	U	50.0	51.3		ug/L		103	69 - 130	3	20
1,1,1-Trichloroethane	1.0	U	50.0	53.3		ug/L		107	74 - 131	2	20
1,1,2-Trichloroethane	0.50	U	50.0	48.3		ug/L		97	80 - 119	3	20
Trichloroethene	1.0	U	50.0	51.1		ug/L		102	79 - 123	1	20
Trichlorofluoromethane	1.0	U	50.0	53.0		ug/L		106	65 - 141	7	20
1,2,3-Trichloropropane	1.0	U	50.0	49.7		ug/L		99	73 - 122	1	20
1,2,4-Trimethylbenzene	1.0	U	50.0	52.5		ug/L		105	76 - 124	1	20

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

Lab Sample ID: 680-140428-8 MSD
Matrix: Water
Analysis Batch: 487395

Client Sample ID: 32M-01-17XBR-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,3,5-Trimethylbenzene	0.50	U	50.0	53.0		ug/L		106	75 - 124	3	20
Vinyl acetate	2.0	U	100	117		ug/L		117	54 - 146	0	20
Vinyl chloride	1.0	U	50.0	51.0		ug/L		102	58 - 137	2	20
Xylenes, Total	0.50	U	100	106		ug/L		106	79 - 121	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*85 - 114*
Dibromofluoromethane (Surr)	*98*		*80 - 119*
1,2-Dichloroethane-d4 (Surr)	*93*		*81 - 118*
Toluene-d8 (Surr)	*102*		*89 - 112*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-486825/1-A
Matrix: Water
Analysis Batch: 486971

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 486825

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	3.0	U	10	3.0	1.0	ug/L		07/06/17 23:06	1

Lab Sample ID: LCS 680-486825/2-A
Matrix: Water
Analysis Batch: 486971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 486825

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Manganese	500	525		ug/L		105	90 - 114

Lab Sample ID: 680-140428-8 MS
Matrix: Water
Analysis Batch: 486971

Client Sample ID: 32M-01-17XBR-SPR17
Prep Type: Total/NA
Prep Batch: 486825

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Manganese	3.9	J	500	529		ug/L		105	90 - 114

Lab Sample ID: 680-140428-8 MSD
Matrix: Water
Analysis Batch: 486971

Client Sample ID: 32M-01-17XBR-SPR17
Prep Type: Total/NA
Prep Batch: 486825

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Manganese	3.9	J	500	517		ug/L		103	90 - 114	2	20

Lab Sample ID: MB 680-486361/1-A
Matrix: Water
Analysis Batch: 486971

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 486361

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	3.0	U	10	3.0	1.0	ug/L		07/06/17 15:22	1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 680-486361/2-A
Matrix: Water
Analysis Batch: 486971

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 486361

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Manganese	500	564		ug/L		113	90 - 114

Lab Sample ID: MB 680-486986/1-A
Matrix: Water
Analysis Batch: 487420

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 486986

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	3.0	U	10	3.0	1.0	ug/L		07/11/17 15:47	1

Lab Sample ID: LCS 680-486986/2-A
Matrix: Water
Analysis Batch: 487420

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 486986

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Manganese	500	515		ug/L		103	90 - 114

Lab Sample ID: 680-140428-8 MS
Matrix: Water
Analysis Batch: 487420

Client Sample ID: 32M-01-17XBR-SPR17
Prep Type: Dissolved
Prep Batch: 486986

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Manganese	1.3	J	500	524		ug/L		105	90 - 114

Lab Sample ID: 680-140428-8 MSD
Matrix: Water
Analysis Batch: 487420

Client Sample ID: 32M-01-17XBR-SPR17
Prep Type: Dissolved
Prep Batch: 486986

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Manganese	1.3	J	500	524		ug/L		105	90 - 114	0	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-486365/1-A
Matrix: Water
Analysis Batch: 486575

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 486365

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		07/03/17 22:37	1

Lab Sample ID: LCS 680-486365/2-A
Matrix: Water
Analysis Batch: 486575

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 486365

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	98.3		ug/L		98	84 - 116

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 680-140428-8 MS
Matrix: Water
Analysis Batch: 486575

Client Sample ID: 32M-01-17XBR-SPR17
Prep Type: Total/NA
Prep Batch: 486365

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2.6	J	100	102		ug/L		100	84 - 116

Lab Sample ID: 680-140428-8 MSD
Matrix: Water
Analysis Batch: 486575

Client Sample ID: 32M-01-17XBR-SPR17
Prep Type: Total/NA
Prep Batch: 486365

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	2.6	J	100	100		ug/L		98	84 - 116	2	20

Lab Sample ID: MB 680-486359/1-A
Matrix: Water
Analysis Batch: 486580

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 486359

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		07/04/17 11:08	1

Lab Sample ID: LCS 680-486359/2-A
Matrix: Water
Analysis Batch: 486580

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 486359

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	105		ug/L		105	84 - 116

Lab Sample ID: MB 680-486985/1-A
Matrix: Water
Analysis Batch: 487282

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 486985

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		07/10/17 15:16	1

Lab Sample ID: LCS 680-486985/2-A
Matrix: Water
Analysis Batch: 487282

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 486985

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	95.1		ug/L		95	84 - 116

Lab Sample ID: 680-140428-8 MS
Matrix: Water
Analysis Batch: 487282

Client Sample ID: 32M-01-17XBR-SPR17
Prep Type: Dissolved
Prep Batch: 486985

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	3.0	U	100	107		ug/L		107	84 - 116

Lab Sample ID: 680-140428-8 MSD
Matrix: Water
Analysis Batch: 487282

Client Sample ID: 32M-01-17XBR-SPR17
Prep Type: Dissolved
Prep Batch: 486985

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	3.0	U	100	101		ug/L		101	84 - 116	6	20

GC/MS VOA

Analysis Batch: 487091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-6	32M-01-13XBR-SPR17	Total/NA	Water	8260B	
680-140428-9	32M-01-18XBR-SPR17	Total/NA	Water	8260B	
680-140428-10	32M-DUP01-SPR17	Total/NA	Water	8260B	
MB 680-487091/9	Method Blank	Total/NA	Water	8260B	
LCS 680-487091/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-487091/5	Lab Control Sample Dup	Total/NA	Water	8260B	

Analysis Batch: 487148

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-10 - DL	32M-DUP01-SPR17	Total/NA	Water	8260B	
MB 680-487148/9	Method Blank	Total/NA	Water	8260B	
LCS 680-487148/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-487148/5	Lab Control Sample Dup	Total/NA	Water	8260B	

Analysis Batch: 487395

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-7	32M-01-14XOB-SPR17	Total/NA	Water	8260B	
680-140428-8	32M-01-17XBR-SPR17	Total/NA	Water	8260B	
680-140428-11	Trip Blank	Total/NA	Water	8260B	
MB 680-487395/9	Method Blank	Total/NA	Water	8260B	
LCS 680-487395/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-487395/5	Lab Control Sample Dup	Total/NA	Water	8260B	
680-140428-8 MS	32M-01-17XBR-SPR17	Total/NA	Water	8260B	
680-140428-8 MSD	32M-01-17XBR-SPR17	Total/NA	Water	8260B	

Metals

Prep Batch: 486359

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-6	32M-01-13XBR-SPR17	Dissolved	Water	3005A	
680-140428-7	32M-01-14XOB-SPR17	Dissolved	Water	3005A	
680-140428-9	32M-01-18XBR-SPR17	Dissolved	Water	3005A	
680-140428-10	32M-DUP01-SPR17	Dissolved	Water	3005A	
MB 680-486359/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-486359/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 486361

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-6	32M-01-13XBR-SPR17	Dissolved	Water	3005A	
680-140428-7	32M-01-14XOB-SPR17	Dissolved	Water	3005A	
680-140428-9	32M-01-18XBR-SPR17	Dissolved	Water	3005A	
680-140428-10	32M-DUP01-SPR17	Dissolved	Water	3005A	
MB 680-486361/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-486361/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 486365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-6	32M-01-13XBR-SPR17	Total/NA	Water	3010A	
680-140428-7	32M-01-14XOB-SPR17	Total/NA	Water	3010A	
680-140428-8	32M-01-17XBR-SPR17	Total/NA	Water	3010A	

Metals (Continued)

Prep Batch: 486365 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-9	32M-01-18XBR-SPR17	Total/NA	Water	3010A	
680-140428-10	32M-DUP01-SPR17	Total/NA	Water	3010A	
MB 680-486365/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-486365/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-140428-8 MS	32M-01-17XBR-SPR17	Total/NA	Water	3010A	
680-140428-8 MSD	32M-01-17XBR-SPR17	Total/NA	Water	3010A	

Analysis Batch: 486575

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-6	32M-01-13XBR-SPR17	Total/NA	Water	6020A	486365
680-140428-7	32M-01-14XOB-SPR17	Total/NA	Water	6020A	486365
680-140428-8	32M-01-17XBR-SPR17	Total/NA	Water	6020A	486365
680-140428-9	32M-01-18XBR-SPR17	Total/NA	Water	6020A	486365
680-140428-10	32M-DUP01-SPR17	Total/NA	Water	6020A	486365
MB 680-486365/1-A	Method Blank	Total/NA	Water	6020A	486365
LCS 680-486365/2-A	Lab Control Sample	Total/NA	Water	6020A	486365
680-140428-8 MS	32M-01-17XBR-SPR17	Total/NA	Water	6020A	486365
680-140428-8 MSD	32M-01-17XBR-SPR17	Total/NA	Water	6020A	486365

Analysis Batch: 486580

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-6	32M-01-13XBR-SPR17	Dissolved	Water	6020A	486359
680-140428-7	32M-01-14XOB-SPR17	Dissolved	Water	6020A	486359
680-140428-9	32M-01-18XBR-SPR17	Dissolved	Water	6020A	486359
680-140428-10	32M-DUP01-SPR17	Dissolved	Water	6020A	486359
MB 680-486359/1-A	Method Blank	Total Recoverable	Water	6020A	486359
LCS 680-486359/2-A	Lab Control Sample	Total Recoverable	Water	6020A	486359

Prep Batch: 486825

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-6	32M-01-13XBR-SPR17	Total/NA	Water	3010A	
680-140428-7	32M-01-14XOB-SPR17	Total/NA	Water	3010A	
680-140428-8	32M-01-17XBR-SPR17	Total/NA	Water	3010A	
680-140428-9	32M-01-18XBR-SPR17	Total/NA	Water	3010A	
680-140428-10	32M-DUP01-SPR17	Total/NA	Water	3010A	
MB 680-486825/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-486825/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-140428-8 MS	32M-01-17XBR-SPR17	Total/NA	Water	3010A	
680-140428-8 MSD	32M-01-17XBR-SPR17	Total/NA	Water	3010A	

Analysis Batch: 486971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-6	32M-01-13XBR-SPR17	Dissolved	Water	6010C	486361
680-140428-6	32M-01-13XBR-SPR17	Total/NA	Water	6010C	486825
680-140428-7	32M-01-14XOB-SPR17	Dissolved	Water	6010C	486361
680-140428-7	32M-01-14XOB-SPR17	Total/NA	Water	6010C	486825
680-140428-8	32M-01-17XBR-SPR17	Total/NA	Water	6010C	486825
680-140428-9	32M-01-18XBR-SPR17	Dissolved	Water	6010C	486361
680-140428-9	32M-01-18XBR-SPR17	Total/NA	Water	6010C	486825
680-140428-10	32M-DUP01-SPR17	Dissolved	Water	6010C	486361
680-140428-10	32M-DUP01-SPR17	Total/NA	Water	6010C	486825

Metals (Continued)

Analysis Batch: 486971 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 680-486361/1-A	Method Blank	Total Recoverable	Water	6010C	486361
MB 680-486825/1-A	Method Blank	Total/NA	Water	6010C	486825
LCS 680-486361/2-A	Lab Control Sample	Total Recoverable	Water	6010C	486361
LCS 680-486825/2-A	Lab Control Sample	Total/NA	Water	6010C	486825
680-140428-8 MS	32M-01-17XBR-SPR17	Total/NA	Water	6010C	486825
680-140428-8 MSD	32M-01-17XBR-SPR17	Total/NA	Water	6010C	486825

Prep Batch: 486985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-8	32M-01-17XBR-SPR17	Dissolved	Water	3005A	
MB 680-486985/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-486985/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
680-140428-8 MS	32M-01-17XBR-SPR17	Dissolved	Water	3005A	
680-140428-8 MSD	32M-01-17XBR-SPR17	Dissolved	Water	3005A	

Prep Batch: 486986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-8	32M-01-17XBR-SPR17	Dissolved	Water	3005A	
MB 680-486986/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-486986/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
680-140428-8 MS	32M-01-17XBR-SPR17	Dissolved	Water	3005A	
680-140428-8 MSD	32M-01-17XBR-SPR17	Dissolved	Water	3005A	

Analysis Batch: 487282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-8	32M-01-17XBR-SPR17	Dissolved	Water	6020A	486985
MB 680-486985/1-A	Method Blank	Total Recoverable	Water	6020A	486985
LCS 680-486985/2-A	Lab Control Sample	Total Recoverable	Water	6020A	486985
680-140428-8 MS	32M-01-17XBR-SPR17	Dissolved	Water	6020A	486985
680-140428-8 MSD	32M-01-17XBR-SPR17	Dissolved	Water	6020A	486985

Analysis Batch: 487420

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140428-8	32M-01-17XBR-SPR17	Dissolved	Water	6010C	486986
MB 680-486986/1-A	Method Blank	Total Recoverable	Water	6010C	486986
LCS 680-486986/2-A	Lab Control Sample	Total Recoverable	Water	6010C	486986
680-140428-8 MS	32M-01-17XBR-SPR17	Dissolved	Water	6010C	486986
680-140428-8 MSD	32M-01-17XBR-SPR17	Dissolved	Water	6010C	486986

Client Sample ID: 32M-01-13XBR-SPR17

Lab Sample ID: 680-140428-6

Date Collected: 06/26/17 13:05

Matrix: Water

Date Received: 06/29/17 08:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	487091	07/09/17 21:59	JD1	TAL SAV
	Instrument ID: CMSA2									
Dissolved	Prep	3005A			50 mL	50 mL	486361	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6010C		1			486971	07/06/17 16:39	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	486825	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6010C		1			486971	07/07/17 00:55	BWR	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	486359	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6020A		1			486580	07/04/17 02:57	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	3010A			50 mL	250 mL	486365	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6020A		1			486575	07/03/17 23:59	BJB	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: 32M-01-14XOB-SPR17

Lab Sample ID: 680-140428-7

Date Collected: 06/28/17 10:50

Matrix: Water

Date Received: 06/29/17 08:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	487395	07/12/17 11:51	DAS	TAL SAV
	Instrument ID: CMSA2									
Dissolved	Prep	3005A			50 mL	50 mL	486361	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6010C		1			486971	07/06/17 16:50	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	486825	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6010C		1			486971	07/07/17 00:29	BWR	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	486359	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6020A		1			486580	07/04/17 03:05	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	3010A			50 mL	250 mL	486365	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6020A		1			486575	07/03/17 23:46	BJB	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: 32M-01-17XBR-SPR17

Lab Sample ID: 680-140428-8

Date Collected: 06/28/17 12:30

Matrix: Water

Date Received: 06/29/17 08:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	487395	07/12/17 12:13	DAS	TAL SAV
	Instrument ID: CMSA2									
Dissolved	Prep	3005A			50 mL	50 mL	486986	07/07/17 09:54	AJR	TAL SAV

Client Sample ID: 32M-01-17XBR-SPR17

Lab Sample ID: 680-140428-8

Date Collected: 06/28/17 12:30

Matrix: Water

Date Received: 06/29/17 08:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	6010C		1			487420	07/11/17 16:05	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	486825	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6010C		1			486971	07/06/17 23:53	BWR	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	486985	07/07/17 09:54	AJR	TAL SAV
Dissolved	Analysis	6020A		1			487282	07/10/17 15:25	BWR	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	3010A			50 mL	250 mL	486365	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6020A		1			486575	07/03/17 23:07	BJB	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: 32M-01-18XBR-SPR17

Lab Sample ID: 680-140428-9

Date Collected: 06/26/17 14:05

Matrix: Water

Date Received: 06/29/17 08:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	5 mL	5 mL	487091	07/09/17 22:21	JD1	TAL SAV
	Instrument ID: CMSA2									
Dissolved	Prep	3005A			50 mL	50 mL	486361	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6010C		1			486971	07/06/17 16:55	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	486825	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6010C		1			486971	07/07/17 00:14	BWR	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	486359	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6020A		1			486580	07/04/17 03:10	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	3010A			50 mL	250 mL	486365	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6020A		1			486575	07/03/17 23:33	BJB	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: 32M-DUP01-SPR17

Lab Sample ID: 680-140428-10

Date Collected: 06/26/17 14:10

Matrix: Water

Date Received: 06/29/17 08:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	487091	07/09/17 22:42	JD1	TAL SAV
	Instrument ID: CMSA2									
Total/NA	Analysis	8260B	DL	5	5 mL	5 mL	487148	07/10/17 19:13	JD1	TAL SAV
	Instrument ID: CMSA2									
Dissolved	Prep	3005A			50 mL	50 mL	486361	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6010C		1			486971	07/06/17 16:44	BWR	TAL SAV
	Instrument ID: ICPE									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC32/43A

TestAmerica Job ID: 680-140428-2

Client Sample ID: 32M-DUP01-SPR17

Date Collected: 06/26/17 14:10
Date Received: 06/29/17 08:46

Lab Sample ID: 680-140428-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	486825	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6010C		1			486971	07/07/17 00:24	BWR	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	486359	06/30/17 16:38	AJR	TAL SAV
Dissolved	Analysis	6020A		1			486580	07/04/17 03:01	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	3010A			50 mL	250 mL	486365	06/30/17 17:06	AJR	TAL SAV
Total/NA	Analysis	6020A		1			486575	07/03/17 23:42	BJB	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: Trip Blank

Date Collected: 06/28/17 00:00
Date Received: 06/29/17 08:46

Lab Sample ID: 680-140428-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	487395	07/12/17 11:08	DAS	TAL SAV
	Instrument ID: CMSA2									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

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

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
Sk5622-1, 2, 3, 4, 5, 6

Matrices: Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1] *All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 07/10/2017

July 10, 2017

Mr. Jerry Lanier
Test America Savannah
5102 LaRoche Avenue
Savannah,GA 31404

RE: Katahdin Lab Number: SK5622
Project ID: Devens Spring 2017 LTM, 680-140428
Project Manager: Ms. Heather Manz
Sample Receipt Date(s): June 29, 2017

Dear Mr. Lanier:

Please find enclosed the following information:

* Report of Analysis (Analytical and/or Field)
* Quality Control Data Summary
* Chain of Custody (COC)
* Login Report

A copy of the Chain of Custody is included in the paginated report. The original COC is attached as an addendum to this report.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact the project manager listed above. The results contained in this report relate only to the submitted samples. This cover letter is an integral part of the ROA.

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

We appreciate your continued use of our laboratory and look forward to working with you in the future. The following signature indicates technical review and acceptance of the data.

Please go to http://www.katahdinlab.com/cert.html for copies of Katahdin Analytical Services Inc. current certificates and analyte lists.

Sincerely,
KATAHDIN ANALYTICAL SERVICES

Leslie Dimond

Authorized Signature

07/10/2017

Date

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA, SAVANNAH
DEVENS SPRING 2017 LTM, 680-140428
SK5622

Sample Receipt

The following samples were received on June 29, 2017 and were logged in under Katahdin Analytical Services work order number SK5622 for a hardcopy due date of July 11, 2017.

KATAHDIN Sample No.	TEST AMERICA SAVANNAH Sample Identification
SK5622-1	32M-01-13XBR-SPR17
SK5622-2	32M-01-14ZOB-SPR17
SK5622-3	32M-01-17XBR-SPR17
SK5622-4	32M-01-18XBR-SPR17
SK5622-5	32M-DUP01-SPR17
SK5622-6	TRIP BLANK

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. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order SK5622 were analyzed in accordance with the Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

Sample SK5622-3 was used for the matrix spike (MS) and matrix spike duplicate (MSD), as per client request.

MA-VPH Analysis

Samples SK5622-4 and 5 were manually integrated for the surrogate 2,5-dibromotoluene on the FID. 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 independent check standard (file 2KF10193), associated with the initial calibration analyzed on the GC02 instrument on 06/19/17 had a high concentration for n-pentane, which exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL. Since this standard is also the LCS and the concentration was within the method acceptance limits, no further action was taken.

The MSD WG208461-5 had a low recovery for the surrogate 2,5-dibromotoluene on the PID which was outside of the method acceptance limits. Since the spike recoveries were acceptable and the associated LCS/LCSD spike recoveries were acceptable, no further action was taken.

There were no other protocol deviations or observations noted by the organics laboratory staff.

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 the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond
07.10.17

Leslie Dimond
Quality Assurance Officer

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U — Indicates the compound was analyzed for but not detected above the specified level. This level may be the Practical Quantitation Level (PQL) (also called Limit of Quantitation (LOQ)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL, "U" LOQ or "U" LOD, where the rate of false negatives is <1%.

* — Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D — Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E — Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J — Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Practical Quantitation Level (PQL) (also called Limit of Quantitation (LOQ)), but above the Method Detection Limit (MDL).

or

J — Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B — Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C — Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L — Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M — Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N — Presumptive evidence of a compound based on a mass spectral library search.

A — Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P — Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-1
Client ID: 32M-01-13XBR-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10012.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		104.	%				
2,5-Dibromotoluene (PID)		95.0	%				

600 Technology Way
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Tel:(207) 874-2400 Fax:(207) 775-4029

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-2
Client ID: 32M-01-14XOB-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10013.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		107.	%				
2,5-Dibromotoluene (PID)		97.3	%				

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Tel:(207) 874-2400 Fax:(207) 775-4029

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-3
Client ID: 32M-01-17XBR-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10014.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		101.	%				
2,5-Dibromotoluene (PID)		92.0	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-4
Client ID: 32M-01-18XBR-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10015.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	E	430	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene		200	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		81.4	%				
2,5-Dibromotoluene (PID)		78.3	%				

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Tel:(207) 874-2400 Fax:(207) 775-4029

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-4DL
Client ID: 32M-01-18XBR-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10062.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 06-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208667

Analysis Date: 06-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	200	ug/L	2	100	200	100
C9-C12 Aliphatics	U	200	ug/L	2	100	200	100
C9-C10 Aromatics		410	ug/L	2	100	200	100
Benzene	U	6.0	ug/L	2	3	6.0	0.62
Ethylbenzene		180	ug/L	2	5	10.	0.84
Methyl tert-butylether	U	10	ug/L	2	5	10.	0.62
Naphthalene	U	10	ug/L	2	5	10.	3.2
Toluene	U	10	ug/L	2	5	10.	0.68
m+p-Xylenes	U	20	ug/L	2	10	20.	1.8
o-Xylene	U	10	ug/L	2	5	10.	0.94
2,5-Dibromotoluene (FID)		85.9	%				
2,5-Dibromotoluene (PID)		78.8	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-5
Client ID: 32M-DUP01-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10016.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	E	400	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene		190	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		84.1	%				
2,5-Dibromotoluene (PID)		82.0	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-5DL
Client ID: 32M-DUP01-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10063.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 06-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208667

Analysis Date: 06-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	200	ug/L	2	100	200	100
C9-C12 Aliphatics	U	200	ug/L	2	100	200	100
C9-C10 Aromatics		400	ug/L	2	100	200	100
Benzene	U	6.0	ug/L	2	3	6.0	0.62
Ethylbenzene		180	ug/L	2	5	10.	0.84
Methyl tert-butylether	U	10	ug/L	2	5	10.	0.62
Naphthalene	U	10	ug/L	2	5	10.	3.2
Toluene	U	10	ug/L	2	5	10.	0.68
m+p-Xylenes	U	20	ug/L	2	10	20.	1.8
o-Xylene	U	10	ug/L	2	5	10.	0.94
2,5-Dibromotoluene (FID)		93.4	%				
2,5-Dibromotoluene (PID)		85.5	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-6
Client ID: TRIP BLANK
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10017.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		96.4	%				
2,5-Dibromotoluene (PID)		88.3	%				

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-140428
Lab File ID : 2KG10006.D
Instrument ID : GC02

SDG : SK5622
Lab Sample ID : WG208461-1
Date Analyzed : 03-JUL-17
Time Analyzed : 09:10
Date Extracted : 03-JUL-17

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	WG208461-2	2KG10007.	07/03/17	09:51
Laboratory Control S	WG208461-3	2KG10008.	07/03/17	10:32
32M-01-13XBR-SPR17	SK5622-1	2KG10012.	07/03/17	14:41
32M-01-14XOB-SPR17	SK5622-2	2KG10013.	07/03/17	15:22
32M-01-17XBR-SPR17	SK5622-3	2KG10014.	07/03/17	16:03
32M-01-18XBR-SPR17	SK5622-4	2KG10015.	07/03/17	16:44
32M-DUP01-SPR17	SK5622-5	2KG10016.	07/03/17	17:24
TRIP BLANK	SK5622-6	2KG10017.	07/03/17	18:05
Matrix Spike	WG208461-4	2KG10026.	07/04/17	00:12
Matrix Spike Duplica	WG208461-5	2KG10027.	07/04/17	00:53

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Report of Analytical Results

Client:
Lab ID: WG208461-1
Client ID: Method Blank Sample
Project:
SDG: SK5622
Lab File ID: 2KG10006.D

Sample Date:
Received Date:
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		97.6	%				
2,5-Dibromotoluene (PID)		88.4	%				

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LCS/LCSD Recovery Report

LCS ID: WG208461-2
LCSD ID: WG208461-3
Project:
SDG: SK5622
Report Date: 10-JUL-17
LCS File ID: 2KG10007.D

Received Date:
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461
LCSD File ID: 2KG10008.D

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	324.	108.	336.	112.	ug/L	4	25	70-130
C9-C12 Aliphatics	200.	197.	98.5	206.	103.	ug/L	4	25	70-130
C9-C10 Aromatics	100.	96.9	96.9	102.	102.	ug/L	5	25	70-130
Benzene	100.	95.0	95.0	100.	100.	ug/L	5	25	70-130
Ethylbenzene	100.	92.7	92.7	97.1	97.1	ug/L	5	25	70-130
Methyl tert-butylether	100.	97.8	97.8	104.	104.	ug/L	6	25	70-130
Naphthalene	100.	91.0	91.0	96.0	96.0	ug/L	5	25	70-130
Toluene	100.	94.1	94.1	98.3	98.3	ug/L	4	25	70-130
m+p-Xylenes	200.	186.	93.0	195.	97.5	ug/L	5	25	70-130
o-Xylene	100.	94.0	94.0	98.7	98.7	ug/L	5	25	70-130
2,5-Dibromotoluene (FID)			84.7		89.8				70-130
2,5-Dibromotoluene (PID)			77.8		82.5				70-130

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MS/MSD Recovery Report

MS ID: WG208461-4
MSD ID: WG208461-5
Sample ID: SK5622-3
Client ID: 32M-01-17XBR-SPR17
Project:
SDG: SK5622
MS File ID: 2KG10026.D

Received Date:
Extract Date: 04-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461
Report Date: 10-JUL-17
MSD File ID: 2KG10027.D

Analysis Date: 04-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	300.	ug/L	U100	340	305	113.	102.	11	50	70-130
C9-C12 Aliphatics	200.	200.	ug/L	U100	193	167	96.5	83.5	14	50	70-130
C9-C10 Aromatics	100.	100.	ug/L	U100	98.8	93.3	98.8	93.3	6	50	70-130
Benzene	100.	100.	ug/L	U3.0	99.1	94.5	99.1	94.5	5	50	70-130
Ethylbenzene	100.	100.	ug/L	U5.0	96.2	91.2	96.2	91.2	5	50	70-130
Methyl tert-butylether	100.	100.	ug/L	U5.0	97.1	94	97.1	94.0	3	50	70-130
Naphthalene	100.	100.	ug/L	U5.0	88.2	83.7	88.2	83.7	5	50	70-130
Toluene	100.	100.	ug/L	U5.0	97.4	92.9	97.4	92.9	5	50	70-130
m+p-Xylenes	200.	200.	ug/L	U10	192	182	96.0	91.0	5	50	70-130
o-Xylene	100.	100.	ug/L	U5.0	96.6	91.6	96.6	91.6	5	50	70-130
2,5-Dibromotoluene (FID)							77.3	73.0			70-130
2,5-Dibromotoluene (PID)							70.8	67.1*			70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-140428
Lab File ID : 2KG10057.D
Instrument ID : GC02

SDG : SK5622
Lab Sample ID : WG208667-1
Date Analyzed : 06-JUL-17
Time Analyzed : 09:19
Date Extracted : 06-JUL-17

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	WG208667-2	2KG10058.	07/06/17	10:00
Laboratory Control S	WG208667-3	2KG10059.	07/06/17	10:41
32M-01-18XBR-SPR17	SK5622-4DL	2KG10062.	07/06/17	14:04
32M-DUP01-SPR17	SK5622-5DL	2KG10063.	07/06/17	14:45

Report of Analytical Results

Client:
Lab ID: WG208667-1
Client ID: Method Blank Sample
Project:
SDG: SK5622
Lab File ID: 2KG10057.D

Sample Date:
Received Date:
Extract Date: 06-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208667

Analysis Date: 06-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		81.8	%				
2,5-Dibromotoluene (PID)		74.7	%				

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

LCS/LCSD Recovery Report

LCS ID: WG208667-2
LCSD ID: WG208667-3
Project:
SDG: SK5622
Report Date: 10-JUL-17
LCS File ID: 2KG10058.D

Received Date:
Extract Date: 06-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208667
LCSD File ID: 2KG10059.D

Analysis Date: 06-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	342.	114.	330.	110.	ug/L	4	25	70-130
C9-C12 Aliphatics	200.	209.	104.	204.	102.	ug/L	2	25	70-130
C9-C10 Aromatics	100.	102.	102.	102.	102.	ug/L	0	25	70-130
Benzene	100.	99.2	99.2	99.7	99.7	ug/L	0	25	70-130
Ethylbenzene	100.	96.6	96.6	96.6	96.6	ug/L	0	25	70-130
Methyl tert-butylether	100.	105.	105.	103.	103.	ug/L	2	25	70-130
Naphthalene	100.	94.9	94.9	96.0	96.0	ug/L	1	25	70-130
Toluene	100.	97.9	97.9	98.0	98.0	ug/L	0	25	70-130
m+p-Xylenes	200.	194.	97.0	194.	97.0	ug/L	0	25	70-130
o-Xylene	100.	98.0	98.0	98.2	98.2	ug/L	0	25	70-130
2,5-Dibromotoluene (FID)			91.7		90.1				70-130
2,5-Dibromotoluene (PID)			84.6		82.7				70-130

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Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Koman GS	KAS PM: MHM	Sampled By: Client
Project:	KIMS Entry By: SD	Delivered By: Fedex
KAS Work Order#: - SK5622	KIMS Review By: AMH	Received By: JCB
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 6.29.17 900

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): -2.9
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
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 (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
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.

SK5622

Chain of Custody Record

Page: 1 of: 1

PO #	17-636
	Devens - AOC32/43A 1024-003
Company	KOMAN GS, LLC
Address:	160 East Main Street, Suite 2F Westborough, MA
Phone:	508-366-7442 Fax: 508-366-7445
Sampled by [Print Name(s)]/Affilliation	Kevin G. Robson
Sampler(s) Signature(s)	

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	VOCs/SW8260 3-40-ml VOA vials (HCl)	VPH/MaDEP 3-40-ml VOA vials (HCl)	Total Metals*-SW6010/6020 1-250 ml poly (HNO3)	Dissolved Metals*-SW6010/6020 1-250 ml poly (HNO3)					Remarks	Lab. No.
						Preservatives (see codes)	H	H	I	S	O	I	S	N		
						Analyses Requested										
32M-01-13XBR-SPR17		6/26/17	1305	P	GW	8	X	X	X	X						
32M-01-14XOB-SPR17		6/26/17	1050	P	GW	8	X	X	X	X						
32M-01-17XBR-SPR17		6/26/17	1230	P	GW	24	X	X	X	X					MS/MSD	
32M-01-18XBR-SPR17		6/26/17	1405	P	GW	8	X	X	X	X						
32M-DUP01-SPR17		6/26/17	1410	P	GW	8	X	X	X	X						
	Trip Blank	—	—	O	O	4	X	X								
				P	GW											
				P	GW											
				P	GW											
Shipping Details				courier pick up		0	← Total Number of Containers									

Laboratory:	Test America - Savannah
Address:	
Contact:	Jerry Lanier
Regulatory Facility No.	
Project Name:	Devens Spring 2017 LTM
Sampling QAP No.:	
Approval Date:	
TAT	Routine
Other:	

Date Out: Via:

Returned: Via:

Additional Comments:

* = Dissolved Metals include: Mn (6010); As (6020)

Item No.	Relinquished by/Affiliation	Date	Time	Received by/Affiliation	Date	Time
		6/28/17	1400		6-28-17	1400
		6-28-17	1845		6.29.17	900

email logins and results to:

lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐

On ICE ☐

Temperature _____C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SP = Soil SW = Surface Water O = Other

PRESERVATIVE CODES H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other

COLLECTION METHOD C = Composite G=Grab P= Pumping O = Other

Katahdin Analytical Services SK5622 page 00000211 of 00000024

SK5622

PO #	17-636	Devens - AOC57 1024-003

Chain of Custody Record

Page: 1 of: 1

Company	KOMAN GS, LLC
Address:	160 East Main Street, Suite 2F Westborough, MA
Phone: 508-366-7442	Fax: 508-366-7445
Sampled by [Print Name(s)]/Affilliation	Liam G. Anderson
Sampler(s) Signature(s)	

Laboratory:	Test America - Savannah
Address:	
Contact:	Jerry Lanier
Regulatory Facility No.	
Project Name:	Devens Spring 2017 LTM
Sampling QAP No.:	
Approval Date:	
TAT	Routine
Other:	

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	Preservatives (see codes) H	H	I	S	O	I	S	N	Analyses Requested: Total Metals*-SW6010/6020 1-250 ml poly (HNO3)	Analyses Requested: Dissolved Metals*-SW6010/6020 1-250 ml poly (HNO3)	Remarks	Lab. No.
57M-96-11X-SPR17		6/26/17	1015	P	GW	2									X	X		
57M-DUP01-SPR17		6/26/17	1020	P	GW	2									X	X		
57M-95-03X-SPR17		6/26/17	910	P	GW	6									X	X	MS/MSD	
57M-SW-1-SPR17		6/26/17	1055	P	GW	2									X	X		
57M-SWDUP-SPR17		6/26/17	1100	P	GW	2									X	X		
				P	GW													
				P	GW													
				P	GW													

Shipping Details: courier pick up — 0 ← Total Number of Containers

Date Out: Via:

Returned: Via:

Additional Comments:
* = Dissolved Metals include: Fe, Mn (6010); As (6020)

Item No.	Relinquished by/Affiliation	Date	Time	Received	Date	Time
		6/28/17	1400		6-28-17	1400
		6-28-17	1810		6.29.17	900

email logins and results to:

lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐

On ICE ☐

Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater SE = Sediment SP = Soil SW = Surface Water O = Other

PRESERVATIVE CODES H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other

COLLECTION METHOD C = Composite G=Grab P= Pumping O = Other

Katahdin Analytical Services SK5622 page 00000220f20000024

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Jun. 30, 2017
08:57 AM

Login Number: SK5622

Account: TASAV001
Test America Savannah

Project: TASAV-DEVENS

NoWeb

Quote/Incoming:

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:

Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	DOD QSM 4.2 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	680-140428
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	W912WJ-10-D-0003
COOLER TEMPERATURE	:	2.9
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS033QC-XLS
LOGIN INITIALS	:	SO
PM	:	HHM
PROJECT NAME	:	Devens Spring 2017 LTM, 680-140428
QC LEVEL	:	II
REPORT INSTRUCTIONS	:	Email PDF, EDD files and invoice to Jerry. No HC. Include Level 4 narrative and MCP forms.
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SK5622-1	32M-01-13XBR-SPR17	26-JUN-17 13:05	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	10-JUL-17	40mL Vial+HCl		

SK5622-2	32M-01-14XOB-SPR17	26-JUN-17 10:50	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	10-JUL-17	40mL Vial+HCl		

SK5622-3	32M-01-17XBR-SPR17	26-JUN-17 12:30	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	10-JUL-17	40mL Vial+HCl		**MS/MSD**

SK5622-4	32M-01-18XBR-SPR17	26-JUN-17 14:05	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	10-JUL-17	40mL Vial+HCl		

SK5622-5	32M-DUP01-SPR17	26-JUN-17 14:10	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	10-JUL-17	40mL Vial+HCl		

SK5622-6	TRIP BLANK	26-JUN-17 00:00	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	10-JUL-17	40mL Vial+HCl		

SK5622-7	NOT A SAMPLE	26-JUN-17 12:30	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Service	S	CLIENT-CHARGE				**MS charge for VPH**

AMH 6/30/17

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Jun. 30, 2017
08:57 AM

Quote/Incoming:

Login Number: SK5622

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SK5622-8	NOT A SAMPLE	26-JUN-17 12:30	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Service	S	CLIENT-CHARGE				MSD charge for VPH

Total Samples: *8* ***Total Analyses:*** *8*

AMH 6/30/17

360325-Boston 360325-Boston

PO #	17-636	Devens - AOC32/43A 1024-003	**Chain of Custody Record**	Page: 1 of: 1

Company	KOMAN GS, LLC
Address:	160 East Main Street, Suite 2F Westborough, MA
Phone:	508-366-7442 Fax: 508-366-7445
Sampled by [Print Name(s)]/Affilliation	Kevin G Anderson
Sampler(s) Signature(s)	[signature]

Laboratory: Test America - Savannah
Address:
Contact: Jerry Lanier
Regulatory Facility No.
Project Name: Devens Spring 2017 LTM
Sampling QAP No.:
Approval Date:
TAT Routine
Other:

Preservatives (see codes): H H I S O I S N

Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	VOCs/SW8260 3-40-ml VOA vials (HCl)	VPH/MaDEP 3-40-ml VOA vials (HCl)	Total Metals*-SW6010/6020 1-250 ml poly (HNO3)	Dissolved Metals*-SW6010/6020 1-250 ml poly (HNO3)					Remarks	Lab. No.
32M-01-13XBR-SPR17		6/26/17	1305	P	GW	8	X	X	X	X						
32M-01-14XOB-SPR17		6/26/17	1050	P	GW	8	X	X	X	X						
32M-01-17XBR-SPR17		6/26/17	1230	P	GW	24	X	X	X	X					MS/MSD	
32M-01-18XBR-SPR17		6/26/17	1405	P	GW	8	X	X	X	X						
32M-DUP01-SPR17		6/26/17	1410	P	GW	8	X	X	X	X						
	Trip Blank	—	—	O	O	4	X	X								
				P	GW											
				P	GW											
				P	GW											

680-140428 Chain of Custody

Shipping Details	courier pick up	0	← Total Number of Contai

Date Out:	Via:	Item No.	Relinquished by/Affiliation	Date	Time	Receive A	Date	Time
Returned:	Via:		[signature]	6/28/17	1400	[signature]	6-28-17	1400
Additional Comments:			[signature]	6-28-17	1800			
* = Dissolved Metals include: Mn (6010); As (6020)								

email logins and results to:
lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐
On ICE ☐
Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater	SE = Sediment	SP = Soil	SW = Surface Water		O = Other
PRESERVATIVE CODES H = HCL + Ice	I = Ice Only	N = Nitric Acid + Ice	S = Sulfuric Acid + Ice	M = Methanol	O = Other
COLLECTION METHOD C = Composite	G=Grab	P= Pumping			O = Other

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-140428-2

Login Number: 140428
List Number: 1
Creator: Ragnaldsen, Amy E

List Source: TestAmerica Savannah

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - AOC32/43A

TestAmerica Job ID: 680-140428-2

Laboratory: TestAmerica Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	07-31-17 *
Alaska	State Program	10		06-30-18
Alaska (UST)	State Program	10	UST-104	11-05-17
Arizona	State Program	9	AZ808	12-14-17
Arkansas DEQ	State Program	6	88-0692	02-01-18
California	State Program	9	2939	06-30-17 *
Colorado	State Program	8	N/A	12-31-17
Connecticut	State Program	1	PH-0161	03-31-19
Florida	NELAP	4	E87052	06-30-18
GA Dept. of Agriculture	State Program	4	N/A	06-12-18
Georgia	State Program	4	N/A	06-30-18
Guam	State Program	9	15-005r	04-16-18
Hawaii	State Program	9	N/A	06-30-17 *
Illinois	NELAP	5	200022	11-30-17
Indiana	State Program	5	N/A	06-30-17 *
Iowa	State Program	7	353	06-30-17 *
Kentucky (DW)	State Program	4	90084	12-31-17
Kentucky (UST)	State Program	4	18	06-30-18
Kentucky (WW)	State Program	4	90084	12-31-17
L-A-B	DoD ELAP		L2463	09-22-19
L-A-B	ISO/IEC 17025		L2463.01	09-22-19
Louisiana	NELAP	6	30690	06-30-18
Louisiana (DW)	NELAP	6	LA160019	12-31-17
Maine	State Program	1	GA00006	09-24-18
Maryland	State Program	3	250	12-31-17
Massachusetts	State Program	1	M-GA006	06-30-18
Michigan	State Program	5	9925	06-30-17 *
Mississippi	State Program	4	N/A	06-30-18
Nebraska	State Program	7	TestAmerica-Savannah	06-30-17 *
New Jersey	NELAP	2	GA769	06-30-18
New Mexico	State Program	6	N/A	06-30-17 *
New York	NELAP	2	10842	03-31-18
North Carolina (DW)	State Program	4	13701	07-31-17 *
North Carolina (WW/SW)	State Program	4	269	12-31-17
Oklahoma	State Program	6	9984	08-31-17 *
Pennsylvania	NELAP	3	68-00474	06-30-17 *
Puerto Rico	State Program	2	GA00006	12-31-17
South Carolina	State Program	4	98001	06-30-17 *
Tennessee	State Program	4	TN02961	06-30-18
Texas	NELAP	6	T104704185-16-9	11-30-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		SAV 3-04	06-14-20 *
Virginia	NELAP	3	460161	06-14-17 *
Washington	State Program	10	C805	06-10-17 *
West Virginia (DW)	State Program	3	9950C	12-31-17
West Virginia DEP	State Program	3	094	06-30-18
Wisconsin	State Program	5	999819810	08-31-17 *
Wyoming	State Program	8	8TMS-L	06-30-16 *

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

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
Sk5622-1, 2, 3, 4, 5, 6

Matrices: Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1] *All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 07/10/2017

Katahdin
ANALYTICAL SERVICES

Accredited in accordance with nelac
Cert. No. E87604

July 10, 2017

Mr. Jerry Lanier
Test America Savannah
5102 LaRoche Avenue
Savannah,GA 31404

RE: Katahdin Lab Number: SK5622
Project ID: Devens Spring 2017 LTM, 680-140428
Project Manager: Ms. Heather Manz
Sample Receipt Date(s): June 29, 2017

Dear Mr. Lanier:

Please find enclosed the following information:

* Report of Analysis (Analytical and/or Field)
* Quality Control Data Summary
* Chain of Custody (COC)
* Login Report

A copy of the Chain of Custody is included in the paginated report. The original COC is attached as an addendum to this report.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact the project manager listed above. The results contained in this report relate only to the submitted samples. This cover letter is an integral part of the ROA.

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

We appreciate your continued use of our laboratory and look forward to working with you in the future. The following signature indicates technical review and acceptance of the data.

Please go to http://www.katahdinlab.com/cert.html for copies of Katahdin Analytical Services Inc. current certificates and analyte lists.

Sincerely,
KATAHDIN ANALYTICAL SERVICES

Louis Dimond

Authorized Signature

07/10/2017

Date

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA, SAVANNAH
DEVENS SPRING 2017 LTM, 680-140428
SK5622

Sample Receipt

The following samples were received on June 29, 2017 and were logged in under Katahdin Analytical Services work order number SK5622 for a hardcopy due date of July 11, 2017.

KATAHDIN	TEST AMERICA SAVANNAH
Sample No.	Sample Identification
SK5622-1	32M-01-13XBR-SPR17
SK5622-2	32M-01-14ZOB-SPR17
SK5622-3	32M-01-17XBR-SPR17
SK5622-4	32M-01-18XBR-SPR17
SK5622-5	32M-DUP01-SPR17
SK5622-6	TRIP BLANK

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. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order SK5622 were analyzed in accordance with the Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

Sample SK5622-3 was used for the matrix spike (MS) and matrix spike duplicate (MSD), as per client request.

MA-VPH Analysis

Samples SK5622-4 and 5 were manually integrated for the surrogate 2,5-dibromotoluene on the FID. 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 independent check standard (file 2KF10193), associated with the initial calibration analyzed on the GC02 instrument on 06/19/17 had a high concentration for n-pentane, which exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL. Since this standard is also the LCS and the concentration was within the method acceptance limits, no further action was taken.

The MSD WG208461-5 had a low recovery for the surrogate 2,5-dibromotoluene on the PID which was outside of the method acceptance limits. Since the spike recoveries were acceptable and the associated LCS/LCSD spike recoveries were acceptable, no further action was taken.

There were no other protocol deviations or observations noted by the organics laboratory staff.

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 the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond
07.10.17

Leslie Dimond
Quality Assurance Officer

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Practical Quantitation Level (PQL) (also called Limit of Quantitation (LOQ)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL, "U" LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Practical Quantitation Level (PQL) (also called Limit of Quantitation (LOQ)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-1
Client ID: 32M-01-13XBR-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10012.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		104.	%				
2,5-Dibromotoluene (PID)		95.0	%				

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-2
Client ID: 32M-01-14XOB-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10013.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		107.	%				
2,5-Dibromotoluene (PID)		97.3	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-3
Client ID: 32M-01-17XBR-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10014.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		101.	%				
2,5-Dibromotoluene (PID)		92.0	%				

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Cert No E87604

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-4
Client ID: 32M-01-18XBR-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10015.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	E	430	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene		200	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		81.4	%				
2,5-Dibromotoluene (PID)		78.3	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-4DL
Client ID: 32M-01-18XBR-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10062.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 06-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208667

Analysis Date: 06-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	200	ug/L	2	100	200	100
C9-C12 Aliphatics	U	200	ug/L	2	100	200	100
C9-C10 Aromatics		410	ug/L	2	100	200	100
Benzene	U	6.0	ug/L	2	3	6.0	0.62
Ethylbenzene		180	ug/L	2	5	10.	0.84
Methyl tert-butylether	U	10	ug/L	2	5	10.	0.62
Naphthalene	U	10	ug/L	2	5	10.	3.2
Toluene	U	10	ug/L	2	5	10.	0.68
m+p-Xylenes	U	20	ug/L	2	10	20.	1.8
o-Xylene	U	10	ug/L	2	5	10.	0.94
2,5-Dibromotoluene (FID)		85.9	%				
2,5-Dibromotoluene (PID)		78.8	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-5
Client ID: 32M-DUP01-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10016.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	E	400	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene		190	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		84.1	%				
2,5-Dibromotoluene (PID)		82.0	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-5DL
Client ID: 32M-DUP01-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10063.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 06-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208667

Analysis Date: 06-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	200	ug/L	2	100	200	100
C9-C12 Aliphatics	U	200	ug/L	2	100	200	100
C9-C10 Aromatics		400	ug/L	2	100	200	100
Benzene	U	6.0	ug/L	2	3	6.0	0.62
Ethylbenzene		180	ug/L	2	5	10.	0.84
Methyl tert-butylether	U	10	ug/L	2	5	10.	0.62
Naphthalene	U	10	ug/L	2	5	10.	3.2
Toluene	U	10	ug/L	2	5	10.	0.68
m+p-Xylenes	U	20	ug/L	2	10	20.	1.8
o-Xylene	U	10	ug/L	2	5	10.	0.94
2,5-Dibromotoluene (FID)		93.4	%				
2,5-Dibromotoluene (PID)		85.5	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5622-6
Client ID: TRIP BLANK
Project: Devens Spring 2017 LTM, 68
SDG: SK5622
Lab File ID: 2KG10017.I

Sample Date: 26-JUN-17
Received Date: 29-JUN-17
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		96.4	%				
2,5-Dibromotoluene (PID)		88.3	%				

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-140428
Lab File ID : 2KG10006.D
Instrument ID : GC02

SDG : SK5622
Lab Sample ID : WG208461-1
Date Analyzed : 03-JUL-17
Time Analyzed : 09:10
Date Extracted : 03-JUL-17

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	WG208461-2	2KG10007.	07/03/17	09:51
Laboratory Control S	WG208461-3	2KG10008.	07/03/17	10:32
32M-01-13XBR-SPR17	SK5622-1	2KG10012.	07/03/17	14:41
32M-01-14XOB-SPR17	SK5622-2	2KG10013.	07/03/17	15:22
32M-01-17XBR-SPR17	SK5622-3	2KG10014.	07/03/17	16:03
32M-01-18XBR-SPR17	SK5622-4	2KG10015.	07/03/17	16:44
32M-DUP01-SPR17	SK5622-5	2KG10016.	07/03/17	17:24
TRIP BLANK	SK5622-6	2KG10017.	07/03/17	18:05
Matrix Spike	WG208461-4	2KG10026.	07/04/17	00:12
Matrix Spike Duplica	WG208461-5	2KG10027.	07/04/17	00:53

Report of Analytical Results

Client:
Lab ID: WG208461-1
Client ID: Method Blank Sample
Project:
SDG: SK5622
Lab File ID: 2KG10006.D

Sample Date:
Received Date:
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		97.6	%				
2,5-Dibromotoluene (PID)		88.4	%				

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LCS/LCSD Recovery Report

LCS ID: WG208461-2
LCSD ID: WG208461-3
Project:
SDG: SK5622
Report Date: 10-JUL-17
LCS File ID: 2KG10007.D

Received Date:
Extract Date: 03-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461
LCSD File ID: 2KG10008.D

Analysis Date: 03-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	324.	108.	336.	112.	ug/L	4	25	70-130
C9-C12 Aliphatics	200.	197.	98.5	206.	103.	ug/L	4	25	70-130
C9-C10 Aromatics	100.	96.9	96.9	102.	102.	ug/L	5	25	70-130
Benzene	100.	95.0	95.0	100.	100.	ug/L	5	25	70-130
Ethylbenzene	100.	92.7	92.7	97.1	97.1	ug/L	5	25	70-130
Methyl tert-butylether	100.	97.8	97.8	104.	104.	ug/L	6	25	70-130
Naphthalene	100.	91.0	91.0	96.0	96.0	ug/L	5	25	70-130
Toluene	100.	94.1	94.1	98.3	98.3	ug/L	4	25	70-130
m+p-Xylenes	200.	186.	93.0	195.	97.5	ug/L	5	25	70-130
o-Xylene	100.	94.0	94.0	98.7	98.7	ug/L	5	25	70-130
2,5-Dibromotoluene (FID)			84.7		89.8				70-130
2,5-Dibromotoluene (PID)			77.8		82.5				70-130

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MS/MSD Recovery Report

MS ID: WG208461-4
MSD ID: WG208461-5
Sample ID: SK5622-3
Client ID: 32M-01-17XBR-SPR17
Project:
SDG: SK5622
MS File ID: 2KG10026.D

Received Date:
Extract Date: 04-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208461
Report Date: 10-JUL-17
MSD File ID: 2KG10027.D

Analysis Date: 04-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	300.	ug/L	U100	340	305	113.	102.	11	50	70-130
C9-C12 Aliphatics	200.	200.	ug/L	U100	193	167	96.5	83.5	14	50	70-130
C9-C10 Aromatics	100.	100.	ug/L	U100	98.8	93.3	98.8	93.3	6	50	70-130
Benzene	100.	100.	ug/L	U3.0	99.1	94.5	99.1	94.5	5	50	70-130
Ethylbenzene	100.	100.	ug/L	U5.0	96.2	91.2	96.2	91.2	5	50	70-130
Methyl tert-butylether	100.	100.	ug/L	U5.0	97.1	94	97.1	94.0	3	50	70-130
Naphthalene	100.	100.	ug/L	U5.0	88.2	83.7	88.2	83.7	5	50	70-130
Toluene	100.	100.	ug/L	U5.0	97.4	92.9	97.4	92.9	5	50	70-130
m+p-Xylenes	200.	200.	ug/L	U10	192	182	96.0	91.0	5	50	70-130
o-Xylene	100.	100.	ug/L	U5.0	96.6	91.6	96.6	91.6	5	50	70-130
2,5-Dibromotoluene (FID)							77.3	73.0			70-130
2,5-Dibromotoluene (PID)							70.8	67.1*			70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-140428
Lab File ID : 2KG10057.D
Instrument ID : GC02

SDG : SK5622
Lab Sample ID : WG208667-1
Date Analyzed : 06-JUL-17
Time Analyzed : 09:19
Date Extracted : 06-JUL-17

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	WG208667-2	2KG10058.	07/06/17	10:00
Laboratory Control S	WG208667-3	2KG10059.	07/06/17	10:41
32M-01-18XBR-SPR17	SK5622-4DL	2KG10062.	07/06/17	14:04
32M-DUP01-SPR17	SK5622-5DL	2KG10063.	07/06/17	14:45

Report of Analytical Results

Client:
Lab ID: WG208667-1
Client ID: Method Blank Sample
Project:
SDG: SK5622
Lab File ID: 2KG10057.D

Sample Date:
Received Date:
Extract Date: 06-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208667

Analysis Date: 06-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 10-JUL-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		81.8	%				
2,5-Dibromotoluene (PID)		74.7	%				

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LCS/LCSD Recovery Report

LCS ID: WG208667-2
LCSD ID: WG208667-3
Project:
SDG: SK5622
Report Date: 10-JUL-17
LCS File ID: 2KG10058.D

Received Date:
Extract Date: 06-JUL-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG208667
LCSD File ID: 2KG10059.D

Analysis Date: 06-JUL-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	342.	114.	330.	110.	ug/L	4	25	70-130
C9-C12 Aliphatics	200.	209.	104.	204.	102.	ug/L	2	25	70-130
C9-C10 Aromatics	100.	102.	102.	102.	102.	ug/L	0	25	70-130
Benzene	100.	99.2	99.2	99.7	99.7	ug/L	0	25	70-130
Ethylbenzene	100.	96.6	96.6	96.6	96.6	ug/L	0	25	70-130
Methyl tert-butylether	100.	105.	105.	103.	103.	ug/L	2	25	70-130
Naphthalene	100.	94.9	94.9	96.0	96.0	ug/L	1	25	70-130
Toluene	100.	97.9	97.9	98.0	98.0	ug/L	0	25	70-130
m+p-Xylenes	200.	194.	97.0	194.	97.0	ug/L	0	25	70-130
o-Xylene	100.	98.0	98.0	98.2	98.2	ug/L	0	25	70-130
2,5-Dibromotoluene (FID)			91.7		90.1				70-130
2,5-Dibromotoluene (PID)			84.6		82.7				70-130

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Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Koman GS	KAS PM: MHM	Sampled By: Client
Project:	KIMS Entry By: SD	Delivered By: Fedex
KAS Work Order#: - SK5622	KIMS Review By: AMH	Received By: JCB
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 6.29.17 900

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): -2.9
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
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 (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
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.

SK5622

360325 Boston

360325 Boston

PO #	17-636	Devens - AOC32/43A 1024-003

Chain of Custody Record

Page: 1 of: 1

Company: KOMAN GS, LLC

Address: 160 East Main Street, Suite 2F
Westborough, MA

Phone: 508-366-7442 Fax: 508-366-7445

Sampled by [Print Name(s)]/Affilliation: Kevin G. Anderson

Sampler(s) Signature(s): [signature]

Laboratory: Test America - Savannah
Address:
Contact: Jerry Lanier
Regulatory Facility No.
Project Name: Devens Spring 2017 LTM
Sampling QAP No.:
Approval Date:
TAT Routine
Other:

Preservatives (see codes): H H I S O I S N

Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	VOCs/SW8260 3-40-ml VOA vials (HCl)	VPH/MaDEP 3-40-ml VOA vials (HCl)	Total Metals*-SW6010/6020 1-250 ml poly (HNO3)	Dissolved Metals*-SW6010/6020 1-250 ml poly (HNO3)					Remarks	Lab. No.
32M-01-13XBR-SPR17		6/26/17	1305	P	GW	8	X	X	X	X						
32M-01-14XOB-SPR17		6/26/17	1050	P	GW	8	X	X	X	X						
32M-01-17XBR-SPR17		6/26/17	1230	P	GW	24	X	X	X	X					MS/MSD	
32M-01-18XBR-SPR17		6/26/17	1405	P	GW	8	X	X	X	X						
32M-DUP01-SPR17		6/26/17	1410	P	GW	8	X	X	X	X						
	Trip Blank	—	—	O	O	24	X	X								
				P	GW											
				P	GW											
				P	GW											

Shipping Details: courier pick up — 0 ← Total Number of Containers

Date Out: Via:
Returned: Via:

Additional Comments:
* = Dissolved Metals include: Mn (6010); As (6020)

Item No.	Relinquished by/Affiliation	Date	Time	Receive A	Date	Time
	[signature]	6/28/17	1400	[signature]	6-28-17	1400
	[signature]	6-28-17	1800	[signature]	6-29-17	900

email logins and results to:
lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐
On ICE ☐
Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater SE = Sediment SP = Soil SW = Surface Water O = Other
PRESERVATIVE CODES H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other
COLLECTION METHOD C = Composite G=Grab P= Pumping O = Other

SK5622

PO #	17-636	Devens - AOC57 1024-003	**Chain of Custody Record**	Page: 1 of: 1

Company: KOMAN GS, LLC

Address: 160 East Main Street, Suite 2F, Westborough, MA

Phone: 508-366-7442 Fax: 508-366-7445

Sampled by [Print Name(s)]/Affilliation: Liam B. Anderson

Sampler(s) Signature(s):

Laboratory: Test America - Savannah
Address:
Contact: Jerry Lanier
Regulatory Facility No.
Project Name: Devens Spring 2017 LTM
Sampling QAP No.:
Approval Date:
TAT: Routine
Other:

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	Preservatives (see codes) H	H	I	S	O	I	S	N	Analyses Requested: Total Metals*-SW6010/6020 1-250 ml poly (HNO3)	Dissolved Metals*-SW6010/6020 1-250 ml poly (HNO3)	Remarks	Lab. No.
57M-96-11X-SPR17		6/26/17	1015	P	GW	2									X	X		
57M-DUP01-SPR17		6/26/17	1020	P	GW	2									X	X		
57M-95-03X-SPR17		6/26/17	910	P	GW	6									X	X	MS/MSD	
57M-SW-1-SPR17		6/26/17	1055	P	GW	2									X	X		
57M-SWDUP-SPR17		6/26/17	1109	P	GW	2									X	X		
				P	GW													
				P	GW													
				P	GW													

Shipping Details: courier pick up — 0 ← Total Number of Containers

Date Out: Via:
Returned: Via:

Additional Comments:
* = Dissolved Metals include: Fe, Mn (6010); As (6020)

email logins and results to:
lekes@komangs.com

Item No.	Relinquished by/Affiliation	Date	Time	Received	Date	Time
		6/28/17	1400		6-28-17	1400
		6-28-17	1810			
					6.29.17	900

Lab Comments

Preserve Where Applicable ☐
On ICE ☐
Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater SE = Sediment SP = Soil SW = Surface Water O = Other
PRESERVATIVE CODES H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other
COLLECTION METHOD C = Composite G=Grab P= Pumping O = Other

Katahdin Analytical Services SK5622 page 0000022 of 0000024

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Jun. 30, 2017
08:57 AM

Login Number: SK5622

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Quote/Incoming:

Login Information:

ANALYSIS INSTRUCTIONS	:	DOD QSM 4.2 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	680-140428
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	W912WJ-10-D-0003
COOLER TEMPERATURE	:	2.9
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS033QC-XLS
LOGIN INITIALS	:	SO
PM	:	HHM
PROJECT NAME	:	Devens Spring 2017 LTM, 680-140428
QC LEVEL	:	II
REPORT INSTRUCTIONS	:	Email PDF, EDD files and invoice to Jerry. No HC. Include Level 4 narrative and MCP forms.
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SK5622-1	32M-01-13XBR-SPR17	26-JUN-17 13:05	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	10-JUL-17	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SK5622-2	32M-01-14XOB-SPR17	26-JUN-17 10:50	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	10-JUL-17	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SK5622-3	32M-01-17XBR-SPR17	26-JUN-17 12:30	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	10-JUL-17	40mL Vial+HCl		**MS/MSD**

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SK5622-4	32M-01-18XBR-SPR17	26-JUN-17 14:05	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	10-JUL-17	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SK5622-5	32M-DUP01-SPR17	26-JUN-17 14:10	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	10-JUL-17	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SK5622-6	TRIP BLANK	26-JUN-17 00:00	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	10-JUL-17	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SK5622-7	NOT A SAMPLE	26-JUN-17 12:30	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Service	S	CLIENT-CHARGE				**MS charge for VPH**

AMH 6/30/17

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Jun. 30, 2017

08:57 AM

Quote/Incoming:

Login Number: SK5622

Account: TASAV001 NoWeb

Test America Savannah

Project: TASAV-DEVENS

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SK5622-8	NOT A SAMPLE	26-JUN-17 12:30	29-JUN-17			11-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Service	S	CLIENT-CHARGE				MSD charge for VPH

Total Samples: *8* ***Total Analyses:*** *8*

AMH 6/30/17

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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

TestAmerica Job ID: 680-140237-1
Client Project/Site: Devens - DCL 1024-003

For:
KOMAN Government Solutions, LLC
160 East Main St
Suite 2F
Westborough, Massachusetts 01581

Attn: Laurie Ekes

Jerry Lanier

Authorized for release by:
7/10/2017 5:14:16 PM

Jerry Lanier, Project Manager I
(912)354-7858 e.3410
jerry.lanier@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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

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

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

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Job ID: 680-140237-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: Devens - DCL 1024-003

Report Number: 680-140237-1

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

RECEIPT

The samples were received on 06/23/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.1º C, 2.7º C and 3.2º C.

PESTICIDES AND PCBS

Samples LFM-99-02B-SPR17 (680-140237-1), LFM-99-05A-SPR17 (680-140237-2), LFM-DUP01-SPR17 (680-140237-3) and LFM-99-06A RP-SPR17 (680-140237-4) were analyzed for Pesticides and PCBs in accordance with EPA SW-846 Method 8081B_8082A. The samples were prepared on 06/27/2017 and 06/28/2017 and analyzed on 06/28/2017 and 06/29/2017.

The closing continuing calibration verification (CCV) standard associated with batch 680-485971 failed to meet acceptance limits for the surrogate DCB Decachlorobiphenyl. The associated samples were re-analyzed following a successful CCV and produced similar results, indicating that the sample matrix is adversely affecting the instrument and causing the failures.

Refer to the QC report for details.

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

METALS (ICP)

Samples LFM-99-02B-SPR17 (680-140237-1), LFM-99-05A-SPR17 (680-140237-2), LFM-DUP01-SPR17 (680-140237-3) and LFM-99-06A RP-SPR17 (680-140237-4) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 06/26/2017 and analyzed on 06/27/2017.

Calcium, Iron and Manganese failed the recovery criteria high for the MS of sample LFM-99-06A RP-SPR17MS (680-140237-4) in batch 680-485954.

Calcium failed the recovery criteria low for the MSD of sample LFM-99-06A RP-SPR17MSD (680-140237-4) in batch 680-485954. Iron exceeded the RPD limit.

Refer to the QC report for details.

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

METALS

Samples LFM-99-02B-SPR17 (680-140237-1), LFM-99-05A-SPR17 (680-140237-2), LFM-DUP01-SPR17 (680-140237-3) and LFM-99-06A RP-SPR17 (680-140237-4) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 06/26/2017 and analyzed on 06/27/2017.

Job ID: 680-140237-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

The interference check standard solution (ICSA) associated with batch 680-485909 had results for one or more elements at a level greater than 2 times the limit of detection (LOD).

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

MERCURY

Samples LFM-99-02B-SPR17 (680-140237-1), LFM-99-05A-SPR17 (680-140237-2), LFM-DUP01-SPR17 (680-140237-3) and LFM-99-06A RP-SPR17 (680-140237-4) were analyzed for mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared and analyzed on 06/27/2017.

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

ALKALINITY

Samples LFM-99-02B-SPR17 (680-140237-1), LFM-99-05A-SPR17 (680-140237-2), LFM-DUP01-SPR17 (680-140237-3) and LFM-99-06A RP-SPR17 (680-140237-4) were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 06/29/2017 and 06/30/2017.

The method blank associated with method 2320B analytical batch 280-379459 contained alkalinity greater than one-half the reporting limit (RL). The samples were not re-analyzed because the sample result was >10x the MB. The sample results have been qualified and reported.

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

TOTAL DISSOLVED SOLIDS

Samples LFM-99-02B-SPR17 (680-140237-1), LFM-99-05A-SPR17 (680-140237-2), LFM-DUP01-SPR17 (680-140237-3) and LFM-99-06A RP-SPR17 (680-140237-4) were analyzed for total dissolved solids in accordance with SM 2540C. The samples were analyzed on 06/28/2017.

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

NITRATE-NITRITE AS NITROGEN

Samples LFM-99-02B-SPR17 (680-140237-1), LFM-99-05A-SPR17 (680-140237-2), LFM-DUP01-SPR17 (680-140237-3) and LFM-99-06A RP-SPR17 (680-140237-4) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 07/04/2017.

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

CHEMICAL OXYGEN DEMAND

Samples LFM-99-02B-SPR17 (680-140237-1), LFM-99-05A-SPR17 (680-140237-2), LFM-DUP01-SPR17 (680-140237-3) and LFM-99-06A RP-SPR17 (680-140237-4) were analyzed for chemical oxygen demand in accordance with EPA Method 410.4. The samples were analyzed on 06/28/2017.

Chemical Oxygen Demand failed the recovery criteria low for the MSD of sample LFM-99-06A RP-SPR17MSD (680-140237-4) in batch 280-378875.

Refer to the QC report for details.

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

CYANIDE

Samples LFM-99-02B-SPR17 (680-140237-1), LFM-99-05A-SPR17 (680-140237-2), LFM-DUP01-SPR17 (680-140237-3) and LFM-99-06A RP-SPR17 (680-140237-4) were analyzed for cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared and analyzed on 06/30/2017.

Job ID: 680-140237-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

Cyanide, Total failed the recovery criteria low for the MSD of sample LFM-99-06A RP-SPR17MSD (680-140237-4) in batch 680-486312.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Refer to the QC report for details.

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

9056 ANIONS

Samples LFM-99-02B-SPR17 (680-140237-1), LFM-99-05A-SPR17 (680-140237-2), LFM-DUP01-SPR17 (680-140237-3) and LFM-99-06A RP-SPR17 (680-140237-4) were analyzed for 9056 Anions in accordance with SW 846 9056. The samples were analyzed on 06/28/2017.

Samples LFM-99-02B-SPR17 (680-140237-1)[10X], LFM-99-05A-SPR17 (680-140237-2)[10X], LFM-DUP01-SPR17 (680-140237-3)[10X] and LFM-99-06A RP-SPR17 (680-140237-4)[25X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL 1024-003

TestAmerica Job ID: 680-140237-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-140237-1	LFM-99-02B-SPR17	Water	06/22/17 12:00	06/23/17 09:40
680-140237-2	LFM-99-05A-SPR17	Water	06/22/17 09:00	06/23/17 09:40
680-140237-3	LFM-DUP01-SPR17	Water	06/22/17 09:05	06/23/17 09:40
680-140237-4	LFM-99-06A RP-SPR17	Water	06/21/17 09:55	06/23/17 09:40
680-140237-5	Trip Blank	Water	06/22/17 00:00	06/23/17 09:40

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL 1024-003

TestAmerica Job ID: 680-140237-1

Method	Method Description	Protocol	Laboratory
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	TAL SAV
9056A	Anions, Ion Chromatography	SW846	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL DEN
410.4	COD	MCAWW	TAL DEN
9012B	Cyanide, Total and/or Amenable	EPA	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
MA EPH	MADEP EPH (Extractable Petroleum Hydroca	NONE	
MA VPH	MADEP VPH Volatile Petroleum Hydrocarbon	NONE	

Protocol References:

EPA = US Environmental Protection Agency
MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
NONE = NONE
SM = "Standard Methods For The Examination Of Water And Wastewater",
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
Q	One or more quality control criteria failed.

HPLC/IC

Qualifier	Qualifier Description
D	The reported value is from a dilution.
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
B	Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.

Glossary

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

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL 1024-003

TestAmerica Job ID: 680-140237-1

Client Sample ID: LFM-99-02B-SPR17

Date Collected: 06/22/17 12:00
Date Received: 06/23/17 09:40

Lab Sample ID: 680-140237-1

Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.017	U	0.048	0.017	0.0069	ug/L		06/28/17 21:10	1
alpha-BHC	0.0096	U	0.048	0.0096	0.0033	ug/L		06/28/17 21:10	1
beta-BHC	0.017	U	0.048	0.017	0.0087	ug/L		06/28/17 21:10	1
Chlordane (technical)	0.29	U	0.48	0.29	0.091	ug/L		06/28/17 21:10	1
4,4'-DDD	0.0096	U	0.048	0.0096	0.0060	ug/L		06/28/17 21:10	1
4,4'-DDE	0.0096	U	0.048	0.0096	0.0049	ug/L		06/28/17 21:10	1
4,4'-DDT	0.017	U	0.048	0.017	0.0067	ug/L		06/28/17 21:10	1
delta-BHC	0.017	U	0.048	0.017	0.0072	ug/L		06/28/17 21:10	1
Dieldrin	0.0096	U	0.048	0.0096	0.0036	ug/L		06/28/17 21:10	1
Endosulfan I	0.0096	U	0.048	0.0096	0.0033	ug/L		06/28/17 21:10	1
Endosulfan II	0.0096	U	0.048	0.0096	0.0040	ug/L		06/28/17 21:10	1
Endosulfan sulfate	0.0096	U	0.048	0.0096	0.0049	ug/L		06/28/17 21:10	1
Endrin	0.0096	U	0.048	0.0096	0.0051	ug/L		06/28/17 21:10	1
Endrin aldehyde	0.0096	U	0.048	0.0096	0.0058	ug/L		06/28/17 21:10	1
Endrin ketone	0.0096	U	0.048	0.0096	0.0044	ug/L		06/28/17 21:10	1
gamma-BHC (Lindane)	0.0096	U	0.048	0.0096	0.0034	ug/L		06/28/17 21:10	1
Heptachlor	0.017	U	0.048	0.017	0.0068	ug/L		06/28/17 21:10	1
Heptachlor epoxide	0.0096	U	0.048	0.0096	0.0035	ug/L		06/28/17 21:10	1
Methoxychlor	0.017	U	0.048	0.017	0.0094	ug/L		06/28/17 21:10	1
Toxaphene	0.76	U	4.8	0.76	0.38	ug/L		06/28/17 21:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*34*	*Q*	*14 - 130*	*06/27/17 15:49*	*06/28/17 21:10*	*1*
Tetrachloro-m-xylene	*56*		*44 - 124*	*06/27/17 15:49*	*06/28/17 21:10*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**320**	**D**	5.0	5.0	2.0	mg/L		06/28/17 11:45	10
Sulfate	**16**	**M**	1.0	1.0	0.40	mg/L		06/28/17 11:27	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**12**		10	5.0	1.7	ug/L		06/27/17 15:39	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		06/27/17 15:39	1
Calcium	**44000**		500	75	25	ug/L		06/27/17 15:39	1
Chromium	4.0	U	10	4.0	1.6	ug/L		06/27/17 15:39	1
Copper	5.0	U	20	5.0	1.8	ug/L		06/27/17 15:39	1
Iron	50	U	50	50	17	ug/L		06/27/17 15:39	1
Lead	10	U	10	10	3.9	ug/L		06/27/17 15:39	1
Manganese	3.0	U	10	3.0	1.0	ug/L		06/27/17 15:39	1
Selenium	20	U	20	20	9.9	ug/L		06/27/17 15:39	1
Silver	1.5	U	10	1.5	0.60	ug/L		06/27/17 15:39	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		06/27/17 22:34	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		06/27/17 15:22	1

Client Sample ID: LFM-99-02B-SPR17

Lab Sample ID: 680-140237-1

Date Collected: 06/22/17 12:00

Matrix: Water

Date Received: 06/23/17 09:40

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	**0.47**		0.10	0.050	0.019	mg/L		07/04/17 16:55	1
Chemical Oxygen Demand	**5.4**	**J**	20	10	4.1	mg/L		06/28/17 08:53	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		06/30/17 11:41	1
Alkalinity	**60**		5.0	3.2	1.1	mg/L		06/30/17 20:49	1
Total Dissolved Solids (TDS)	**630**		10	10	4.7	mg/L		06/28/17 07:27	1

Client Sample ID: LFM-99-05A-SPR17

Lab Sample ID: 680-140237-2

Date Collected: 06/22/17 09:00

Matrix: Water

Date Received: 06/23/17 09:40

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.017	U	0.048	0.017	0.0069	ug/L		06/28/17 21:26	1
alpha-BHC	0.0096	U	0.048	0.0096	0.0033	ug/L		06/28/17 21:26	1
beta-BHC	0.017	U	0.048	0.017	0.0087	ug/L		06/28/17 21:26	1
Chlordane (technical)	0.29	U	0.48	0.29	0.091	ug/L		06/28/17 21:26	1
4,4'-DDD	0.0096	U	0.048	0.0096	0.0060	ug/L		06/28/17 21:26	1
4,4'-DDE	0.0096	U	0.048	0.0096	0.0049	ug/L		06/28/17 21:26	1
4,4'-DDT	0.017	U	0.048	0.017	0.0067	ug/L		06/28/17 21:26	1
delta-BHC	0.017	U	0.048	0.017	0.0072	ug/L		06/28/17 21:26	1
Dieldrin	0.0096	U	0.048	0.0096	0.0036	ug/L		06/28/17 21:26	1
Endosulfan I	0.0096	U	0.048	0.0096	0.0034	ug/L		06/28/17 21:26	1
Endosulfan II	0.0096	U	0.048	0.0096	0.0040	ug/L		06/28/17 21:26	1
Endosulfan sulfate	0.0096	U	0.048	0.0096	0.0049	ug/L		06/28/17 21:26	1
Endrin	0.0096	U	0.048	0.0096	0.0051	ug/L		06/28/17 21:26	1
Endrin aldehyde	0.0096	U	0.048	0.0096	0.0059	ug/L		06/28/17 21:26	1
Endrin ketone	0.0096	U	0.048	0.0096	0.0044	ug/L		06/28/17 21:26	1
gamma-BHC (Lindane)	0.0096	U	0.048	0.0096	0.0035	ug/L		06/28/17 21:26	1
Heptachlor	0.017	U	0.048	0.017	0.0068	ug/L		06/28/17 21:26	1
Heptachlor epoxide	0.0096	U	0.048	0.0096	0.0035	ug/L		06/28/17 21:26	1
Methoxychlor	0.017	U	0.048	0.017	0.0094	ug/L		06/28/17 21:26	1
Toxaphene	0.77	U	4.8	0.77	0.38	ug/L		06/28/17 21:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*41*	*Q*	*14 - 130*	*06/27/17 15:49*	*06/28/17 21:26*	*1*
Tetrachloro-m-xylene	*56*		*44 - 124*	*06/27/17 15:49*	*06/28/17 21:26*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**170**	**D**	5.0	5.0	2.0	mg/L		06/28/17 12:20	10
Sulfate	**20**	**M**	1.0	1.0	0.40	mg/L		06/28/17 12:02	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**14**		10	5.0	1.7	ug/L		06/27/17 15:21	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		06/27/17 15:21	1
Calcium	**62000**		500	75	25	ug/L		06/27/17 15:21	1
Chromium	4.0	U	10	4.0	1.6	ug/L		06/27/17 15:21	1
Copper	5.0	U	20	5.0	1.8	ug/L		06/27/17 15:21	1
Iron	50	U	50	50	17	ug/L		06/27/17 15:21	1

Client Sample ID: LFM-99-05A-SPR17

Lab Sample ID: 680-140237-2

Date Collected: 06/22/17 09:00

Matrix: Water

Date Received: 06/23/17 09:40

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Lead	10	U	10	10	3.9	ug/L		06/27/17 15:21	1
Manganese	3.0	U	10	3.0	1.0	ug/L		06/27/17 15:21	1
Selenium	20	U	20	20	9.9	ug/L		06/27/17 15:21	1
Silver	1.5	U	10	1.5	0.60	ug/L		06/27/17 15:21	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		06/27/17 22:25	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		06/27/17 15:26	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	**2.1**		0.10	0.050	0.019	mg/L		07/04/17 16:57	1
Chemical Oxygen Demand	10	U	20	10	4.1	mg/L		06/28/17 08:53	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		06/30/17 11:45	1
Alkalinity	**82**		5.0	3.2	1.1	mg/L		06/30/17 20:25	1
Total Dissolved Solids (TDS)	**440**		10	10	4.7	mg/L		06/28/17 07:27	1

Client Sample ID: LFM-DUP01-SPR17

Lab Sample ID: 680-140237-3

Date Collected: 06/22/17 09:05

Matrix: Water

Date Received: 06/23/17 09:40

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.017	U	0.048	0.017	0.0069	ug/L		06/28/17 21:42	1
alpha-BHC	0.0096	U	0.048	0.0096	0.0033	ug/L		06/28/17 21:42	1
beta-BHC	0.017	U	0.048	0.017	0.0087	ug/L		06/28/17 21:42	1
Chlordane (technical)	0.29	U	0.48	0.29	0.091	ug/L		06/28/17 21:42	1
4,4'-DDD	0.0096	U	0.048	0.0096	0.0060	ug/L		06/28/17 21:42	1
4,4'-DDE	0.0096	U	0.048	0.0096	0.0049	ug/L		06/28/17 21:42	1
4,4'-DDT	0.017	U	0.048	0.017	0.0067	ug/L		06/28/17 21:42	1
delta-BHC	0.017	U	0.048	0.017	0.0072	ug/L		06/28/17 21:42	1
Dieldrin	0.0096	U	0.048	0.0096	0.0036	ug/L		06/28/17 21:42	1
Endosulfan I	0.0096	U	0.048	0.0096	0.0033	ug/L		06/28/17 21:42	1
Endosulfan II	0.0096	U	0.048	0.0096	0.0040	ug/L		06/28/17 21:42	1
Endosulfan sulfate	0.0096	U	0.048	0.0096	0.0049	ug/L		06/28/17 21:42	1
Endrin	0.0096	U	0.048	0.0096	0.0051	ug/L		06/28/17 21:42	1
Endrin aldehyde	0.0096	U	0.048	0.0096	0.0058	ug/L		06/28/17 21:42	1
Endrin ketone	0.0096	U	0.048	0.0096	0.0044	ug/L		06/28/17 21:42	1
gamma-BHC (Lindane)	0.0096	U	0.048	0.0096	0.0034	ug/L		06/28/17 21:42	1
Heptachlor	0.017	U	0.048	0.017	0.0068	ug/L		06/28/17 21:42	1
Heptachlor epoxide	0.0096	U	0.048	0.0096	0.0035	ug/L		06/28/17 21:42	1
Methoxychlor	0.017	U	0.048	0.017	0.0094	ug/L		06/28/17 21:42	1
Toxaphene	0.77	U	4.8	0.77	0.38	ug/L		06/28/17 21:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*40*	*Q*	*14 - 130*	*06/27/17 15:49*	*06/28/17 21:42*	*1*
Tetrachloro-m-xylene	*56*		*44 - 124*	*06/27/17 15:49*	*06/28/17 21:42*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**160**	**D**	5.0	5.0	2.0	mg/L		06/28/17 14:21	10
Sulfate	**20**	**M**	1.0	1.0	0.40	mg/L		06/28/17 14:04	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**14**		10	5.0	1.7	ug/L		06/27/17 15:25	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		06/27/17 15:25	1
Calcium	**63000**		500	75	25	ug/L		06/27/17 15:25	1
Chromium	4.0	U	10	4.0	1.6	ug/L		06/27/17 15:25	1
Copper	5.0	U	20	5.0	1.8	ug/L		06/27/17 15:25	1
Iron	**23**	**J**	50	50	17	ug/L		06/27/17 15:25	1
Lead	10	U	10	10	3.9	ug/L		06/27/17 15:25	1
Manganese	3.0	U	10	3.0	1.0	ug/L		06/27/17 15:25	1
Selenium	20	U	20	20	9.9	ug/L		06/27/17 15:25	1
Silver	1.5	U	10	1.5	0.60	ug/L		06/27/17 15:25	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		06/27/17 22:30	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		06/27/17 15:29	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	**2.1**		0.10	0.050	0.019	mg/L		07/04/17 16:59	1
Chemical Oxygen Demand	10	U	20	10	4.1	mg/L		06/28/17 08:53	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		06/30/17 11:46	1
Alkalinity	**82**		5.0	3.2	1.1	mg/L		06/30/17 20:21	1
Total Dissolved Solids (TDS)	**450**		10	10	4.7	mg/L		06/28/17 07:27	1

Client Sample ID: LFM-99-06A RP-SPR17

Lab Sample ID: 680-140237-4

Date Collected: 06/21/17 09:55

Matrix: Water

Date Received: 06/23/17 09:40

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.017	U	0.048	0.017	0.0069	ug/L		06/29/17 20:10	1
alpha-BHC	0.0096	U	0.048	0.0096	0.0033	ug/L		06/29/17 20:10	1
beta-BHC	0.017	U	0.048	0.017	0.0088	ug/L		06/29/17 20:10	1
Chlordane (technical)	0.29	U	0.48	0.29	0.092	ug/L		06/29/17 20:10	1
4,4'-DDD	0.0096	U	0.048	0.0096	0.0061	ug/L		06/29/17 20:10	1
4,4'-DDE	0.0096	U	0.048	0.0096	0.0049	ug/L		06/29/17 20:10	1
4,4'-DDT	0.017	U	0.048	0.017	0.0067	ug/L		06/29/17 20:10	1
delta-BHC	0.017	U	0.048	0.017	0.0072	ug/L		06/29/17 20:10	1
Dieldrin	0.0096	U	0.048	0.0096	0.0037	ug/L		06/29/17 20:10	1
Endosulfan I	0.0096	U	0.048	0.0096	0.0034	ug/L		06/29/17 20:10	1
Endosulfan II	0.0096	U	0.048	0.0096	0.0040	ug/L		06/29/17 20:10	1
Endosulfan sulfate	0.0096	U	0.048	0.0096	0.0049	ug/L		06/29/17 20:10	1
Endrin	0.0096	U	0.048	0.0096	0.0051	ug/L		06/29/17 20:10	1
Endrin aldehyde	0.0096	U	0.048	0.0096	0.0059	ug/L		06/29/17 20:10	1
Endrin ketone	0.0096	U	0.048	0.0096	0.0044	ug/L		06/29/17 20:10	1
gamma-BHC (Lindane)	0.0096	U	0.048	0.0096	0.0035	ug/L		06/29/17 20:10	1

Client Sample ID: LFM-99-06A RP-SPR17
Date Collected: 06/21/17 09:55
Date Received: 06/23/17 09:40

Lab Sample ID: 680-140237-4
Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Heptachlor	0.017	U	0.048	0.017	0.0068	ug/L		06/29/17 20:10	1
Heptachlor epoxide	0.0096	U	0.048	0.0096	0.0036	ug/L		06/29/17 20:10	1
Methoxychlor	0.017	U	0.048	0.017	0.0094	ug/L		06/29/17 20:10	1
Toxaphene	0.77	U	4.8	0.77	0.39	ug/L		06/29/17 20:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*54*		*14 - 130*	*06/28/17 16:21*	*06/29/17 20:10*	*1*
Tetrachloro-m-xylene	*51*		*44 - 124*	*06/28/17 16:21*	*06/29/17 20:10*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**420**	**D**	13	13	5.0	mg/L		06/28/17 16:06	25
Sulfate	**24**	**M**	1.0	1.0	0.40	mg/L		06/28/17 12:37	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**9.1**	**J**	10	5.0	1.7	ug/L		06/27/17 15:01	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		06/27/17 15:01	1
Calcium	**78000**	**J**	500	75	25	ug/L		06/27/17 15:01	1
Chromium	4.0	U	10	4.0	1.6	ug/L		06/27/17 15:01	1
Copper	5.0	U	20	5.0	1.8	ug/L		06/27/17 15:01	1
Iron	**82**	**J**	50	50	17	ug/L		06/27/17 15:01	1
Lead	10	U	10	10	3.9	ug/L		06/27/17 15:01	1
Manganese	**6.9**	**J**	10	3.0	1.0	ug/L		06/27/17 15:01	1
Selenium	20	U	20	20	9.9	ug/L		06/27/17 15:01	1
Silver	1.5	U J	10	1.5	0.60	ug/L		06/27/17 15:01	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		06/27/17 22:03	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		06/27/17 15:32	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	**0.95**		0.10	0.050	0.019	mg/L		07/04/17 16:49	1
Chemical Oxygen Demand	**5.7**	**J**	20	10	4.1	mg/L		06/28/17 08:53	1
Cyanide, Total	0.0050	U J	0.010	0.0050	0.0025	mg/L		06/30/17 11:47	1
Alkalinity	**74**	**B**	5.0	3.2	1.1	mg/L		06/29/17 16:56	1
Total Dissolved Solids (TDS)	**880**		10	10	4.7	mg/L		06/28/17 07:27	1

Surrogate Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL 1024-003

TestAmerica Job ID: 680-140237-1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	DCB1 (14-130)	TCX1 (44-124)								
680-140237-1	LFM-99-02B-SPR17	34 Q	56								
680-140237-2	LFM-99-05A-SPR17	41 Q	56								
680-140237-3	LFM-DUP01-SPR17	40 Q	56								
680-140237-4	LFM-99-06A RP-SPR17	54	51								
680-140237-4 MS	LFM-99-06A RP-SPR17	64	55								
680-140237-4 MSD	LFM-99-06A RP-SPR17	58	45								
LCS 680-485771/13-A	Lab Control Sample	47	44								
LCS 680-485929/12-A	Lab Control Sample	66	51								
LCS 680-485929/9-A	Lab Control Sample	61	61								
MB 680-485771/12-A	Method Blank	48	58								
MB 680-485929/8-A	Method Blank	60	67								

Surrogate Legend

DCB = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-485771/12-A
Matrix: Water
Analysis Batch: 485971

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 485771

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.018	U	0.050	0.018	0.0072	ug/L		06/28/17 20:08	1
alpha-BHC	0.010	U	0.050	0.010	0.0034	ug/L		06/28/17 20:08	1
beta-BHC	0.018	U	0.050	0.018	0.0091	ug/L		06/28/17 20:08	1
Chlordane (technical)	0.30	U	0.50	0.30	0.095	ug/L		06/28/17 20:08	1
4,4'-DDD	0.010	U	0.050	0.010	0.0063	ug/L		06/28/17 20:08	1
4,4'-DDE	0.010	U	0.050	0.010	0.0051	ug/L		06/28/17 20:08	1
4,4'-DDT	0.018	U	0.050	0.018	0.0070	ug/L		06/28/17 20:08	1
delta-BHC	0.018	U	0.050	0.018	0.0075	ug/L		06/28/17 20:08	1
Dieldrin	0.010	U	0.050	0.010	0.0038	ug/L		06/28/17 20:08	1
Endosulfan I	0.010	U	0.050	0.010	0.0035	ug/L		06/28/17 20:08	1
Endosulfan II	0.010	U	0.050	0.010	0.0042	ug/L		06/28/17 20:08	1
Endosulfan sulfate	0.010	U	0.050	0.010	0.0051	ug/L		06/28/17 20:08	1
Endrin	0.010	U	0.050	0.010	0.0053	ug/L		06/28/17 20:08	1
Endrin aldehyde	0.010	U	0.050	0.010	0.0061	ug/L		06/28/17 20:08	1
Endrin ketone	0.010	U	0.050	0.010	0.0046	ug/L		06/28/17 20:08	1
gamma-BHC (Lindane)	0.010	U	0.050	0.010	0.0036	ug/L		06/28/17 20:08	1
Heptachlor	0.018	U	0.050	0.018	0.0071	ug/L		06/28/17 20:08	1
Heptachlor epoxide	0.010	U	0.050	0.010	0.0037	ug/L		06/28/17 20:08	1
Methoxychlor	0.018	U	0.050	0.018	0.0098	ug/L		06/28/17 20:08	1
Toxaphene	0.80	U	5.0	0.80	0.40	ug/L		06/28/17 20:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*48*		*14 - 130*	*06/27/17 15:49*	*06/28/17 20:08*	*1*
Tetrachloro-m-xylene	*58*		*44 - 124*	*06/27/17 15:49*	*06/28/17 20:08*	*1*

Lab Sample ID: LCS 680-485771/13-A
Matrix: Water
Analysis Batch: 485971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 485771

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.100	0.0560		ug/L		56	45 - 134
alpha-BHC	0.100	0.0706		ug/L		71	54 - 138
beta-BHC	0.100	0.0729		ug/L		73	56 - 136
4,4'-DDD	0.100	0.0844		ug/L		84	56 - 143
4,4'-DDE	0.100	0.0749		ug/L		75	57 - 135
4,4'-DDT	0.100	0.0859		ug/L		86	51 - 143
delta-BHC	0.100	0.0824		ug/L		82	52 - 142
Dieldrin	0.100	0.0792		ug/L		79	60 - 136
Endosulfan I	0.100	0.0738		ug/L		74	62 - 126
Endosulfan II	0.100	0.0848		ug/L		85	52 - 135
Endosulfan sulfate	0.100	0.0813		ug/L		81	62 - 133
Endrin	0.100	0.0768		ug/L		77	60 - 138
Endrin aldehyde	0.100	0.0840		ug/L		84	51 - 132
Endrin ketone	0.100	0.0854		ug/L		85	58 - 134
gamma-BHC (Lindane)	0.100	0.0700		ug/L		70	59 - 134
Heptachlor	0.100	0.0580		ug/L		58	54 - 130
Heptachlor epoxide	0.100	0.0776		ug/L		78	61 - 133
Methoxychlor	0.100	0.0837		ug/L		84	54 - 145

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	47		14 - 130
Tetrachloro-m-xylene	44		44 - 124

Lab Sample ID: MB 680-485929/8-A
Matrix: Water
Analysis Batch: 486184

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 485929

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.018	U	0.050	0.018	0.0072	ug/L		06/29/17 19:27	1
alpha-BHC	0.010	U	0.050	0.010	0.0034	ug/L		06/29/17 19:27	1
beta-BHC	0.018	U	0.050	0.018	0.0091	ug/L		06/29/17 19:27	1
Chlordane (technical)	0.30	U	0.50	0.30	0.095	ug/L		06/29/17 19:27	1
4,4'-DDD	0.010	U	0.050	0.010	0.0063	ug/L		06/29/17 19:27	1
4,4'-DDE	0.010	U	0.050	0.010	0.0051	ug/L		06/29/17 19:27	1
4,4'-DDT	0.018	U	0.050	0.018	0.0070	ug/L		06/29/17 19:27	1
delta-BHC	0.018	U	0.050	0.018	0.0075	ug/L		06/29/17 19:27	1
Dieldrin	0.010	U	0.050	0.010	0.0038	ug/L		06/29/17 19:27	1
Endosulfan I	0.010	U	0.050	0.010	0.0035	ug/L		06/29/17 19:27	1
Endosulfan II	0.010	U	0.050	0.010	0.0042	ug/L		06/29/17 19:27	1
Endosulfan sulfate	0.010	U	0.050	0.010	0.0051	ug/L		06/29/17 19:27	1
Endrin	0.010	U	0.050	0.010	0.0053	ug/L		06/29/17 19:27	1
Endrin aldehyde	0.010	U	0.050	0.010	0.0061	ug/L		06/29/17 19:27	1
Endrin ketone	0.010	U	0.050	0.010	0.0046	ug/L		06/29/17 19:27	1
gamma-BHC (Lindane)	0.010	U	0.050	0.010	0.0036	ug/L		06/29/17 19:27	1
Heptachlor	0.018	U	0.050	0.018	0.0071	ug/L		06/29/17 19:27	1
Heptachlor epoxide	0.010	U	0.050	0.010	0.0037	ug/L		06/29/17 19:27	1
Methoxychlor	0.018	U	0.050	0.018	0.0098	ug/L		06/29/17 19:27	1
Toxaphene	0.80	U	5.0	0.80	0.40	ug/L		06/29/17 19:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	60		14 - 130	06/28/17 16:21	06/29/17 19:27	1
Tetrachloro-m-xylene	67		44 - 124	06/28/17 16:21	06/29/17 19:27	1

Lab Sample ID: LCS 680-485929/12-A
Matrix: Water
Analysis Batch: 486184

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 485929

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	66		14 - 130
Tetrachloro-m-xylene	51		44 - 124

Lab Sample ID: LCS 680-485929/9-A
Matrix: Water
Analysis Batch: 486184

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 485929

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.100	0.0637		ug/L		64	45 - 134
alpha-BHC	0.100	0.0761		ug/L		76	54 - 138
beta-BHC	0.100	0.0724		ug/L		72	56 - 136
4,4'-DDD	0.100	0.0935		ug/L		93	56 - 143
4,4'-DDE	0.100	0.0758		ug/L		76	57 - 135
4,4'-DDT	0.100	0.0868		ug/L		87	51 - 143
delta-BHC	0.100	0.0782		ug/L		78	52 - 142

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCS 680-485929/9-A
Matrix: Water
Analysis Batch: 486184

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 485929

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dieldrin	0.100	0.0853		ug/L		85	60 - 136
Endosulfan I	0.100	0.0861		ug/L		86	62 - 126
Endosulfan II	0.100	0.0908		ug/L		91	52 - 135
Endosulfan sulfate	0.100	0.0869		ug/L		87	62 - 133
Endrin	0.100	0.0836		ug/L		84	60 - 138
Endrin aldehyde	0.100	0.0944		ug/L		94	51 - 132
Endrin ketone	0.100	0.0931		ug/L		93	58 - 134
gamma-BHC (Lindane)	0.100	0.0728		ug/L		73	59 - 134
Heptachlor	0.100	0.0670		ug/L		67	54 - 130
Heptachlor epoxide	0.100	0.0835		ug/L		84	61 - 133
Methoxychlor	0.100	0.0943		ug/L		94	54 - 145

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*61*		*14 - 130*
Tetrachloro-m-xylene	*61*		*44 - 124*

Lab Sample ID: 680-140237-4 MS
Matrix: Water
Analysis Batch: 486184

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA
Prep Batch: 485929

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.017	U	0.0959	0.0618		ug/L		65	45 - 134
alpha-BHC	0.0096	U	0.0959	0.0743		ug/L		77	54 - 138
beta-BHC	0.017	U	0.0959	0.0726		ug/L		76	56 - 136
4,4'-DDD	0.0096	U	0.0959	0.0886		ug/L		92	56 - 143
4,4'-DDE	0.0096	U	0.0959	0.0753		ug/L		79	57 - 135
4,4'-DDT	0.017	U	0.0959	0.0957		ug/L		100	51 - 143
delta-BHC	0.017	U	0.0959	0.0814		ug/L		85	52 - 142
Dieldrin	0.0096	U	0.0959	0.0853		ug/L		89	60 - 136
Endosulfan I	0.0096	U	0.0959	0.0821		ug/L		86	62 - 126
Endosulfan II	0.0096	U	0.0959	0.0863		ug/L		90	52 - 135
Endosulfan sulfate	0.0096	U	0.0959	0.0873		ug/L		91	62 - 133
Endrin	0.0096	U	0.0959	0.0903		ug/L		94	60 - 138
Endrin aldehyde	0.0096	U	0.0959	0.0846		ug/L		88	51 - 132
Endrin ketone	0.0096	U	0.0959	0.0825		ug/L		86	58 - 134
gamma-BHC (Lindane)	0.0096	U	0.0959	0.0699		ug/L		73	59 - 134
Heptachlor	0.017	U	0.0959	0.0636		ug/L		66	54 - 130
Heptachlor epoxide	0.0096	U	0.0959	0.0812		ug/L		85	61 - 133
Methoxychlor	0.017	U	0.0959	0.0924		ug/L		96	54 - 145

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*64*		*14 - 130*
Tetrachloro-m-xylene	*55*		*44 - 124*

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: 680-140237-4 MSD — **Client Sample ID: LFM-99-06A RP-SPR17**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 486184 — **Prep Batch: 485929**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin	0.017	U	0.0983	0.0525		ug/L		53	45 - 134	16	30
alpha-BHC	0.0096	U	0.0983	0.0635		ug/L		65	54 - 138	16	30
beta-BHC	0.017	U	0.0983	0.0655		ug/L		67	56 - 136	10	30
4,4'-DDD	0.0096	U	0.0983	0.0868		ug/L		88	56 - 143	2	30
4,4'-DDE	0.0096	U	0.0983	0.0671		ug/L		68	57 - 135	12	30
4,4'-DDT	0.017	U	0.0983	0.0927		ug/L		94	51 - 143	3	30
delta-BHC	0.017	U	0.0983	0.0696		ug/L		71	52 - 142	16	30
Dieldrin	0.0096	U	0.0983	0.0764		ug/L		78	60 - 136	11	30
Endosulfan I	0.0096	U	0.0983	0.0730		ug/L		74	62 - 126	12	30
Endosulfan II	0.0096	U	0.0983	0.0823		ug/L		84	52 - 135	5	30
Endosulfan sulfate	0.0096	U	0.0983	0.0840		ug/L		85	62 - 133	4	30
Endrin	0.0096	U	0.0983	0.0791		ug/L		80	60 - 138	13	30
Endrin aldehyde	0.0096	U	0.0983	0.0813		ug/L		83	51 - 132	4	30
Endrin ketone	0.0096	U	0.0983	0.0809		ug/L		82	58 - 134	2	30
gamma-BHC (Lindane)	0.0096	U	0.0983	0.0600		ug/L		61	59 - 134	15	30
Heptachlor	0.017	U	0.0983	0.0564		ug/L		57	54 - 130	12	30
Heptachlor epoxide	0.0096	U	0.0983	0.0723		ug/L		74	61 - 133	12	30
Methoxychlor	0.017	U	0.0983	0.0909		ug/L		93	54 - 145	2	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*58*		*14 - 130*
Tetrachloro-m-xylene	*45*		*44 - 124*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 680-485866/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 485866

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	0.50	U	0.50	0.50	0.20	mg/L		06/28/17 08:28	1
Sulfate	1.0	U	1.0	1.0	0.40	mg/L		06/28/17 08:28	1

Lab Sample ID: LCS 680-485866/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 485866

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.69		mg/L		97	90 - 110
Sulfate	10.0	10.1		mg/L		101	90 - 110

Lab Sample ID: LCSD 680-485866/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 485866

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	9.61		mg/L		96	90 - 110	1	15
Sulfate	10.0	10.2		mg/L		102	90 - 110	0	15

Lab Sample ID: 680-140237-4 MS
Matrix: Water
Analysis Batch: 485866

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	24	M	10.0	34.4	M	mg/L		99	80 - 120

Lab Sample ID: 680-140237-4 MS
Matrix: Water
Analysis Batch: 485866

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	420	D	250	669	D	mg/L		99	80 - 120

Lab Sample ID: 680-140237-4 MSD
Matrix: Water
Analysis Batch: 485866

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	24	M	10.0	34.5	M	mg/L		100	80 - 120	0	15

Lab Sample ID: 680-140237-4 MSD
Matrix: Water
Analysis Batch: 485866

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	420	D	250	669	D	mg/L		99	80 - 120	0	15

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-485645/1-A
Matrix: Water
Analysis Batch: 485954

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 485645

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	5.0	U	10	5.0	1.7	ug/L		06/27/17 14:52	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		06/27/17 14:52	1
Calcium	75	U	500	75	25	ug/L		06/27/17 14:52	1
Chromium	4.0	U	10	4.0	1.6	ug/L		06/27/17 14:52	1
Copper	5.0	U	20	5.0	1.8	ug/L		06/27/17 14:52	1
Iron	50	U	50	50	17	ug/L		06/27/17 14:52	1
Lead	10	U	10	10	3.9	ug/L		06/27/17 14:52	1
Manganese	3.0	U	10	3.0	1.0	ug/L		06/27/17 14:52	1
Selenium	20	U	20	20	9.9	ug/L		06/27/17 14:52	1
Silver	1.5	U	10	1.5	0.60	ug/L		06/27/17 14:52	1

Lab Sample ID: LCS 680-485645/2-A
Matrix: Water
Analysis Batch: 485954

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 485645

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	100	102		ug/L		102	88 - 113
Cadmium	50.0	52.1		ug/L		104	88 - 113
Calcium	5000	5220		ug/L		104	87 - 113
Chromium	100	105		ug/L		105	90 - 113
Copper	100	105		ug/L		105	86 - 114

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 680-485645/2-A
Matrix: Water
Analysis Batch: 485954

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 485645

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5000	5200		ug/L		104	87 - 115
Lead	500	519		ug/L		104	86 - 113
Manganese	500	539		ug/L		108	90 - 114
Selenium	100	101		ug/L		101	83 - 114
Silver	50.0	53.8		ug/L		108	84 - 115

Lab Sample ID: 680-140237-4 MS
Matrix: Water
Analysis Batch: 485954

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA
Prep Batch: 485645

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	9.1	J	100	117		ug/L		108	88 - 113
Cadmium	3.0	U	50.0	51.1		ug/L		102	88 - 113
Calcium	78000	J	5000	85000	4	ug/L		134	87 - 113
Chromium	4.0	U	100	108		ug/L		108	90 - 113
Copper	5.0	U	100	109		ug/L		109	86 - 114
Iron	82	J	5000	7190	J	ug/L		142	87 - 115
Lead	10	U	500	508		ug/L		102	86 - 113
Manganese	6.9	J J	500	585	J	ug/L		116	90 - 114
Selenium	20	U	100	103		ug/L		103	83 - 114
Silver	1.5	U J	50.0	54.6		ug/L		109	84 - 115

Lab Sample ID: 680-140237-4 MSD
Matrix: Water
Analysis Batch: 485954

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA
Prep Batch: 485645

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium	9.1	J	100	108		ug/L		99	88 - 113	8	20
Cadmium	3.0	U	50.0	50.7		ug/L		101	88 - 113	1	20
Calcium	78000	J	5000	77500	4	ug/L		-17	87 - 113	9	20
Chromium	4.0	U	100	104		ug/L		104	90 - 113	5	20
Copper	5.0	U	100	105		ug/L		105	86 - 114	4	20
Iron	82	J	5000	5110	J	ug/L		101	87 - 115	34	20
Lead	10	U	500	500		ug/L		100	86 - 113	2	20
Manganese	6.9	J J	500	530		ug/L		105	90 - 114	10	20
Selenium	20	U	100	104		ug/L		104	83 - 114	1	20
Silver	1.5	U J	50.0	54.1		ug/L		108	84 - 115	1	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-485644/1-A
Matrix: Water
Analysis Batch: 485909

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 485644

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		06/27/17 21:54	1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 680-485644/2-A
Matrix: Water
Analysis Batch: 485909

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 485644

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	107		ug/L		107	84 - 116

Lab Sample ID: 680-140237-4 MS
Matrix: Water
Analysis Batch: 485909

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA
Prep Batch: 485644

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	3.0	U	100	116		ug/L		116	84 - 116

Lab Sample ID: 680-140237-4 MSD
Matrix: Water
Analysis Batch: 485909

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA
Prep Batch: 485644

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	3.0	U	100	108		ug/L		108	84 - 116	7	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-485715/1-A
Matrix: Water
Analysis Batch: 485888

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 485715

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		06/27/17 15:16	1

Lab Sample ID: LCS 680-485715/2-A
Matrix: Water
Analysis Batch: 485888

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 485715

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	2.50	2.58		ug/L		103	80 - 124

Lab Sample ID: 680-140237-4 MS
Matrix: Water
Analysis Batch: 485888

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA
Prep Batch: 485715

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.20	U	1.00	1.03		ug/L		103	80 - 124

Lab Sample ID: 680-140237-4 MSD
Matrix: Water
Analysis Batch: 485888

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA
Prep Batch: 485715

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.20	U	1.00	1.01		ug/L		101	80 - 124	2	20

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 280-379747/22
Matrix: Water
Analysis Batch: 379747

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate Nitrite as N	0.050	U	0.10	0.050	0.019	mg/L		07/04/17 16:47	1

Lab Sample ID: LCS 280-379747/21
Matrix: Water
Analysis Batch: 379747

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate Nitrite as N	5.00	5.15		mg/L		103	90 - 110

Lab Sample ID: 680-140237-4 MS
Matrix: Water
Analysis Batch: 379747

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate Nitrite as N	0.95		4.00	5.28		mg/L		108	90 - 110

Lab Sample ID: 680-140237-4 MSD
Matrix: Water
Analysis Batch: 379747

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate Nitrite as N	0.95		4.00	5.22		mg/L		107	90 - 110	1	10

Method: 410.4 - COD

Lab Sample ID: MB 280-378875/11
Matrix: Water
Analysis Batch: 378875

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chemical Oxygen Demand	10	U	20	10	4.1	mg/L		06/28/17 08:53	1

Lab Sample ID: LCS 280-378875/9
Matrix: Water
Analysis Batch: 378875

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	100	98.9		mg/L		99	90 - 110

Lab Sample ID: LCSD 280-378875/10
Matrix: Water
Analysis Batch: 378875

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	100	96.8		mg/L		97	90 - 110	2	11

Method: 410.4 - COD (Continued)

Lab Sample ID: 680-140237-4 MS
Matrix: Water
Analysis Batch: 378875

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	5.7	J J	50.0	54.9		mg/L		98	90 - 110

Lab Sample ID: 680-140237-4 MSD
Matrix: Water
Analysis Batch: 378875

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	5.7	J J	50.0	49.7	J	mg/L		88	90 - 110	10	11

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-486206/1-A
Matrix: Water
Analysis Batch: 486293

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 486206

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		06/30/17 11:08	1

Lab Sample ID: LCS 680-486206/2-A
Matrix: Water
Analysis Batch: 486293

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 486206

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0500	0.0512		mg/L		102	83 - 116

Lab Sample ID: 680-140237-4 MS
Matrix: Water
Analysis Batch: 486312

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA
Prep Batch: 486206

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0050	U J	0.0500	0.0468		mg/L		94	83 - 116

Lab Sample ID: 680-140237-4 MSD
Matrix: Water
Analysis Batch: 486312

Client Sample ID: LFM-99-06A RP-SPR17
Prep Type: Total/NA
Prep Batch: 486206

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	0.0050	U J	0.0500	0.0395	J	mg/L		79	83 - 116	17	20

Lab Sample ID: MB 680-486207/1-A
Matrix: Water
Analysis Batch: 486312

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 486207

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		06/30/17 12:03	1

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-379459/5
Matrix: Water
Analysis Batch: 379459

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	3.05	J	5.0	3.2	1.1	mg/L		06/29/17 15:59	1

Lab Sample ID: LCS 280-379459/4
Matrix: Water
Analysis Batch: 379459

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	196		mg/L		98	90 - 110

Lab Sample ID: MB 280-379528/31
Matrix: Water
Analysis Batch: 379528

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	3.2	U	5.0	3.2	1.1	mg/L		06/30/17 18:37	1

Lab Sample ID: MB 280-379528/57
Matrix: Water
Analysis Batch: 379528

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	3.2	U	5.0	3.2	1.1	mg/L		06/30/17 20:45	1

Lab Sample ID: LCS 280-379528/30
Matrix: Water
Analysis Batch: 379528

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	190		mg/L		95	90 - 110

Lab Sample ID: LCS 280-379528/56
Matrix: Water
Analysis Batch: 379528

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	189		mg/L		95	90 - 110

Lab Sample ID: 680-140237-1 DU
Matrix: Water
Analysis Batch: 379528

Client Sample ID: LFM-99-02B-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	60		59.2		mg/L		1	10

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-379009/1
Matrix: Water
Analysis Batch: 379009

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	10	U	10	10	4.7	mg/L		06/28/17 07:27	1

Lab Sample ID: LCS 280-379009/2
Matrix: Water
Analysis Batch: 379009

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	492		mg/L		98	86 - 110

Lab Sample ID: 680-140237-1 DU
Matrix: Water
Analysis Batch: 379009

Client Sample ID: LFM-99-02B-SPR17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	630		632		mg/L		0.3	10

GC Semi VOA

Prep Batch: 485771

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	3520C	
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	3520C	
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	3520C	
MB 680-485771/12-A	Method Blank	Total/NA	Water	3520C	
LCS 680-485771/13-A	Lab Control Sample	Total/NA	Water	3520C	

Prep Batch: 485929

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	3520C	
MB 680-485929/8-A	Method Blank	Total/NA	Water	3520C	
LCS 680-485929/12-A	Lab Control Sample	Total/NA	Water	3520C	
LCS 680-485929/9-A	Lab Control Sample	Total/NA	Water	3520C	
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	3520C	
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	3520C	

Analysis Batch: 485971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	8081B 8082A	485771
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	8081B 8082A	485771
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	8081B 8082A	485771
MB 680-485771/12-A	Method Blank	Total/NA	Water	8081B 8082A	485771
LCS 680-485771/13-A	Lab Control Sample	Total/NA	Water	8081B 8082A	485771

Analysis Batch: 486184

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	8081B 8082A	485929
MB 680-485929/8-A	Method Blank	Total/NA	Water	8081B 8082A	485929
LCS 680-485929/12-A	Lab Control Sample	Total/NA	Water	8081B 8082A	485929
LCS 680-485929/9-A	Lab Control Sample	Total/NA	Water	8081B 8082A	485929
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	8081B 8082A	485929
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	8081B 8082A	485929

HPLC/IC

Analysis Batch: 485866

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	9056A	
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	9056A	
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	9056A	
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	9056A	
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	9056A	
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	9056A	
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	9056A	
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	9056A	
MB 680-485866/2	Method Blank	Total/NA	Water	9056A	
LCS 680-485866/3	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-485866/4	Lab Control Sample Dup	Total/NA	Water	9056A	
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	9056A	
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	9056A	
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	9056A	

HPLC/IC (Continued)

Analysis Batch: 485866 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	9056A	

Metals

Prep Batch: 485644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	3010A	
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	3010A	
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	3010A	
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	3010A	
MB 680-485644/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-485644/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	3010A	
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	3010A	

Prep Batch: 485645

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	3010A	
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	3010A	
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	3010A	
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	3010A	
MB 680-485645/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-485645/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	3010A	
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	3010A	

Prep Batch: 485715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	7470A	
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	7470A	
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	7470A	
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	7470A	
MB 680-485715/1-A	Method Blank	Total/NA	Water	7470A	
LCS 680-485715/2-A	Lab Control Sample	Total/NA	Water	7470A	
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	7470A	
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	7470A	

Analysis Batch: 485888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	7470A	485715
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	7470A	485715
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	7470A	485715
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	7470A	485715
MB 680-485715/1-A	Method Blank	Total/NA	Water	7470A	485715
LCS 680-485715/2-A	Lab Control Sample	Total/NA	Water	7470A	485715
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	7470A	485715
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	7470A	485715

Metals (Continued)

Analysis Batch: 485909

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	6020A	485644
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	6020A	485644
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	6020A	485644
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	6020A	485644
MB 680-485644/1-A	Method Blank	Total/NA	Water	6020A	485644
LCS 680-485644/2-A	Lab Control Sample	Total/NA	Water	6020A	485644
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	6020A	485644
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	6020A	485644

Analysis Batch: 485954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	6010C	485645
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	6010C	485645
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	6010C	485645
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	6010C	485645
MB 680-485645/1-A	Method Blank	Total/NA	Water	6010C	485645
LCS 680-485645/2-A	Lab Control Sample	Total/NA	Water	6010C	485645
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	6010C	485645
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	6010C	485645

General Chemistry

Analysis Batch: 378875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	410.4	
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	410.4	
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	410.4	
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	410.4	
MB 280-378875/11	Method Blank	Total/NA	Water	410.4	
LCS 280-378875/9	Lab Control Sample	Total/NA	Water	410.4	
LCSD 280-378875/10	Lab Control Sample Dup	Total/NA	Water	410.4	
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	410.4	
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	410.4	

Analysis Batch: 379009

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	SM 2540C	
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	SM 2540C	
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	SM 2540C	
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	SM 2540C	
MB 280-379009/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-379009/2	Lab Control Sample	Total/NA	Water	SM 2540C	
680-140237-1 DU	LFM-99-02B-SPR17	Total/NA	Water	SM 2540C	

Analysis Batch: 379459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	SM 2320B	
MB 280-379459/5	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-379459/4	Lab Control Sample	Total/NA	Water	SM 2320B	

General Chemistry (Continued)

Analysis Batch: 379528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	SM 2320B	
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	SM 2320B	
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	SM 2320B	
MB 280-379528/31	Method Blank	Total/NA	Water	SM 2320B	
MB 280-379528/57	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-379528/30	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 280-379528/56	Lab Control Sample	Total/NA	Water	SM 2320B	
680-140237-1 DU	LFM-99-02B-SPR17	Total/NA	Water	SM 2320B	

Analysis Batch: 379747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	353.2	
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	353.2	
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	353.2	
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	353.2	
MB 280-379747/22	Method Blank	Total/NA	Water	353.2	
LCS 280-379747/21	Lab Control Sample	Total/NA	Water	353.2	
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	353.2	
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	353.2	

Prep Batch: 486206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	9012B	
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	9012B	
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	9012B	
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	9012B	
MB 680-486206/1-A	Method Blank	Total/NA	Water	9012B	
LCS 680-486206/2-A	Lab Control Sample	Total/NA	Water	9012B	
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	9012B	
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	9012B	

Prep Batch: 486207

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 680-486207/1-A	Method Blank	Total/NA	Water	Distill/CN	

Analysis Batch: 486293

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 680-486206/1-A	Method Blank	Total/NA	Water	9012B	486206
LCS 680-486206/2-A	Lab Control Sample	Total/NA	Water	9012B	486206

Analysis Batch: 486312

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-140237-1	LFM-99-02B-SPR17	Total/NA	Water	9012B	486206
680-140237-2	LFM-99-05A-SPR17	Total/NA	Water	9012B	486206
680-140237-3	LFM-DUP01-SPR17	Total/NA	Water	9012B	486206
680-140237-4	LFM-99-06A RP-SPR17	Total/NA	Water	9012B	486206
MB 680-486207/1-A	Method Blank	Total/NA	Water	9012B	486207
680-140237-4 MS	LFM-99-06A RP-SPR17	Total/NA	Water	9012B	486206
680-140237-4 MSD	LFM-99-06A RP-SPR17	Total/NA	Water	9012B	486206

Client Sample ID: LFM-99-02B-SPR17

Lab Sample ID: 680-140237-1

Date Collected: 06/22/17 12:00

Matrix: Water

Date Received: 06/23/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1045.9 mL	10 mL	485771	06/27/17 15:49	CEW	TAL SAV
Total/NA	Analysis	8081B 8082A		1			485971	06/28/17 21:10	JCK	TAL SAV
	Instrument ID: CSGZ									
Total/NA	Analysis	9056A		1	5 mL	5 mL	485866	06/28/17 11:27	KLD	TAL SAV
	Instrument ID: CICH									
Total/NA	Analysis	9056A		10	5 mL	5 mL	485866	06/28/17 11:45	KLD	TAL SAV
	Instrument ID: CICH									
Total/NA	Prep	3010A			50 mL	50 mL	485645	06/26/17 14:41	AJR	TAL SAV
Total/NA	Analysis	6010C		1			485954	06/27/17 15:39	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	485644	06/26/17 14:41	AJR	TAL SAV
Total/NA	Analysis	6020A		1			485909	06/27/17 22:34	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	7470A			50 mL	50 mL	485715	06/27/17 08:50	JKL	TAL SAV
Total/NA	Analysis	7470A		1			485888	06/27/17 15:22	JKL	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	379747	07/04/17 16:55	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	378875	06/28/17 08:53	CCJ	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	486206	06/30/17 05:00	DAM	TAL SAV
Total/NA	Analysis	9012B		1			486312	06/30/17 11:41	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	SM 2320B		1			379528	06/30/17 20:49	A1D	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	379009	06/28/17 07:27	JAP	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-99-05A-SPR17

Lab Sample ID: 680-140237-2

Date Collected: 06/22/17 09:00

Matrix: Water

Date Received: 06/23/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1042.7 mL	10 mL	485771	06/27/17 15:49	CEW	TAL SAV
Total/NA	Analysis	8081B 8082A		1			485971	06/28/17 21:26	JCK	TAL SAV
	Instrument ID: CSGZ									
Total/NA	Analysis	9056A		1	5 mL	5 mL	485866	06/28/17 12:02	KLD	TAL SAV
	Instrument ID: CICH									
Total/NA	Analysis	9056A		10	5 mL	5 mL	485866	06/28/17 12:20	KLD	TAL SAV
	Instrument ID: CICH									
Total/NA	Prep	3010A			50 mL	50 mL	485645	06/26/17 14:41	AJR	TAL SAV
Total/NA	Analysis	6010C		1			485954	06/27/17 15:21	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	485644	06/26/17 14:41	AJR	TAL SAV

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL 1024-003

TestAmerica Job ID: 680-140237-1

Client Sample ID: LFM-99-05A-SPR17

Lab Sample ID: 680-140237-2

Date Collected: 06/22/17 09:00

Matrix: Water

Date Received: 06/23/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	6020A		1			485909	06/27/17 22:25	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	7470A			50 mL	50 mL	485715	06/27/17 08:50	JKL	TAL SAV
Total/NA	Analysis	7470A		1			485888	06/27/17 15:26	JKL	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	379747	07/04/17 16:57	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	378875	06/28/17 08:53	CCJ	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	486206	06/30/17 05:00	DAM	TAL SAV
Total/NA	Analysis	9012B		1			486312	06/30/17 11:45	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	SM 2320B		1			379528	06/30/17 20:25	A1D	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	379009	06/28/17 07:27	JAP	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-DUP01-SPR17

Lab Sample ID: 680-140237-3

Date Collected: 06/22/17 09:05

Matrix: Water

Date Received: 06/23/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1045.7 mL	10 mL	485771	06/27/17 15:49	CEW	TAL SAV
Total/NA	Analysis	8081B 8082A		1			485971	06/28/17 21:42	JCK	TAL SAV
	Instrument ID: CSGZ									
Total/NA	Analysis	9056A		1	5 mL	5 mL	485866	06/28/17 14:04	KLD	TAL SAV
	Instrument ID: CICH									
Total/NA	Analysis	9056A		10	5 mL	5 mL	485866	06/28/17 14:21	KLD	TAL SAV
	Instrument ID: CICH									
Total/NA	Prep	3010A			50 mL	50 mL	485645	06/26/17 14:41	AJR	TAL SAV
Total/NA	Analysis	6010C		1			485954	06/27/17 15:25	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	485644	06/26/17 14:41	AJR	TAL SAV
Total/NA	Analysis	6020A		1			485909	06/27/17 22:30	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	7470A			50 mL	50 mL	485715	06/27/17 08:50	JKL	TAL SAV
Total/NA	Analysis	7470A		1			485888	06/27/17 15:29	JKL	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	379747	07/04/17 16:59	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	378875	06/28/17 08:53	CCJ	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	486206	06/30/17 05:00	DAM	TAL SAV

Client Sample ID: LFM-DUP01-SPR17

Lab Sample ID: 680-140237-3

Date Collected: 06/22/17 09:05

Matrix: Water

Date Received: 06/23/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9012B		1			486312	06/30/17 11:46	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	SM 2320B		1			379528	06/30/17 20:21	A1D	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	379009	06/28/17 07:27	JAP	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-99-06A RP-SPR17

Lab Sample ID: 680-140237-4

Date Collected: 06/21/17 09:55

Matrix: Water

Date Received: 06/23/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1037.7 mL	10 mL	485929	06/28/17 16:21	CEW	TAL SAV
Total/NA	Analysis	8081B 8082A		1			486184	06/29/17 20:10	JCK	TAL SAV
	Instrument ID: CSGAA									
Total/NA	Analysis	9056A		1	5 mL	5 mL	485866	06/28/17 12:37	KLD	TAL SAV
	Instrument ID: CICH									
Total/NA	Analysis	9056A		25	5 mL	5 mL	485866	06/28/17 16:06	KLD	TAL SAV
	Instrument ID: CICH									
Total/NA	Prep	3010A			50 mL	50 mL	485645	06/26/17 14:41	AJR	TAL SAV
Total/NA	Analysis	6010C		1			485954	06/27/17 15:01	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	485644	06/26/17 14:41	AJR	TAL SAV
Total/NA	Analysis	6020A		1			485909	06/27/17 22:03	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	7470A			50 mL	50 mL	485715	06/27/17 08:50	JKL	TAL SAV
Total/NA	Analysis	7470A		1			485888	06/27/17 15:32	JKL	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	379747	07/04/17 16:49	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	378875	06/28/17 08:53	CCJ	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	486206	06/30/17 05:00	DAM	TAL SAV
Total/NA	Analysis	9012B		1			486312	06/30/17 11:47	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	SM 2320B		1			379459	06/29/17 16:56	A1D	TAL DEN
	Instrument ID: WC_AT2									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	379009	06/28/17 07:27	JAP	TAL DEN
	Instrument ID: NOEQUIP									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
Sk5423-1, 2, 3, 4, 5

Matrices: Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B ✓	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1] *All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 07/10/2017

July 10, 2017

Mr. Jerry Lanier
Test America Savannah
5102 LaRoche Avenue
Savannah,GA 31404

RE: Katahdin Lab Number: SK5423
Project ID: Devens Spring 2017 LTM
Project Manager: Ms. Heather Manz
Sample Receipt Date(s): June 23, 2017

Dear Mr. Lanier:

Please find enclosed the following information:

* Report of Analysis (Analytical and/or Field)
* Quality Control Data Summary
* Chain of Custody (COC)
* Login Report

A copy of the Chain of Custody is included in the paginated report. The original COC is attached as an addendum to this report.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact the project manager listed above. The results contained in this report relate only to the submitted samples. This cover letter is an integral part of the ROA.

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

We appreciate your continued use of our laboratory and look forward to working with you in the future. The following signature indicates technical review and acceptance of the data.

Please go to http://www.katahdinlab.com/cert.html for copies of Katahdin Analytical Services Inc. current certificates and analyte lists.

Sincerely,
KATAHDIN ANALYTICAL SERVICES

Leslie Dimond — 07/10/2017

Authorized Signature **Date**

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA, SAVANNAH
DEVENS SPRING 2017 LTM
SK5423

Sample Receipt

The following samples were received on June 23, 2017 and were logged in under Katahdin Analytical Services work order number SK5423 for a hardcopy due date of July 05, 2017.

KATAHDIN Sample No.	TEST AMERICA SAVANNAH Sample Identification
SK5423-1	LFM-99-02B-SPR17
SK5423-2	LFM-99-05A-SPR17
SK5423-3	LFM-DUP01-SPR17
SK5423-4	LFM-99-06A RP-SPR17
SK5423-5	TRIP BLANK

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. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order SK5423 were analyzed in accordance with the Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MADEP, May 2004, Revision 1.1, and/or Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

Sample SK5423-4 was used for the matrix spike (MS) and matrix spike duplicate (MSD), as per client request.

MA-EPH Analysis

Samples SK5423-3 and 4 were manually integrated for the extraction surrogate 5-alpha-androstane. 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.

MA-VPH Analysis

The independent check standard (file 2KF10193), associated with the initial calibration analyzed on the GC02 instrument on 06/19/17 had a high concentration for n-pentane, which exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL. Since this standard is also the LCS and the concentration was within the method acceptance limits, no further action was taken.

There were no other protocol deviations or observations noted by the organics laboratory staff.

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 the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond 07.10.17

Leslie Dimond
Quality Assurance Officer

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U — Indicates the compound was analyzed for but not detected above the specified level. This level may be the Practical Quantitation Level (PQL) (also called Limit of Quantitation (LOQ)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL, "U" LOQ or "U" LOD, where the rate of false negatives is <1%.

* — Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D — Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E — Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J — Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Practical Quantitation Level (PQL) (also called Limit of Quantitation (LOQ)), but above the Method Detection Limit (MDL).

or

J — Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B — Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C — Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L — Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M — Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N — Presumptive evidence of a compound based on a mass spectral library search.

A — Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P — Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-1RE
Client ID: LFM-99-02B-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: CKG2010.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 29-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208231

Analysis Date: 03-JUL-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 05-JUL-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	96	ug/L	1	100	96.	48.	72.
C19-C36 Aliphatics	U	96	ug/L	1	100	96.	48.	72.
C11-C22 Aromatics	U	96	ug/L	1	100	96.	48.	72.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.86	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.96	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		71.2	%					
o-Terphenyl		74.9	%					
2-Fluorobiphenyl		84.4	%					
2-Bromonaphthalene		98.7	%					

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-2RE
Client ID: LFM-99-05A-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: CKG2011.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 29-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208231

Analysis Date: 03-JUL-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 05-JUL-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C19-C36 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C11-C22 Aromatics	U	94	ug/L	1	100	94.	47.	71.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.85	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.94	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		65.0	%					
o-Terphenyl		65.7	%					
2-Fluorobiphenyl		81.7	%					
2-Bromonaphthalene		86.6	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-3
Client ID: LFM-DUP01-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: CKF4014.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 27-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208063

Analysis Date: 28-JUN-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 05-JUL-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C19-C36 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C11-C22 Aromatics	U	94	ug/L	1	100	94.	47.	71.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.85	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.94	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		46.9	%					
o-Terphenyl		46.2	%					
2-Fluorobiphenyl		58.8	%					
2-Bromonaphthalene		61.2	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-4
Client ID: LFM-99-06A RP-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: CKF4015.D

Sample Date: 21-JUN-17
Received Date: 23-JUN-17
Extract Date: 27-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208063

Analysis Date: 28-JUN-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 05-JUL-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C19-C36 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C11-C22 Aromatics	U	94	ug/L	1	100	94.	47.	71.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.85	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.94	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		46.5	%					
o-Terphenyl		50.2	%					
2-Fluorobiphenyl		65.6	%					
2-Bromonaphthalene		69.2	%					

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : CKF3001.D
Instrument ID : GC12

SDG : SK5423
Lab Sample ID : WG208063-1
Date Analyzed : 28-JUN-17
Time Analyzed : 12:32
Date Extracted : 27-JUN-17

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	WG208063-2	CKF3002.D	06/28/17	13:17
Laboratory Control S	WG208063-3	CKF3003.D	06/28/17	14:03
LFM-DUP01-SPR17	SK5423-3	CKF3014.D	06/28/17	22:24
LFM-99-06A RP-SPR17	SK5423-4	CKF3015.D	06/28/17	23:09

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : CKF3001A.D
Instrument ID : GC12

SDG : SK5423
Lab Sample ID : WG208063-1
Date Analyzed : 28-JUN-17
Time Analyzed : 12:32
Date Extracted : 27-JUN-17

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	WG208063-2	CKF3002A	06/28/17	13:17
Laboratory Control S	WG208063-3	CKF3003A	06/28/17	14:03
LFM-DUP01-SPR17	SK5423-3	CKF3014A	06/28/17	22:24
LFM-99-06A RP-SPR17	SK5423-4	CKF3015A	06/28/17	23:09

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : CKF4001.D
Instrument ID : GC12

SDG : SK5423
Lab Sample ID : WG208063-1
Date Analyzed : 28-JUN-17
Time Analyzed : 12:32
Date Extracted : 27-JUN-17

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	WG208063-2	CKF4002.D	06/28/17	13:17
Laboratory Control S	WG208063-3	CKF4003.D	06/28/17	14:03
LFM-DUP01-SPR17	SK5423-3	CKF4014.D	06/28/17	22:24
LFM-99-06A RP-SPR17	SK5423-4	CKF4015.D	06/28/17	23:09

Report of Analytical Results

Client:
Lab ID: WG208063-1
Client ID: Method Blank Sample
Project:
SDG: SK5423
Lab File ID: CKF4001.D

Sample Date:
Received Date:
Extract Date: 27-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208063

Analysis Date: 28-JUN-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 05-JUL-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		53.4	%					
o-Terphenyl		41.3	%					
2-Fluorobiphenyl		50.4	%					
2-Bromonaphthalene		52.7	%					

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LCS/LCSD Recovery Report

LCS ID: WG208063-2
LCSD ID: WG208063-3
Project:
SDG: SK5423
Report Date: 05-JUL-17
LCS File ID: CKF4002.D

Received Date:
Extract Date: 27-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208063
LCSD File ID: CKF3003.d

Analysis Date: 28-JUN-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	926.	60.5	909.	59.4	ug/L	2	25	40-140
C9-C18 Aliphatics	540.	263.	48.7	269.	49.8	ug/L	2	25	40-140
C19-C36 Aliphatics	720.	437.	60.7	454.	63.0	ug/L	4	25	40-140
Naphthalene	90.0	48.1	53.4	45.8	50.9	ug/L	5	25	40-140
2-Methylnaphthalene	90.0	54.0	60.0	51.5	57.2	ug/L	5	25	40-140
Phenanthrene	90.0	51.2	56.9	50.3	55.9	ug/L	2	25	40-140
Acenaphthylene	90.0	47.1	52.3	45.0	50.0	ug/L	4	25	40-140
Acenaphthene	90.0	49.0	54.4	45.3	50.3	ug/L	8	25	40-140
Anthracene	90.0	52.5	58.3	51.6	57.3	ug/L	2	25	40-140
Benzo(a)anthracene	90.0	56.7	63.0	55.3	61.4	ug/L	2	25	40-140
Benzo(a)pyrene	90.0	59.0	65.6	57.6	64.0	ug/L	2	25	40-140
Benzo(b)fluoranthene	90.0	57.5	63.9	55.8	62.0	ug/L	3	25	40-140
Benzo(g,h,i)perylene	90.0	58.6	65.1	56.3	62.6	ug/L	4	25	40-140
Benzo(k)fluoranthene	90.0	54.8	60.9	53.7	59.7	ug/L	2	25	40-140
Chrysene	90.0	56.9	63.2	53.6	59.6	ug/L	6	25	40-140
Dibenzo(a,h)anthracene	90.0	56.7	63.0	55.2	61.3	ug/L	3	25	40-140
Fluoranthene	90.0	55.1	61.2	54.0	60.0	ug/L	2	25	40-140
Fluorene	90.0	49.7	55.2	48.2	53.6	ug/L	3	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	56.8	63.1	53.7	59.7	ug/L	6	25	40-140
Pyrene	90.0	54.7	60.8	53.4	59.3	ug/L	2	25	40-140
5-Alpha Androstane			50.1		60.9				40-140
o-Terphenyl			54.7		54.2				40-140
2-Fluorobiphenyl			65.0		64.0				40-140
2-Bromonaphthalene			67.9		67.0				40-140

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MS/MSD Recovery Report

MS ID: WG208063-4
MSD ID: WG208063-5
Sample ID: SK5423-4
Client ID: LFM-99-06A RP-SPR17
Project:
SDG: SK5423
MS File ID: CKF4004.D

Received Date:
Extract Date: 27-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208063
Report Date: 06-JUL-17
MSD File ID: CKF3005a.d

Analysis Date: 28-JUN-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1480	1480	ug/L	U94	715	999	48.1	67.2	33*	25	40-140
C9-C18 Aliphatics	524.	524.	ug/L	U94	241	305	46.0	58.2	23	25	40-140
C19-C36 Aliphatics	699.	699.	ug/L	U94	415	490	59.4	70.1	16	25	40-140
Naphthalene	87.4	87.4	ug/L	U1.9	35.7	49.5	40.8	56.6	32*	25	40-140
2-Methylnaphthalene	87.4	87.4	ug/L	U1.9	39.6	56	45.3	64.1	34*	25	40-140
Phenanthrene	87.4	87.4	ug/L	U1.9	39.5	55.2	45.2	63.2	33*	25	40-140
Acenaphthylene	87.4	87.4	ug/L	U1.9	34.5	48.6	39.5	55.6	34*	25	40-140
Acenaphthene	87.4	87.4	ug/L	U1.9	34.8	48.9	39.8	56.0	34*	25	40-140
Anthracene	87.4	87.4	ug/L	U1.9	40.6	57.2	46.5	65.5	34*	25	40-140
Benzo(a)anthracene	87.4	87.4	ug/L	U1.9	43.9	62.3	50.2	71.3	35*	25	40-140
Benzo(a)pyrene	87.4	87.4	ug/L	U1.9	45.9	64.8	52.5	74.2	34*	25	40-140
Benzo(b)fluoranthene	87.4	87.4	ug/L	U1.9	46.5	66.8	53.2	76.4	36*	25	40-140
Benzo(g,h,i)perylene	87.4	87.4	ug/L	U1.9	47	65	53.8	74.4	32*	25	40-140
Benzo(k)fluoranthene	87.4	87.4	ug/L	U1.9	40.8	56.1	46.7	64.2	32*	25	40-140
Chrysene	87.4	87.4	ug/L	U1.9	44	62.3	50.4	71.3	34*	25	40-140
Dibenzo(a,h)anthracene	87.4	87.4	ug/L	U1.9	45.8	63.2	52.4	72.3	32*	25	40-140
Fluoranthene	87.4	87.4	ug/L	U1.9	42.4	60.1	48.5	68.8	34*	25	40-140
Fluorene	87.4	87.4	ug/L	U1.9	37.2	51.7	42.6	59.2	33*	25	40-140
Indeno(1,2,3-cd)pyrene	87.4	87.4	ug/L	U1.9	42	60.7	48.1	69.5	36*	25	40-140
Pyrene	87.4	87.4	ug/L	U1.9	42.1	59.7	48.2	68.3	34*	25	40-140
5-Alpha Androstane							54.2	61.7			40-140
o-Terphenyl							43.7	60.8			40-140
2-Fluorobiphenyl							55.4	67.4			40-140
2-Bromonaphthalene							57.7	70.0			40-140

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : CKG1005.D
Instrument ID : GC12

SDG : SK5423
Lab Sample ID : WG208231-1
Date Analyzed : 03-JUL-17
Time Analyzed : 15:59
Date Extracted : 29-JUN-17

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	WG208231-2	CKG1006.I	07/03/17	16:45
Laboratory Control S	WG208231-3	CKG1007.I	07/03/17	17:30
LFM-99-02B-SPR17	SK5423-1RE	CKG1010.I	07/03/17	19:47
LFM-99-05A-SPR17	SK5423-2RE	CKG1011.I	07/03/17	20:33

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : CKG1005A.D
Instrument ID : GC12

SDG : SK5423
Lab Sample ID : WG208231-1
Date Analyzed : 03-JUL-17
Time Analyzed : 15:59
Date Extracted : 29-JUN-17

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	WG208231-2	CKG1006A	07/03/17	16:45
Laboratory Control S	WG208231-3	CKG1007A	07/03/17	17:30
LFM-99-02B-SPR17	SK5423-1RE	CKG1010A	07/03/17	19:47
LFM-99-05A-SPR17	SK5423-2RE	CKG1011A	07/03/17	20:33

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : CKG2005.D
Instrument ID : GC12

SDG : SK5423
Lab Sample ID : WG208231-1
Date Analyzed : 03-JUL-17
Time Analyzed : 15:59
Date Extracted : 29-JUN-17

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	WG208231-2	CKG2006.I	07/03/17	16:45
Laboratory Control S	WG208231-3	CKG2007.I	07/03/17	17:30
LFM-99-02B-SPR17	SK5423-1RE	CKG2010.I	07/03/17	19:47
LFM-99-05A-SPR17	SK5423-2RE	CKG2011.I	07/03/17	20:33

Report of Analytical Results

Client:
Lab ID: WG208231-1
Client ID: Method Blank Sample
Project:
SDG: SK5423
Lab File ID: CKG2005.D

Sample Date:
Received Date:
Extract Date: 29-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208231

Analysis Date: 03-JUL-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 05-JUL-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		60.0	%					
o-Terphenyl		63.9	%					
2-Fluorobiphenyl		76.1	%					
2-Bromonaphthalene		80.7	%					

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Cert No E87604

LCS/LCSD Recovery Report

LCS ID: WG208231-2
LCSD ID: WG208231-3
Project:
SDG: SK5423
Report Date: 05-JUL-17
LCS File ID: CKG2006.D

Received Date:
Extract Date: 29-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208231
LCSD File ID: CKG2007.d

Analysis Date: 03-JUL-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	1040	68.0	1350	88.2	ug/L	26*	25	40-140
C9-C18 Aliphatics	540.	296.	54.8	381.	70.6	ug/L	25*	25	40-140
C19-C36 Aliphatics	720.	506.	70.3	619.	86.0	ug/L	20	25	40-140
Naphthalene	90.0	52.9	58.8	70.1	77.9	ug/L	28*	25	40-140
2-Methylnaphthalene	90.0	59.5	66.1	79.6	88.4	ug/L	29*	25	40-140
Phenanthrene	90.0	58.7	65.2	75.9	84.3	ug/L	26*	25	40-140
Acenaphthylene	90.0	52.1	57.9	69.0	76.7	ug/L	28*	25	40-140
Acenaphthene	90.0	52.7	58.6	69.6	77.3	ug/L	28*	25	40-140
Anthracene	90.0	60.2	66.9	78.4	87.1	ug/L	26*	25	40-140
Benzo(a)anthracene	90.0	63.9	71.0	83.2	92.4	ug/L	26*	25	40-140
Benzo(a)pyrene	90.0	66.2	73.6	86.5	96.1	ug/L	26*	25	40-140
Benzo(b)fluoranthene	90.0	68.8	76.4	84.4	93.8	ug/L	20	25	40-140
Benzo(g,h,i)perylene	90.0	69.2	76.9	81.1	90.1	ug/L	16	25	40-140
Benzo(k)fluoranthene	90.0	57.8	64.2	79.4	88.2	ug/L	31*	25	40-140
Chrysene	90.0	64.1	71.2	82.8	92.0	ug/L	25*	25	40-140
Dibenzo(a,h)anthracene	90.0	71.6	79.6	92.6	103.	ug/L	26*	25	40-140
Fluoranthene	90.0	62.9	69.9	81.2	90.2	ug/L	25*	25	40-140
Fluorene	90.0	55.6	61.8	72.8	80.9	ug/L	27*	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	57.7	64.1	75.1	83.4	ug/L	26*	25	40-140
Pyrene	90.0	62.1	69.0	80.1	89.0	ug/L	25*	25	40-140
5-Alpha Androstane			54.3		77.2				40-140
o-Terphenyl			62.7		79.3				40-140
2-Fluorobiphenyl			75.8		81.6				40-140
2-Bromonaphthalene			82.4		88.6				40-140

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-1
Client ID: LFM-99-02B-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: 2KF10277.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 27-JUN-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		93.9	%				
2,5-Dibromotoluene (PID)		87.4	%				

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Cert No E87604

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-2
Client ID: LFM-99-05A-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: 2KF10278.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 27-JUN-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		89.1	%				
2,5-Dibromotoluene (PID)		82.9	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-3
Client ID: LFM-DUP01-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: 2KF10279.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 27-JUN-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		80.0	%				
2,5-Dibromotoluene (PID)		74.2	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-4
Client ID: LFM-99-06A RP-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: 2KF10280.D

Sample Date: 21-JUN-17
Received Date: 23-JUN-17
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 27-JUN-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		118.	%				
2,5-Dibromotoluene (PID)		108.	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-5
Client ID: TRIP BLANK
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: 2KF10273.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 27-JUN-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		106.	%				
2,5-Dibromotoluene (PID)		97.8	%				

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : 2KF10265.D
Instrument ID : GC02

SDG : SK5423
Lab Sample ID : WG207996-1
Date Analyzed : 26-JUN-17
Time Analyzed : 10:13
Date Extracted : 26-JUN-17

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	WG207996-2	2KF10266.	06/26/17	10:54
Laboratory Control S	WG207996-3	2KF10267.	06/26/17	11:35
TRIP BLANK	SK5423-5	2KF10273.	06/26/17	17:40
LFM-99-02B-SPR17	SK5423-1	2KF10277.	06/26/17	20:23
LFM-99-05A-SPR17	SK5423-2	2KF10278.	06/26/17	21:03
LFM-DUP01-SPR17	SK5423-3	2KF10279.	06/26/17	21:44
LFM-99-06A RP-SPR17	SK5423-4	2KF10280.	06/26/17	22:25
Matrix Spike	WG207996-4	2KF10287.	06/27/17	03:13
Matrix Spike Duplica	WG207996-5	2KF10288.	06/27/17	03:54

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Page 58 of 70
Katahdin Analytical Services SK5423 page 0000025 of 0000032

Report of Analytical Results

Client:
Lab ID: WG207996-1
Client ID: Method Blank Sample
Project:
SDG: SK5423
Lab File ID: 2KF10265.D

Sample Date:
Received Date:
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 27-JUN-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		102.	%				
2,5-Dibromotoluene (PID)		94.2	%				

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LCS/LCSD Recovery Report

LCS ID: WG207996-2
LCSD ID: WG207996-3
Project:
SDG: SK5423
Report Date: 27-JUN-17
LCS File ID: 2KF10266.D

Received Date:
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996
LCSD File ID: 2KF10267.D

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	342.	114.	343.	114.	ug/L	0	25	70-130
C9-C12 Aliphatics	200.	217.	108.	214.	107.	ug/L	1	25	70-130
C9-C10 Aromatics	100.	103.	103.	104.	104.	ug/L	1	25	70-130
Benzene	100.	101.	101.	101.	101.	ug/L	0	25	70-130
Ethylbenzene	100.	99.2	99.2	99.3	99.3	ug/L	0	25	70-130
Methyl tert-butylether	100.	101.	101.	104.	104.	ug/L	3	25	70-130
Naphthalene	100.	95.7	95.7	96.5	96.5	ug/L	1	25	70-130
Toluene	100.	100.	100.	100.	100.	ug/L	0	25	70-130
m+p-Xylenes	200.	199.	99.5	199.	99.5	ug/L	0	25	70-130
o-Xylene	100.	100.	100.	101.	101.	ug/L	1	25	70-130
2,5-Dibromotoluene (FID)			85.8		87.5				70-130
2,5-Dibromotoluene (PID)			80.6		82.1				70-130

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MS/MSD Recovery Report

MS ID: WG207996-4
MSD ID: WG207996-5
Sample ID: SK5423-4
Client ID: LFM-99-06A RP-SPR17
Project:
SDG: SK5423
MS File ID: 2KF10287.D

Received Date:
Extract Date: 27-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996
Report Date: 27-JUN-17
MSD File ID: 2KF10288.D

Analysis Date: 27-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	300.	ug/L	U100	360	310	120.	103.	15	50	70-130
C9-C12 Aliphatics	200.	200.	ug/L	U100	202	181	101.	90.5	11	50	70-130
C9-C10 Aromatics	100.	100.	ug/L	U100	108	110	108.	110.	2	50	70-130
Benzene	100.	100.	ug/L	U3.0	108	109	108.	109.	1	50	70-130
Ethylbenzene	100.	100.	ug/L	U5.0	105	106	105.	106.	1	50	70-130
Methyl tert-butylether	100.	100.	ug/L	U5.0	104	105	104.	105.	1	50	70-130
Naphthalene	100.	100.	ug/L	U5.0	105	107	105.	107.	2	50	70-130
Toluene	100.	100.	ug/L	U5.0	106	108	106.	108.	2	50	70-130
m+p-Xylenes	200.	200.	ug/L	U10	210	214	105.	107.	2	50	70-130
o-Xylene	100.	100.	ug/L	U5.0	105	107	105.	107.	2	50	70-130
2,5-Dibromotoluene (FID)							92.5	94.8			70-130
2,5-Dibromotoluene (PID)							86.7	88.7			70-130

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Kaman GS	KAS PM: HHM	Sampled By: Client
Project:	KIMS Entry By: SD	Delivered By: FedEx
KAS Work Order#: -SK5423	KIMS Review By: HHM	Received By: SD
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 06-23 0915

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): 5.7
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
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 (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
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.

360325-Boston 360325-Boston 360325-Boston 360325 Boston

PO #	17-636	Devens - DCL 1024-003

Chain of Custody Record

Page: 1 of: 1

Company	KOMAN GS, LLC
Address:	160 East Main Street, Suite 2F Westborough, MA
Phone: 508-366-7442	Fax: 508-366-7445
Sampled by [Print Name(s)]/Affilliation	Kevin B. Anderson
Sampler(s) Signature(s)	SK5423

Laboratory:	Test America - Savannah
Address:	
Contact:	Jerry Lanier
Regulatory Facility No.	
Project Name:	Devens Spring 2017 LTM
Sampling QAP No.:	
Approval Date:	
TAT	Routine
Other:	

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40-ml VOA vials (HCl)	MA EPH 2-1liter amber glass(HCl)	Pesticides/SW8081 2-1liter amber glass	Total Metals* (SW6010/6020/7470) 1-250 ml poly (HNO3)	Total Cyanide/SW9012 1-250ml poly (NaOH)	Chloride/Sulfate (SW9056) 1-125ml poly	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4)	Alkalinity/SM2320B 1-250-ml poly	TDS/SM2540D 1-1liter poly	COD/SW9060 1-500-ml amber glass (H2SO4)	Remarks	Lab. No.
						Preservatives (see codes)	H	H	I	N	O	I	S	I	I	S		
						Analyses Requested												
	LFM-99-02B-SPR17	6/22/17	1200	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~MS/MSD~~	
	LFM-99-05A-SPR17	6/22/17	900	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	LFM-DUP01-SPR17	6/22/17	905	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	LFM-99-06A RP-SPR17	6/21/17	955	P	GW	42	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	MS/MSD	
	~~LFM-03-07-SPR17 *~~	N/A		~~P~~	~~GW~~													
				P	GW													
	Trip Blank	—	—	O	O		X											

Shipping Details: courier pick up — 0 ← Total Number of Containers

Date Out: Via:

Returned: Via:

Additional Comments:
* = Total Metals include: Ba, Cd, Ca, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)

email logins and results to:
lekes@komangs.com

Item No.	Relinquished by/Affiliation	Date	Time		Date	Time
		6/22/17	1423		6/23/17	14:23
		6/22/17	15:45			
	Samuel DiMeo	6-23-17	0915			

Lab Comments

SK 5423

Preserve Where Applicable ☐

On ICE ☐

Temperature _____C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater SE = Sediment SP = Soil SW = Surface Water O = Other

PRESERVATIVE CODES H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other

COLLECTION METHOD C = Composite G=Grab P= Pumping O = Other

Katahdin Analytical Services SK5423 page 00000301of00000032

Login Number: SK5423

Account: TASAV001 NoWeb

Test America Savannah

Project: TASAV-DEVENS

Primary Report Address:

Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:

Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:

Invoice CC Addresses:

Quote/Incoming:

Login Information:

ANALYSIS INSTRUCTIONS	:	DOD QSM 4.2 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	680-140237
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	W912WJ-10-D-0003
COOLER TEMPERATURE	:	5.7
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS033QC-XLS
LOGIN INITIALS	:	SO
PM	:	HHM
PROJECT NAME	:	Devens Spring 2017 LTM
QC LEVEL	:	II
REPORT INSTRUCTIONS	:	Email PDF, EDD files and invoice to Jerry. No HC. Include Level 4 narrative and MCP forms.
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SK5423-1	LFM-99-02B-SPR17	22-JUN-17 12:00	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	06-JUL-17	1L N-Amber Glass		
Aqueous	S	MA-VPH	06-JUL-17	40mL Vial+HCl		

SK5423-2	LFM-99-05A-SPR17	22-JUN-17 09:00	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	06-JUL-17	1L N-Amber Glass		
Aqueous	S	MA-VPH	06-JUL-17	40mL Vial+HCl		

SK5423-3	LFM-DUP01-SPR17	22-JUN-17 09:05	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	06-JUL-17	1L N-Amber Glass		
Aqueous	S	MA-VPH	06-JUL-17	40mL Vial+HCl		

SK5423-4	LFM-99-06A RP-SPR17	21-JUN-17 09:55	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	05-JUL-17	1L N-Amber Glass		MS/MSD
Aqueous	S	MA-VPH	05-JUL-17	40mL Vial+HCl		

SK5423-5	TRIP BLANK	22-JUN-17 00:00	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	06-JUL-17	40mL Vial+HCl		

SK5423-6	MS CHARGE	21-JUN-17 09:55	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Service	S	CLIENT-CHARGE				charge for MS for EPH & VPH

SK5423-7	MSD CHARGE	21-JUN-17 09:55	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Service	S	CLIENT-CHARGE				charge for MSD for EPH & VPH

AMH 6/26/17

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Jun. 26, 2017
01:33 PM

Quote/incoming:

Login Number: SK5423

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed

Total Samples: *7* ***Total Analyses:*** *11*

AMH 6/26/17

360325-Boston

Chain of Custody Record

PO # 17-636 | Devens - DCL 1024-003 | Page: 1 of: 1

Company	KOMAN GS, LLC
Address:	160 East Main Street, Suite 2F, Westborough, MA
Phone: 508-366-7442	Fax: 508-366-7445
Sampled by [Print Name(s)]/Affilliation	Kevin B. Anderson
Sampler(s) Signature(s)	

Laboratory:	Test America - Savannah
Address:	
Contact:	Jerry Lanier
Regulatory Facility No.	
Project Name:	Devens Spring 2017 LTM
Sampling QAP No.:	
Approval Date:	
TAT	Routine
Other:	

Preservatives (see codes): H | H | I | N | O | I | S | I | I | S

Analyses Requested:

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40-ml VOA vials (HCl) K	MA EPH 2-1liter amber glass(HCl) K	Pesticides/SW8081 2-1liter amber glass LS	Total Metals* (SW6010/6020/7470) 1-250 ml poly (HNO3) S	Total Cyanide/SW9012 1-250ml poly (NaOH) S	Chloride/Sulfate (SW9056) 1-125ml poly S	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4) D	Alkalinity/SM2320B 1-250-ml poly D	TDS/SM2540D 1-1liter poly D	COD/SW9060 1-500-ml amber glass (H2SO4) D	Remarks	Lab. No.
	LFM-99-02B-SPR17	6/22/17	1200	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~MS/MSD~~ N/A	
	LFM-99-05A-SPR17	6/22/17	900	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	LFM-DUP01-SPR17	6/22/17	905	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	LFM-99-06A RP-SPR17	6/21/17	955	P	GW	#42	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	MS/MSD	
	~~LFM-03-07-SPR17-*~~	N/A		P	GW													
				P	GW													
	Trip Blank	~	~	O	O		X											

680-140237 Chain of Custody

Shipping Details: courier pick up | 0 ← Total Number of Containers

Item No.	Relinquished by/Affiliation	Date	Time		Date	Time
Date Out: Via:						
Returned: Via:						
	[signature]	6/22/17	1423	[signature]	6/22/17	1423
	[signature]	6/22/17	15:45	V-Jackson TA	6-23-17	940

Additional Comments:
* = Total Metals include: Ba, Cd, Ca, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)

email logins and results to:
lekes@komangs.com

Lab Comments
2-2/2.7
3.7/3.2

Preserve Where Applicable ☐
On ICE ☐
Temperature _____C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info
☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater | SE = Sediment | SP = Soil | SW = Surface Water | O = Other
PRESERVATIVE CODES H = HCL + Ice | I = Ice Only | N = Nitric Acid + Ice | S = Sulfuric Acid + Ice | M = Methanol | O = Other
COLLECTION METHOD C = Composite | G=Grab | P= Pumping | O = Other

360325-Boston
360325-Boston
360325-Boston

PO # 17-636 | Devens - DCL 1024-003

Chain of Custody Record

Page: 1 of: 1

Company: KOMAN GS, LLC

Address: 160 East Main Street, Suite 2F, Westborough, MA

Phone: 508-366-7442 Fax: 508-366-7445

Sampled by [Print Name(s)]/Affiliation: Kevin G. Anderson

Sampler(s) Signature(s):

Laboratory: Test America - Savannah
Address:
Contact: Jerry Lanier
Regulatory Facility No.
Project Name: Devens Spring 2017 LTM
Sampling QAP No.:
Approval Date:
TAT: Routine
Other:

Preservatives (see codes): H | H | I | N | O | I | S | I | I | S

Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40-ml VOA vials (HCl)	MA EPH 2-1liter amber glass(HCl)	Pesticides/SW8081 2-1liter amber glass	Total Metals* (SW6010/6020/7470) 1-250 ml poly (HNO3)	Total Cyanide/SW9012 1-250ml poly (NaOH)	Chloride/Sulfate (SW9056) 1-125ml poly	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4)	Alkalinity/SM2320B 1-250-ml poly	TDS/SM2540D 1-1liter poly	COD/SW9060 1-500-ml amber glass (H2SO4)	Remarks	Lab. No.
	LFM-99-02B-SPR17	6/22/17	1200	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~MS/MSD~~ N/A	
	LFM-99-05A-SPR17	6/22/17	900	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	LFM-DUP01-SPR17	6/22/17	905	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	LFM-99-06A RP-SPR17	6/21/17	955	P	GW	42	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	MS/MSD	
	~~LFM-03-07-SPR17 *~~	N/A		P	GW													
				P	GW													
	Trip Blank	—	—	O	O		X											

680-140237 Chain of Custody

Shipping Details: courier pick up | 0 ← Total Number of Containers

Date Out: Via:
Returned: Via:

Additional Comments:
* = Total Metals include: Ba, Cd, Ca, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)

Item No.	Relinquished by/Affiliation	Date	Time		Date	Time
		6/22/17	1423		6/23/17	14:23
		6/22/17	15:45	Rec'd PM	6-23-17	0900
	~~Rec'd PM~~	~~6-23-17 0900~~ RP 6-23-17	~~0900~~			
		RP 6-23-17				

email logins and results to:
lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐
On ICE ☐
Temperature 0.1 C IR#7 0.0

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater | SE = Sediment | SP = Soil | SW = Surface Water | O = Other
PRESERVATIVE CODES H = HCL + Ice | I = Ice Only | N = Nitric Acid + Ice | S = Sulfuric Acid + Ice | M = Methanol | O = Other
COLLECTION METHOD C = Composite | G=Grab | P= Pumping | O = Other

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-140237-1

Login Number: 140237
List Number: 1
Creator: Ragnaldsen, Amy E

List Source: TestAmerica Savannah

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL 1024-003

TestAmerica Job ID: 680-140237-1

Laboratory: TestAmerica Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	07-31-17 *
Alaska	State Program	10		06-30-18
Alaska (UST)	State Program	10	UST-104	11-05-17
Arizona	State Program	9	AZ808	12-14-17
Arkansas DEQ	State Program	6	88-0692	02-01-18
California	State Program	9	2939	06-30-17 *
Colorado	State Program	8	N/A	12-31-17
Connecticut	State Program	1	PH-0161	03-31-19
Florida	NELAP	4	E87052	06-30-18
GA Dept. of Agriculture	State Program	4	N/A	06-12-18
Georgia	State Program	4	N/A	06-30-17 *
Georgia	State Program	4	803	06-30-17 *
Guam	State Program	9	15-005r	04-16-18
Hawaii	State Program	9	N/A	06-30-17 *
Illinois	NELAP	5	200022	11-30-17
Indiana	State Program	5	N/A	06-30-17 *
Iowa	State Program	7	353	06-30-17 *
Kentucky (DW)	State Program	4	90084	12-31-17
Kentucky (UST)	State Program	4	18	06-30-18
Kentucky (WW)	State Program	4	90084	12-31-17
L-A-B	DoD ELAP		L2463	09-22-19
L-A-B	ISO/IEC 17025		L2463.01	09-22-19
Louisiana	NELAP	6	30690	06-30-18
Louisiana (DW)	NELAP	6	LA160019	12-31-17
Maine	State Program	1	GA00006	09-24-18
Maryland	State Program	3	250	12-31-17
Massachusetts	State Program	1	M-GA006	06-30-18
Michigan	State Program	5	9925	06-30-17 *
Mississippi	State Program	4	N/A	06-30-18
Nebraska	State Program	7	TestAmerica-Savannah	06-30-17 *
New Jersey	NELAP	2	GA769	06-30-18
New Mexico	State Program	6	N/A	06-30-17 *
New York	NELAP	2	10842	03-31-18
North Carolina (DW)	State Program	4	13701	07-31-17 *
North Carolina (WW/SW)	State Program	4	269	12-31-17
Oklahoma	State Program	6	9984	08-31-17 *
Pennsylvania	NELAP	3	68-00474	06-30-17 *
Puerto Rico	State Program	2	GA00006	12-31-17
South Carolina	State Program	4	98001	06-30-17 *
Tennessee	State Program	4	TN02961	06-30-18
Texas	NELAP	6	T104704185-16-9	11-30-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		SAV 3-04	06-14-20 *
Virginia	NELAP	3	460161	06-14-17 *
Washington	State Program	10	C805	06-10-17 *
West Virginia (DW)	State Program	3	9950C	12-31-17
Wisconsin	State Program	5	999819810	08-31-17 *
Wyoming	State Program	8	8TMS-L	06-30-16 *

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL 1024-003

TestAmerica Job ID: 680-140237-1

Laboratory: TestAmerica Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
Sk5423-1, 2, 3, 4, 5

Matrices: Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B ✓	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1] *All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 07/10/2017

Katahdin
ANALYTICAL SERVICES

Cert. No. E87604

July 10, 2017

Mr. Jerry Lanier
Test America Savannah
5102 LaRoche Avenue
Savannah,GA 31404

RE: Katahdin Lab Number: SK5423
Project ID: Devens Spring 2017 LTM
Project Manager: Ms. Heather Manz
Sample Receipt Date(s): June 23, 2017

Dear Mr. Lanier:

Please find enclosed the following information:

* Report of Analysis (Analytical and/or Field)
* Quality Control Data Summary
* Chain of Custody (COC)
* Login Report

A copy of the Chain of Custody is included in the paginated report. The original COC is attached as an addendum to this report.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact the project manager listed above. The results contained in this report relate only to the submitted samples. This cover letter is an integral part of the ROA.

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

We appreciate your continued use of our laboratory and look forward to working with you in the future. The following signature indicates technical review and acceptance of the data.

Please go to http://www.katahdinlab.com/cert.html for copies of Katahdin Analytical Services Inc. current certificates and analyte lists.

Sincerely,
KATAHDIN ANALYTICAL SERVICES

Leslie Dimond

Authorized Signature

07/10/2017

Date

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA, SAVANNAH
DEVENS SPRING 2017 LTM
SK5423

Sample Receipt

The following samples were received on June 23, 2017 and were logged in under Katahdin Analytical Services work order number SK5423 for a hardcopy due date of July 05, 2017.

KATAHDIN	TEST AMERICA SAVANNAH
Sample No.	Sample Identification
SK5423-1	LFM-99-02B-SPR17
SK5423-2	LFM-99-05A-SPR17
SK5423-3	LFM-DUP01-SPR17
SK5423-4	LFM-99-06A RP-SPR17
SK5423-5	TRIP BLANK

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. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order SK5423 were analyzed in accordance with the Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MADEP, May 2004, Revision 1.1, and/or Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

Sample SK5423-4 was used for the matrix spike (MS) and matrix spike duplicate (MSD), as per client request.

MA-EPH Analysis

Samples SK5423-3 and 4 were manually integrated for the extraction surrogate 5-alpha-androstane. 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.

MA-VPH Analysis

The independent check standard (file 2KF10193), associated with the initial calibration analyzed on the GC02 instrument on 06/19/17 had a high concentration for n-pentane, which exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL. Since this standard is also the LCS and the concentration was within the method acceptance limits, no further action was taken.

There were no other protocol deviations or observations noted by the organics laboratory staff.

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 the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond
07.10.17
Leslie Dimond
Quality Assurance Officer

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Practical Quantitation Level (PQL) (also called Limit of Quantitation (LOQ)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL, "U" LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Practical Quantitation Level (PQL) (also called Limit of Quantitation (LOQ)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-1RE
Client ID: LFM-99-02B-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: CKG2010.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 29-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208231

Analysis Date: 03-JUL-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 05-JUL-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	96	ug/L	1	100	96.	48.	72.
C19-C36 Aliphatics	U	96	ug/L	1	100	96.	48.	72.
C11-C22 Aromatics	U	96	ug/L	1	100	96.	48.	72.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.86	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.96	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		71.2	%					
o-Terphenyl		74.9	%					
2-Fluorobiphenyl		84.4	%					
2-Bromonaphthalene		98.7	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-2RE
Client ID: LFM-99-05A-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: CKG2011.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 29-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208231

Analysis Date: 03-JUL-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 05-JUL-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C19-C36 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C11-C22 Aromatics	U	94	ug/L	1	100	94.	47.	71.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.85	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.94	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		65.0	%					
o-Terphenyl		65.7	%					
2-Fluorobiphenyl		81.7	%					
2-Bromonaphthalene		86.6	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-3
Client ID: LFM-DUP01-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: CKF4014.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 27-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208063

Analysis Date: 28-JUN-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 05-JUL-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C19-C36 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C11-C22 Aromatics	U	94	ug/L	1	100	94.	47.	71.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.85	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.94	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		46.9	%					
o-Terphenyl		46.2	%					
2-Fluorobiphenyl		58.8	%					
2-Bromonaphthalene		61.2	%					

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Cert No E87604

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-4
Client ID: LFM-99-06A RP-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: CKF4015.D

Sample Date: 21-JUN-17
Received Date: 23-JUN-17
Extract Date: 27-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208063

Analysis Date: 28-JUN-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 05-JUL-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C19-C36 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C11-C22 Aromatics	U	94	ug/L	1	100	94.	47.	71.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.85	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.94	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		46.5	%					
o-Terphenyl		50.2	%					
2-Fluorobiphenyl		65.6	%					
2-Bromonaphthalene		69.2	%					

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : CKF3001.D
Instrument ID : GC12

SDG : SK5423
Lab Sample ID : WG208063-1
Date Analyzed : 28-JUN-17
Time Analyzed : 12:32
Date Extracted : 27-JUN-17

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	WG208063-2	CKF3002.D	06/28/17	13:17
Laboratory Control S	WG208063-3	CKF3003.D	06/28/17	14:03
LFM-DUP01-SPR17	SK5423-3	CKF3014.D	06/28/17	22:24
LFM-99-06A RP-SPR17	SK5423-4	CKF3015.D	06/28/17	23:09

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Tel:(207) 874-2400 Fax:(207) 775-4029
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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : CKF3001A.D
Instrument ID : GC12

SDG : SK5423
Lab Sample ID : WG208063-1
Date Analyzed : 28-JUN-17
Time Analyzed : 12:32
Date Extracted : 27-JUN-17

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	WG208063-2	CKF3002A	06/28/17	13:17
Laboratory Control S	WG208063-3	CKF3003A	06/28/17	14:03
LFM-DUP01-SPR17	SK5423-3	CKF3014A	06/28/17	22:24
LFM-99-06A RP-SPR17	SK5423-4	CKF3015A	06/28/17	23:09

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : CKF4001.D
Instrument ID : GC12

SDG : SK5423
Lab Sample ID : WG208063-1
Date Analyzed : 28-JUN-17
Time Analyzed : 12:32
Date Extracted : 27-JUN-17

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	WG208063-2	CKF4002.D	06/28/17	13:17
Laboratory Control S	WG208063-3	CKF4003.D	06/28/17	14:03
LFM-DUP01-SPR17	SK5423-3	CKF4014.D	06/28/17	22:24
LFM-99-06A RP-SPR17	SK5423-4	CKF4015.D	06/28/17	23:09

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Report of Analytical Results

Client:
Lab ID: WG208063-1
Client ID: Method Blank Sample
Project:
SDG: SK5423
Lab File ID: CKF4001.D

Sample Date:
Received Date:
Extract Date: 27-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208063

Analysis Date: 28-JUN-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 05-JUL-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		53.4	%					
o-Terphenyl		41.3	%					
2-Fluorobiphenyl		50.4	%					
2-Bromonaphthalene		52.7	%					

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LCS/LCSD Recovery Report

LCS ID: WG208063-2
LCSD ID: WG208063-3
Project:
SDG: SK5423
Report Date: 05-JUL-17
LCS File ID: CKF4002.D

Received Date:
Extract Date: 27-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208063
LCSD File ID: CKF3003.d

Analysis Date: 28-JUN-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	926.	60.5	909.	59.4	ug/L	2	25	40-140
C9-C18 Aliphatics	540.	263.	48.7	269.	49.8	ug/L	2	25	40-140
C19-C36 Aliphatics	720.	437.	60.7	454.	63.0	ug/L	4	25	40-140
Naphthalene	90.0	48.1	53.4	45.8	50.9	ug/L	5	25	40-140
2-Methylnaphthalene	90.0	54.0	60.0	51.5	57.2	ug/L	5	25	40-140
Phenanthrene	90.0	51.2	56.9	50.3	55.9	ug/L	2	25	40-140
Acenaphthylene	90.0	47.1	52.3	45.0	50.0	ug/L	4	25	40-140
Acenaphthene	90.0	49.0	54.4	45.3	50.3	ug/L	8	25	40-140
Anthracene	90.0	52.5	58.3	51.6	57.3	ug/L	2	25	40-140
Benzo(a)anthracene	90.0	56.7	63.0	55.3	61.4	ug/L	2	25	40-140
Benzo(a)pyrene	90.0	59.0	65.6	57.6	64.0	ug/L	2	25	40-140
Benzo(b)fluoranthene	90.0	57.5	63.9	55.8	62.0	ug/L	3	25	40-140
Benzo(g,h,i)perylene	90.0	58.6	65.1	56.3	62.6	ug/L	4	25	40-140
Benzo(k)fluoranthene	90.0	54.8	60.9	53.7	59.7	ug/L	2	25	40-140
Chrysene	90.0	56.9	63.2	53.6	59.6	ug/L	6	25	40-140
Dibenzo(a,h)anthracene	90.0	56.7	63.0	55.2	61.3	ug/L	3	25	40-140
Fluoranthene	90.0	55.1	61.2	54.0	60.0	ug/L	2	25	40-140
Fluorene	90.0	49.7	55.2	48.2	53.6	ug/L	3	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	56.8	63.1	53.7	59.7	ug/L	6	25	40-140
Pyrene	90.0	54.7	60.8	53.4	59.3	ug/L	2	25	40-140
5-Alpha Androstane			50.1		60.9				40-140
o-Terphenyl			54.7		54.2				40-140
2-Fluorobiphenyl			65.0		64.0				40-140
2-Bromonaphthalene			67.9		67.0				40-140

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MS/MSD Recovery Report

MS ID: WG208063-4
MSD ID: WG208063-5
Sample ID: SK5423-4
Client ID: LFM-99-06A RP-SPR17
Project:
SDG: SK5423
MS File ID: CKF4004.D

Received Date:
Extract Date: 27-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208063
Report Date: 06-JUL-17
MSD File ID: CKF3005a.d

Analysis Date: 28-JUN-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1480	1480	ug/L	U94	715	999	48.1	67.2	33*	25	40-140
C9-C18 Aliphatics	524.	524.	ug/L	U94	241	305	46.0	58.2	23	25	40-140
C19-C36 Aliphatics	699.	699.	ug/L	U94	415	490	59.4	70.1	16	25	40-140
Naphthalene	87.4	87.4	ug/L	U1.9	35.7	49.5	40.8	56.6	32*	25	40-140
2-Methylnaphthalene	87.4	87.4	ug/L	U1.9	39.6	56	45.3	64.1	34*	25	40-140
Phenanthrene	87.4	87.4	ug/L	U1.9	39.5	55.2	45.2	63.2	33*	25	40-140
Acenaphthylene	87.4	87.4	ug/L	U1.9	34.5	48.6	39.5	55.6	34*	25	40-140
Acenaphthene	87.4	87.4	ug/L	U1.9	34.8	48.9	39.8	56.0	34*	25	40-140
Anthracene	87.4	87.4	ug/L	U1.9	40.6	57.2	46.5	65.5	34*	25	40-140
Benzo(a)anthracene	87.4	87.4	ug/L	U1.9	43.9	62.3	50.2	71.3	35*	25	40-140
Benzo(a)pyrene	87.4	87.4	ug/L	U1.9	45.9	64.8	52.5	74.2	34*	25	40-140
Benzo(b)fluoranthene	87.4	87.4	ug/L	U1.9	46.5	66.8	53.2	76.4	36*	25	40-140
Benzo(g,h,i)perylene	87.4	87.4	ug/L	U1.9	47	65	53.8	74.4	32*	25	40-140
Benzo(k)fluoranthene	87.4	87.4	ug/L	U1.9	40.8	56.1	46.7	64.2	32*	25	40-140
Chrysene	87.4	87.4	ug/L	U1.9	44	62.3	50.4	71.3	34*	25	40-140
Dibenzo(a,h)anthracene	87.4	87.4	ug/L	U1.9	45.8	63.2	52.4	72.3	32*	25	40-140
Fluoranthene	87.4	87.4	ug/L	U1.9	42.4	60.1	48.5	68.8	34*	25	40-140
Fluorene	87.4	87.4	ug/L	U1.9	37.2	51.7	42.6	59.2	33*	25	40-140
Indeno(1,2,3-cd)pyrene	87.4	87.4	ug/L	U1.9	42	60.7	48.1	69.5	36*	25	40-140
Pyrene	87.4	87.4	ug/L	U1.9	42.1	59.7	48.2	68.3	34*	25	40-140
5-Alpha Androstane							54.2	61.7			40-140
o-Terphenyl							43.7	60.8			40-140
2-Fluorobiphenyl							55.4	67.4			40-140
2-Bromonaphthalene							57.7	70.0			40-140

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : CKG1005.D
Instrument ID : GC12

SDG : SK5423
Lab Sample ID : WG208231-1
Date Analyzed : 03-JUL-17
Time Analyzed : 15:59
Date Extracted : 29-JUN-17

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	WG208231-2	CKG1006.I	07/03/17	16:45
Laboratory Control S	WG208231-3	CKG1007.I	07/03/17	17:30
LFM-99-02B-SPR17	SK5423-1RE	CKG1010.I	07/03/17	19:47
LFM-99-05A-SPR17	SK5423-2RE	CKG1011.I	07/03/17	20:33

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : CKG1005A.D
Instrument ID : GC12

SDG : SK5423
Lab Sample ID : WG208231-1
Date Analyzed : 03-JUL-17
Time Analyzed : 15:59
Date Extracted : 29-JUN-17

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	WG208231-2	CKG1006A	07/03/17	16:45
Laboratory Control S	WG208231-3	CKG1007A	07/03/17	17:30
LFM-99-02B-SPR17	SK5423-1RE	CKG1010A	07/03/17	19:47
LFM-99-05A-SPR17	SK5423-2RE	CKG1011A	07/03/17	20:33

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : CKG2005.D
Instrument ID : GC12

SDG : SK5423
Lab Sample ID : WG208231-1
Date Analyzed : 03-JUL-17
Time Analyzed : 15:59
Date Extracted : 29-JUN-17

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	WG208231-2	CKG2006.I	07/03/17	16:45
Laboratory Control S	WG208231-3	CKG2007.I	07/03/17	17:30
LFM-99-02B-SPR17	SK5423-1RE	CKG2010.I	07/03/17	19:47
LFM-99-05A-SPR17	SK5423-2RE	CKG2011.I	07/03/17	20:33

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Report of Analytical Results

Client:
Lab ID: WG208231-1
Client ID: Method Blank Sample
Project:
SDG: SK5423
Lab File ID: CKG2005.D

Sample Date:
Received Date:
Extract Date: 29-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208231

Analysis Date: 03-JUL-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 05-JUL-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		60.0	%					
o-Terphenyl		63.9	%					
2-Fluorobiphenyl		76.1	%					
2-Bromonaphthalene		80.7	%					

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LCS/LCSD Recovery Report

LCS ID: WG208231-2
LCSD ID: WG208231-3
Project:
SDG: SK5423
Report Date: 05-JUL-17
LCS File ID: CKG2006.D

Received Date:
Extract Date: 29-JUN-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG208231
LCSD File ID: CKG2007.d

Analysis Date: 03-JUL-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	1040	68.0	1350	88.2	ug/L	26*	25	40-140
C9-C18 Aliphatics	540.	296.	54.8	381.	70.6	ug/L	25*	25	40-140
C19-C36 Aliphatics	720.	506.	70.3	619.	86.0	ug/L	20	25	40-140
Naphthalene	90.0	52.9	58.8	70.1	77.9	ug/L	28*	25	40-140
2-Methylnaphthalene	90.0	59.5	66.1	79.6	88.4	ug/L	29*	25	40-140
Phenanthrene	90.0	58.7	65.2	75.9	84.3	ug/L	26*	25	40-140
Acenaphthylene	90.0	52.1	57.9	69.0	76.7	ug/L	28*	25	40-140
Acenaphthene	90.0	52.7	58.6	69.6	77.3	ug/L	28*	25	40-140
Anthracene	90.0	60.2	66.9	78.4	87.1	ug/L	26*	25	40-140
Benzo(a)anthracene	90.0	63.9	71.0	83.2	92.4	ug/L	26*	25	40-140
Benzo(a)pyrene	90.0	66.2	73.6	86.5	96.1	ug/L	26*	25	40-140
Benzo(b)fluoranthene	90.0	68.8	76.4	84.4	93.8	ug/L	20	25	40-140
Benzo(g,h,i)perylene	90.0	69.2	76.9	81.1	90.1	ug/L	16	25	40-140
Benzo(k)fluoranthene	90.0	57.8	64.2	79.4	88.2	ug/L	31*	25	40-140
Chrysene	90.0	64.1	71.2	82.8	92.0	ug/L	25*	25	40-140
Dibenzo(a,h)anthracene	90.0	71.6	79.6	92.6	103.	ug/L	26*	25	40-140
Fluoranthene	90.0	62.9	69.9	81.2	90.2	ug/L	25*	25	40-140
Fluorene	90.0	55.6	61.8	72.8	80.9	ug/L	27*	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	57.7	64.1	75.1	83.4	ug/L	26*	25	40-140
Pyrene	90.0	62.1	69.0	80.1	89.0	ug/L	25*	25	40-140
5-Alpha Androstane			54.3		77.2				40-140
o-Terphenyl			62.7		79.3				40-140
2-Fluorobiphenyl			75.8		81.6				40-140
2-Bromonaphthalene			82.4		88.6				40-140

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-1
Client ID: LFM-99-02B-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: 2KF10277.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 27-JUN-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		93.9	%				
2,5-Dibromotoluene (PID)		87.4	%				

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Cert No E87604

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-2
Client ID: LFM-99-05A-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: 2KF10278.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 27-JUN-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		89.1	%				
2,5-Dibromotoluene (PID)		82.9	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-3
Client ID: LFM-DUP01-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: 2KF10279.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 27-JUN-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		80.0	%				
2,5-Dibromotoluene (PID)		74.2	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-4
Client ID: LFM-99-06A RP-SPR17
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: 2KF10280.D

Sample Date: 21-JUN-17
Received Date: 23-JUN-17
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 27-JUN-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		118.	%				
2,5-Dibromotoluene (PID)		108.	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK5423-5
Client ID: TRIP BLANK
Project: Devens Spring 2017 LTM
SDG: SK5423
Lab File ID: 2KF10273.D

Sample Date: 22-JUN-17
Received Date: 23-JUN-17
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 27-JUN-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		106.	%				
2,5-Dibromotoluene (PID)		97.8	%				

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM
Lab File ID : 2KF10265.D
Instrument ID : GC02

SDG : SK5423
Lab Sample ID : WG207996-1
Date Analyzed : 26-JUN-17
Time Analyzed : 10:13
Date Extracted : 26-JUN-17

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	WG207996-2	2KF10266.D	06/26/17	10:54
Laboratory Control S	WG207996-3	2KF10267.D	06/26/17	11:35
TRIP BLANK	SK5423-5	2KF10273.D	06/26/17	17:40
LFM-99-02B-SPR17	SK5423-1	2KF10277.D	06/26/17	20:23
LFM-99-05A-SPR17	SK5423-2	2KF10278.D	06/26/17	21:03
LFM-DUP01-SPR17	SK5423-3	2KF10279.D	06/26/17	21:44
LFM-99-06A RP-SPR17	SK5423-4	2KF10280.D	06/26/17	22:25
Matrix Spike	WG207996-4	2KF10287.D	06/27/17	03:13
Matrix Spike Duplica	WG207996-5	2KF10288.D	06/27/17	03:54

Report of Analytical Results

Client:
Lab ID: WG207996-1
Client ID: Method Blank Sample
Project:
SDG: SK5423
Lab File ID: 2KF10265.D

Sample Date:
Received Date:
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 27-JUN-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		102.	%				
2,5-Dibromotoluene (PID)		94.2	%				

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LCS/LCSD Recovery Report

LCS ID: WG207996-2
LCSD ID: WG207996-3
Project:
SDG: SK5423
Report Date: 27-JUN-17
LCS File ID: 2KF10266.D

Received Date:
Extract Date: 26-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996
LCSD File ID: 2KF10267.D

Analysis Date: 26-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	342.	114.	343.	114.	ug/L	0	25	70-130
C9-C12 Aliphatics	200.	217.	108.	214.	107.	ug/L	1	25	70-130
C9-C10 Aromatics	100.	103.	103.	104.	104.	ug/L	1	25	70-130
Benzene	100.	101.	101.	101.	101.	ug/L	0	25	70-130
Ethylbenzene	100.	99.2	99.2	99.3	99.3	ug/L	0	25	70-130
Methyl tert-butylether	100.	101.	101.	104.	104.	ug/L	3	25	70-130
Naphthalene	100.	95.7	95.7	96.5	96.5	ug/L	1	25	70-130
Toluene	100.	100.	100.	100.	100.	ug/L	0	25	70-130
m+p-Xylenes	200.	199.	99.5	199.	99.5	ug/L	0	25	70-130
o-Xylene	100.	100.	100.	101.	101.	ug/L	1	25	70-130
2,5-Dibromotoluene (FID)			85.8		87.5				70-130
2,5-Dibromotoluene (PID)			80.6		82.1				70-130

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MS/MSD Recovery Report

MS ID: WG207996-4
MSD ID: WG207996-5
Sample ID: SK5423-4
Client ID: LFM-99-06A RP-SPR17
Project:
SDG: SK5423
MS File ID: 2KF10287.D

Received Date:
Extract Date: 27-JUN-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG207996
Report Date: 27-JUN-17
MSD File ID: 2KF10288.D

Analysis Date: 27-JUN-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	300.	ug/L	U100	360	310	120.	103.	15	50	70-130
C9-C12 Aliphatics	200.	200.	ug/L	U100	202	181	101.	90.5	11	50	70-130
C9-C10 Aromatics	100.	100.	ug/L	U100	108	110	108.	110.	2	50	70-130
Benzene	100.	100.	ug/L	U3.0	108	109	108.	109.	1	50	70-130
Ethylbenzene	100.	100.	ug/L	U5.0	105	106	105.	106.	1	50	70-130
Methyl tert-butylether	100.	100.	ug/L	U5.0	104	105	104.	105.	1	50	70-130
Naphthalene	100.	100.	ug/L	U5.0	105	107	105.	107.	2	50	70-130
Toluene	100.	100.	ug/L	U5.0	106	108	106.	108.	2	50	70-130
m+p-Xylenes	200.	200.	ug/L	U10	210	214	105.	107.	2	50	70-130
o-Xylene	100.	100.	ug/L	U5.0	105	107	105.	107.	2	50	70-130
2,5-Dibromotoluene (FID)							92.5	94.8			70-130
2,5-Dibromotoluene (PID)							86.7	88.7			70-130

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Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Koman GS	KAS PM: HHM	Sampled By: Client
Project:	KIMS Entry By: SO	Delivered By: FedEX
KAS Work Order#: -SK5423	KIMS Review By: HHM	Received By: SD
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 06-23 0915

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): 5.7
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
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 (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
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.

360325-Boston 360325-Boston 360325-Boston 360325-Boston

Chain of Custody Record

Page: 1 of: 1

PO #	17-636
	Devens - DCL 1024-003
Company	KOMAN GS, LLC
Address:	160 East Main Street, Suite 2F, Westborough, MA
Phone:	508-366-7442 Fax: 508-366-7445
Sampled by [Print Name(s)]/Affilliation	Kevin G. Anderson
Sampler(s) Signature(s)	SK5423

Laboratory: Test America - Savannah
Address:
Contact: Jerry Lanier
Regulatory Facility No.
Project Name: Devens Spring 2017 LTM
Sampling QAP No.:
Approval Date:
TAT: Routine
Other:

Preservatives (see codes): H H I N O I S I I S

Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40-ml VOA vials (HCl)	MA EPH 2-1liter amber glass(HCl)	Pesticides/SW8081 2-1liter amber glass	Total Metals* (SW6010/6020/7470) 1-250 ml poly (HNO3)	Total Cyanide/SW9012 1-250ml poly (NaOH)	Chloride/Sulfate (SW9056) 1-125ml poly	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4)	Alkalinity/SM2320B 1-250-ml poly	TDS/SM2540D 1-1liter poly	COD/SW9060 1-500-ml amber glass (H2SO4)	Remarks	Lab. No.
	LFM-99-02B-SPR17	6/22/17	1200	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~MS/MSD~~ N/A	
	LFM-99-05A-SPR17	6/22/17	900	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	LFM-DUP01-SPR17	6/22/17	905	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	LFM-99-06A RP-SPR17	6/21/17	955	P	GW	42	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	MS/MSD	
	~~LFM-03-07-SPR17 *~~	N/A		P	GW													
				P	GW													
	Trip Blank	—	—	O	O		X											

Shipping Details: courier pick up — 0 ← Total Number of Containers

Date Out: Via:
Returned: Via:

Additional Comments:
* = Total Metals include: Ba, Cd, Ca, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)

Item No.	Relinquished by/Affiliation	Date	Time		Date	Time
		6/22/17	1423		6/23/17	14:23
		6/22/17	15:45			
	Samuel Dimond	6-23-17	0915			

email logins and results to:
lekes@komangs.com

Lab Comments
SK 5423

Preserve Where Applicable ☐
On ICE ☐
Temperature _____C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info
☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater SE = Sediment SP = Soil SW = Surface Water O = Other
PRESERVATIVE CODES H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other
COLLECTION METHOD C = Composite G=Grab P= Pumping O = Other

Katahdin Analytical Services SK5423 page 0000030 of 0000032

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Jun. 26, 2017
01:33 PM

Login Number: SK5423

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Quote/Incoming:

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:

Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	DOD QSM 4.2 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	680-140237
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	W912WJ-10-D-0003
COOLER TEMPERATURE	:	5.7
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS033QC-XLS
LOGIN INITIALS	:	SO
PM	:	HHM
PROJECT NAME	:	Devens Spring 2017 LTM
QC LEVEL	:	II
REPORT INSTRUCTIONS	:	Email PDF, EDD files and invoice to Jerry. No HC. Include Level 4 narrative and MCP forms.
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SK5423-1	LFM-99-02B-SPR17	22-JUN-17 12:00	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	06-JUL-17	1L N-Amber Glass		
Aqueous	S	MA-VPH	06-JUL-17	40mL Vial+HCl		

SK5423-2	LFM-99-05A-SPR17	22-JUN-17 09:00	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	06-JUL-17	1L N-Amber Glass		
Aqueous	S	MA-VPH	06-JUL-17	40mL Vial+HCl		

SK5423-3	LFM-DUP01-SPR17	22-JUN-17 09:05	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	06-JUL-17	1L N-Amber Glass		
Aqueous	S	MA-VPH	06-JUL-17	40mL Vial+HCl		

SK5423-4	LFM-99-06A RP-SPR17	21-JUN-17 09:55	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	05-JUL-17	1L N-Amber Glass		**MS/MSD**
Aqueous	S	MA-VPH	05-JUL-17	40mL Vial+HCl		

SK5423-5	TRIP BLANK	22-JUN-17 00:00	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	06-JUL-17	40mL Vial+HCl		

SK5423-6	MS CHARGE	21-JUN-17 09:55	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Service	S	CLIENT-CHARGE				**charge for MS for EPH & VPH**

SK5423-7	MSD CHARGE	21-JUN-17 09:55	23-JUN-17			05-JUL-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Service	S	CLIENT-CHARGE				**charge for MSD for EPH & VPH**

AMH 6/26/17

Login Number: SK5423

Quote/Incoming:

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed

Total Samples: *7* ***Total Analyses:*** *11*

AMH 6/26/17

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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

TestAmerica Job ID: 680-141617-1
Client Project/Site: Devens Spring 2017 LTM
Revision: 1

For:
KOMAN Government Solutions, LLC
160 East Main St
Suite 2F
Westborough, Massachusetts 01581

Attn: Laurie Ekes



Authorized for release by:
8/16/2017 5:38:49 PM

Jerry Lanier, Project Manager I
(912)354-7858 e.3410
jerry.lanier@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

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

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

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

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Job ID: 680-141617-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: Devens Spring 2017 LTM

Report Number: 680-141617-1

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

RECEIPT

The samples were received on 08/02/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.4 C.

PESTICIDES AND PCBS

Sample LFM-03-07-SPR17 (680-141617-1) was analyzed for Pesticides and PCBs in accordance with EPA SW-846 Method 8081B_8082A. The samples were prepared on 08/03/2017 and analyzed on 08/04/2017.

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

METALS (ICP)

Sample LFM-03-07-SPR17 (680-141617-1) was analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/07/2017 and analyzed on 08/08/2017.

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

METALS

Sample LFM-03-07-SPR17 (680-141617-1) was analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 08/07/2017 and analyzed on 08/08/2017.

The interference check standard solution (ICSA) associated with batch 680-490813 had results for one or more elements at a level greater than 2 times the limit of detection (LOD).

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

MERCURY

Sample LFM-03-07-SPR17 (680-141617-1) was analyzed for mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 08/02/2017 and analyzed on 08/03/2017.

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

ALKALINITY

Sample LFM-03-07-SPR17 (680-141617-1) was analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 08/09/2017.

The method blank for method 2320B analytical batch 280-383785 contained alkalinity above the method detection limit (MDL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

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

Job ID: 680-141617-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

TOTAL DISSOLVED SOLIDS

Sample LFM-03-07-SPR17 (680-141617-1) was analyzed for total dissolved solids in accordance with SM 2540C. The samples were analyzed on 08/07/2017.

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

NITRATE-NITRITE AS NITROGEN

Sample LFM-03-07-SPR17 (680-141617-1) was analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 08/02/2017.

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

CHEMICAL OXYGEN DEMAND

Sample LFM-03-07-SPR17 (680-141617-1) was analyzed for chemical oxygen demand in accordance with EPA Method 410.4. The samples were analyzed on 08/10/2017.

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

CYANIDE

Sample LFM-03-07-SPR17 (680-141617-1) was analyzed for cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared and analyzed on 08/03/2017.

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

9056 ANIONS

Sample LFM-03-07-SPR17 (680-141617-1) was analyzed for 9056 Anions in accordance with SW 846 9056. The samples were analyzed on 08/08/2017.

Sample LFM-03-07-SPR17 (680-141617-1)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

TOTAL ORGANIC CARBON

Sample LFM-03-07-SPR17 (680-141617-1) was analyzed for total organic carbon in accordance with EPA SW-846 Method 9060A. The samples were analyzed on 08/07/2017.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens Spring 2017 LTM

TestAmerica Job ID: 680-141617-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-141617-1	LFM-03-07-SPR17	Water	08/01/17 09:30	08/02/17 09:10
680-141617-2	Trip Blank	Water	08/01/17 00:00	08/02/17 09:10

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens Spring 2017 LTM

TestAmerica Job ID: 680-141617-1

Method	Method Description	Protocol	Laboratory
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	TAL SAV
9056A	Anions, Ion Chromatography	SW846	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL DEN
410.4	COD	MCAWW	TAL DEN
9012B	Cyanide, Total and/or Amenable	EPA	TAL SAV
9060A	Organic Carbon, Total (TOC)	SW846	TAL DEN
SM 2320B	Alkalinity	SM	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
MA EPH	MADEP EPH (Extractable Petroleum Hydroca	NONE	
MA VPH	MADEP VPH Volatile Petroleum Hydrocarbon	NONE	

Protocol References:

EPA = US Environmental Protection Agency

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

NONE = NONE

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

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

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

HPLC/IC

Qualifier	Qualifier Description
D	The reported value is from a dilution.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
B	Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

Glossary

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

Client Sample ID: LFM-03-07-SPR17
Date Collected: 08/01/17 09:30
Date Received: 08/02/17 09:10

Lab Sample ID: 680-141617-1
Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.017	U	0.048	0.017	0.0069	ug/L		08/04/17 16:22	1
alpha-BHC	0.0096	U	0.048	0.0096	0.0032	ug/L		08/04/17 16:22	1
beta-BHC	0.017	U	0.048	0.017	0.0087	ug/L		08/04/17 16:22	1
Chlordane (technical)	0.29	U	0.48	0.29	0.091	ug/L		08/04/17 16:22	1
4,4'-DDD	0.0096	U	0.048	0.0096	0.0060	ug/L		08/04/17 16:22	1
4,4'-DDE	0.0096	U	0.048	0.0096	0.0049	ug/L		08/04/17 16:22	1
4,4'-DDT	0.017	U	0.048	0.017	0.0067	ug/L		08/04/17 16:22	1
delta-BHC	0.017	U	0.048	0.017	0.0072	ug/L		08/04/17 16:22	1
Dieldrin	0.0096	U	0.048	0.0096	0.0036	ug/L		08/04/17 16:22	1
Endosulfan I	0.0096	U	0.048	0.0096	0.0033	ug/L		08/04/17 16:22	1
Endosulfan II	0.0096	U	0.048	0.0096	0.0040	ug/L		08/04/17 16:22	1
Endosulfan sulfate	0.0096	U	0.048	0.0096	0.0049	ug/L		08/04/17 16:22	1
Endrin	0.0096	U	0.048	0.0096	0.0051	ug/L		08/04/17 16:22	1
Endrin aldehyde	0.0096	U	0.048	0.0096	0.0058	ug/L		08/04/17 16:22	1
Endrin ketone	0.0096	U	0.048	0.0096	0.0044	ug/L		08/04/17 16:22	1
gamma-BHC (Lindane)	0.0096	U	0.048	0.0096	0.0034	ug/L		08/04/17 16:22	1
Heptachlor	0.017	U	0.048	0.017	0.0068	ug/L		08/04/17 16:22	1
Heptachlor epoxide	0.0096	U	0.048	0.0096	0.0035	ug/L		08/04/17 16:22	1
Methoxychlor	0.017	U	0.048	0.017	0.0094	ug/L		08/04/17 16:22	1
Toxaphene	0.76	U	4.8	0.76	0.38	ug/L		08/04/17 16:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*75*		*14 - 130*	*08/03/17 12:14*	*08/04/17 16:22*	*1*
Tetrachloro-m-xylene	*64*		*44 - 124*	*08/03/17 12:14*	*08/04/17 16:22*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**380**	**D**	5.0	5.0	2.0	mg/L		08/08/17 19:19	10
Sulfate	**22**	**D**	10	10	4.0	mg/L		08/08/17 19:19	10

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**77**		10	5.0	1.7	ug/L		08/08/17 18:11	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		08/08/17 18:11	1
Calcium	**2500**		500	75	25	ug/L		08/08/17 18:11	1
Chromium	4.0	U	10	4.0	1.6	ug/L		08/08/17 18:11	1
Copper	5.0	U	20	5.0	1.8	ug/L		08/08/17 18:11	1
Iron	**1900**		50	50	17	ug/L		08/08/17 18:11	1
Lead	10	U	10	10	3.9	ug/L		08/08/17 18:11	1
Manganese	**110**		10	3.0	1.0	ug/L		08/08/17 18:11	1
Selenium	20	U	20	20	9.9	ug/L		08/08/17 18:11	1
Silver	1.5	U	10	1.5	0.60	ug/L		08/08/17 18:11	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		08/08/17 21:56	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		08/03/17 14:30	1

Client: KOMAN Government Solutions, LLC
Project/Site: Devens Spring 2017 LTM

TestAmerica Job ID: 680-141617-1

Client Sample ID: LFM-03-07-SPR17
Date Collected: 08/01/17 09:30
Date Received: 08/02/17 09:10

Lab Sample ID: 680-141617-1
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	1.7		0.10	0.050	0.019	mg/L		08/02/17 20:43	1
Chemical Oxygen Demand	7.5	J	20	10	4.1	mg/L		08/10/17 09:36	1
Cyanide, Total	0.0033	J Q	0.010	0.0050	0.0025	mg/L		08/03/17 11:28	1
Total Organic Carbon - Duplicates	0.90	J	1.0	0.50	0.16	mg/L		08/07/17 16:58	1
Alkalinity	96	B	5.0	3.2	1.1	mg/L		08/09/17 15:30	1
Total Dissolved Solids (TDS)	860		10	10	4.7	mg/L		08/07/17 08:05	1

Surrogate Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens Spring 2017 LTM

TestAmerica Job ID: 680-141617-1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)									
		DCB1	TCX1								
Lab Sample ID	Client Sample ID	(14-130)	(44-124)								
680-141617-1	LFM-03-07-SPR17	75	64								
LCS 680-490132/6-A	Lab Control Sample	81	63								
MB 680-490132/5-A	Method Blank	77	60								

Surrogate Legend

DCB = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-490132/5-A
Matrix: Water
Analysis Batch: 490325

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 490132

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.018	U	0.050	0.018	0.0072	ug/L		08/04/17 14:55	1
alpha-BHC	0.010	U	0.050	0.010	0.0034	ug/L		08/04/17 14:55	1
beta-BHC	0.018	U	0.050	0.018	0.0091	ug/L		08/04/17 14:55	1
Chlordane (technical)	0.30	U	0.50	0.30	0.095	ug/L		08/04/17 14:55	1
4,4'-DDD	0.010	U	0.050	0.010	0.0063	ug/L		08/04/17 14:55	1
4,4'-DDE	0.010	U	0.050	0.010	0.0051	ug/L		08/04/17 14:55	1
4,4'-DDT	0.018	U	0.050	0.018	0.0070	ug/L		08/04/17 14:55	1
delta-BHC	0.018	U	0.050	0.018	0.0075	ug/L		08/04/17 14:55	1
Dieldrin	0.010	U	0.050	0.010	0.0038	ug/L		08/04/17 14:55	1
Endosulfan I	0.010	U	0.050	0.010	0.0035	ug/L		08/04/17 14:55	1
Endosulfan II	0.010	U	0.050	0.010	0.0042	ug/L		08/04/17 14:55	1
Endosulfan sulfate	0.010	U	0.050	0.010	0.0051	ug/L		08/04/17 14:55	1
Endrin	0.010	U	0.050	0.010	0.0053	ug/L		08/04/17 14:55	1
Endrin aldehyde	0.010	U	0.050	0.010	0.0061	ug/L		08/04/17 14:55	1
Endrin ketone	0.010	U	0.050	0.010	0.0046	ug/L		08/04/17 14:55	1
gamma-BHC (Lindane)	0.010	U	0.050	0.010	0.0036	ug/L		08/04/17 14:55	1
Heptachlor	0.018	U	0.050	0.018	0.0071	ug/L		08/04/17 14:55	1
Heptachlor epoxide	0.010	U	0.050	0.010	0.0037	ug/L		08/04/17 14:55	1
Methoxychlor	0.018	U	0.050	0.018	0.0098	ug/L		08/04/17 14:55	1
Toxaphene	0.80	U	5.0	0.80	0.40	ug/L		08/04/17 14:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*77*		*14 - 130*	*08/03/17 12:14*	*08/04/17 14:55*	*1*
Tetrachloro-m-xylene	*60*		*44 - 124*	*08/03/17 12:14*	*08/04/17 14:55*	*1*

Lab Sample ID: LCS 680-490132/6-A
Matrix: Water
Analysis Batch: 490325

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 490132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.100	0.0716		ug/L		72	45 - 134
alpha-BHC	0.100	0.0789		ug/L		79	54 - 138
beta-BHC	0.100	0.0938		ug/L		94	56 - 136
4,4'-DDD	0.100	0.102		ug/L		102	56 - 143
4,4'-DDE	0.100	0.0865		ug/L		87	57 - 135
4,4'-DDT	0.100	0.0986		ug/L		99	51 - 143
delta-BHC	0.100	0.0844		ug/L		84	52 - 142
Dieldrin	0.100	0.0978		ug/L		98	60 - 136
Endosulfan I	0.100	0.0973		ug/L		97	62 - 126
Endosulfan II	0.100	0.0916		ug/L		92	52 - 135
Endosulfan sulfate	0.100	0.0945		ug/L		95	62 - 133
Endrin	0.100	0.0832		ug/L		83	60 - 138
Endrin aldehyde	0.100	0.109		ug/L		109	51 - 132
Endrin ketone	0.100	0.0927		ug/L		93	58 - 134
gamma-BHC (Lindane)	0.100	0.0787		ug/L		79	59 - 134
Heptachlor	0.100	0.0708		ug/L		71	54 - 130
Heptachlor epoxide	0.100	0.0843		ug/L		84	61 - 133
Methoxychlor	0.100	0.104		ug/L		104	54 - 145

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	81		14 - 130
Tetrachloro-m-xylene	63		44 - 124

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 680-490671/35
Matrix: Water
Analysis Batch: 490671

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	0.50	U	0.50	0.50	0.20	mg/L		08/08/17 18:27	1
Sulfate	1.0	U	1.0	1.0	0.40	mg/L		08/08/17 18:27	1

Lab Sample ID: LCS 680-490671/36
Matrix: Water
Analysis Batch: 490671

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.0		mg/L		100	90 - 110
Sulfate	10.0	9.13		mg/L		91	90 - 110

Lab Sample ID: LCSD 680-490671/37
Matrix: Water
Analysis Batch: 490671

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	10.0		mg/L		100	90 - 110	0	15
Sulfate	10.0	9.13		mg/L		91	90 - 110	0	15

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-490559/1-A
Matrix: Water
Analysis Batch: 490871

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 490559

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	5.0	U	10	5.0	1.7	ug/L		08/08/17 17:40	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		08/08/17 17:40	1
Calcium	75	U	500	75	25	ug/L		08/08/17 17:40	1
Chromium	4.0	U	10	4.0	1.6	ug/L		08/08/17 17:40	1
Copper	5.0	U	20	5.0	1.8	ug/L		08/08/17 17:40	1
Iron	50	U	50	50	17	ug/L		08/08/17 17:40	1
Lead	10	U	10	10	3.9	ug/L		08/08/17 17:40	1
Manganese	3.0	U	10	3.0	1.0	ug/L		08/08/17 17:40	1
Selenium	20	U	20	20	9.9	ug/L		08/08/17 17:40	1
Silver	1.5	U	10	1.5	0.60	ug/L		08/08/17 17:40	1

Lab Sample ID: LCS 680-490559/2-A
Matrix: Water
Analysis Batch: 490871

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 490559

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	100	106		ug/L		106	88 - 113
Cadmium	50.0	52.5		ug/L		105	88 - 113

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 680-490559/2-A
Matrix: Water
Analysis Batch: 490871

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 490559

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	5000	5490		ug/L		110	87 - 113
Chromium	100	108		ug/L		108	90 - 113
Copper	100	106		ug/L		106	86 - 114
Iron	5000	5200		ug/L		104	87 - 115
Lead	500	522		ug/L		104	86 - 113
Manganese	500	551		ug/L		110	90 - 114
Selenium	100	103		ug/L		103	83 - 114
Silver	50.0	53.3		ug/L		107	84 - 115

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-490554/1-A
Matrix: Water
Analysis Batch: 490813

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 490554

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		08/08/17 21:21	1

Lab Sample ID: LCS 680-490554/2-A
Matrix: Water
Analysis Batch: 490813

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 490554

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	102		ug/L		102	84 - 116

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-490088/1-A
Matrix: Water
Analysis Batch: 490240

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 490088

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		08/03/17 14:00	1

Lab Sample ID: LCS 680-490088/2-A
Matrix: Water
Analysis Batch: 490240

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 490088

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	2.50	2.50		ug/L		100	80 - 124

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 280-383000/66
Matrix: Water
Analysis Batch: 383000

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	0.050	U	0.10	0.050	0.019	mg/L		08/02/17 19:55	1

Lab Sample ID: LCS 280-383000/65
Matrix: Water
Analysis Batch: 383000

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate/Nitrite-N	5.00	5.00		mg/L		100	90 - 110

Method: 410.4 - COD

Lab Sample ID: MB 280-383824/5
Matrix: Water
Analysis Batch: 383824

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chemical Oxygen Demand	10	U	20	10	4.1	mg/L		08/10/17 09:36	1

Lab Sample ID: LCS 280-383824/3
Matrix: Water
Analysis Batch: 383824

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	100	105		mg/L		105	90 - 110

Lab Sample ID: LCSD 280-383824/4
Matrix: Water
Analysis Batch: 383824

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	100	103		mg/L		103	90 - 110	1	11

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-490106/1-A
Matrix: Water
Analysis Batch: 490182

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 490106

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		08/03/17 11:13	1

Lab Sample ID: LCS 680-490106/2-A
Matrix: Water
Analysis Batch: 490182

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 490106

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0500	0.0503		mg/L		101	83 - 116

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 280-383492/5
Matrix: Water
Analysis Batch: 383492

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	0.50	U	1.0	0.50	0.16	mg/L		08/07/17 12:43	1

Method: 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: LCS 280-383492/3
Matrix: Water
Analysis Batch: 383492

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	25.0	24.3		mg/L		97	88 - 112

Lab Sample ID: LCSD 280-383492/4
Matrix: Water
Analysis Batch: 383492

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Duplicates	25.0	24.7		mg/L		99	88 - 112	2	15

Lab Sample ID: MB 280-383493/5
Matrix: Water
Analysis Batch: 383493

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	0.50	U	1.0	0.50	0.16	mg/L		08/07/17 12:43	1

Lab Sample ID: LCS 280-383493/3
Matrix: Water
Analysis Batch: 383493

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	25.0	24.3		mg/L		97	88 - 112

Lab Sample ID: LCSD 280-383493/4
Matrix: Water
Analysis Batch: 383493

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Duplicates	25.0	24.7		mg/L		99	88 - 112	2	15

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-383785/33
Matrix: Water
Analysis Batch: 383785

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	2.68	J	5.0	3.2	1.1	mg/L		08/09/17 13:34	1

Lab Sample ID: LCS 280-383785/31
Matrix: Water
Analysis Batch: 383785

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	193		mg/L		96	90 - 110

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: LCSD 280-383785/32
Matrix: Water
Analysis Batch: 383785

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Alkalinity	200	195		mg/L		98	90 - 110	1	10

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-383355/1
Matrix: Water
Analysis Batch: 383355

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	10	U	10	10	4.7	mg/L		08/07/17 08:05	1

Lab Sample ID: LCS 280-383355/2
Matrix: Water
Analysis Batch: 383355

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	500		mg/L		100	86 - 110

Lab Sample ID: LCSD 280-383355/3
Matrix: Water
Analysis Batch: 383355

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)	500	488		mg/L		98	86 - 110	2	20

GC Semi VOA

Prep Batch: 490132

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	3520C	
MB 680-490132/5-A	Method Blank	Total/NA	Water	3520C	
LCS 680-490132/6-A	Lab Control Sample	Total/NA	Water	3520C	

Analysis Batch: 490325

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	8081B 8082A	490132
MB 680-490132/5-A	Method Blank	Total/NA	Water	8081B 8082A	490132
LCS 680-490132/6-A	Lab Control Sample	Total/NA	Water	8081B 8082A	490132

HPLC/IC

Analysis Batch: 490671

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	9056A	
MB 680-490671/35	Method Blank	Total/NA	Water	9056A	
LCS 680-490671/36	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-490671/37	Lab Control Sample Dup	Total/NA	Water	9056A	

Metals

Prep Batch: 490088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	7470A	
MB 680-490088/1-A	Method Blank	Total/NA	Water	7470A	
LCS 680-490088/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 490240

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	7470A	490088
MB 680-490088/1-A	Method Blank	Total/NA	Water	7470A	490088
LCS 680-490088/2-A	Lab Control Sample	Total/NA	Water	7470A	490088

Prep Batch: 490554

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	3010A	
MB 680-490554/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-490554/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 490559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	3010A	
MB 680-490559/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-490559/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 490813

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	6020A	490554
MB 680-490554/1-A	Method Blank	Total/NA	Water	6020A	490554
LCS 680-490554/2-A	Lab Control Sample	Total/NA	Water	6020A	490554

Metals (Continued)

Analysis Batch: 490871

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	6010C	490559
MB 680-490559/1-A	Method Blank	Total/NA	Water	6010C	490559
LCS 680-490559/2-A	Lab Control Sample	Total/NA	Water	6010C	490559

General Chemistry

Analysis Batch: 383000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	353.2	
MB 280-383000/66	Method Blank	Total/NA	Water	353.2	
LCS 280-383000/65	Lab Control Sample	Total/NA	Water	353.2	

Analysis Batch: 383355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	SM 2540C	
MB 280-383355/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-383355/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-383355/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 383492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	9060A	
MB 280-383492/5	Method Blank	Total/NA	Water	9060A	
LCS 280-383492/3	Lab Control Sample	Total/NA	Water	9060A	
LCSD 280-383492/4	Lab Control Sample Dup	Total/NA	Water	9060A	

Analysis Batch: 383493

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-383493/5	Method Blank	Total/NA	Water	9060A	
LCS 280-383493/3	Lab Control Sample	Total/NA	Water	9060A	
LCSD 280-383493/4	Lab Control Sample Dup	Total/NA	Water	9060A	

Analysis Batch: 383785

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	SM 2320B	
MB 280-383785/33	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-383785/31	Lab Control Sample	Total/NA	Water	SM 2320B	
LCSD 280-383785/32	Lab Control Sample Dup	Total/NA	Water	SM 2320B	

Analysis Batch: 383824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	410.4	
MB 280-383824/5	Method Blank	Total/NA	Water	410.4	
LCS 280-383824/3	Lab Control Sample	Total/NA	Water	410.4	
LCSD 280-383824/4	Lab Control Sample Dup	Total/NA	Water	410.4	

Prep Batch: 490106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	9012B	
MB 680-490106/1-A	Method Blank	Total/NA	Water	9012B	

General Chemistry (Continued)

Prep Batch: 490106 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-490106/2-A	Lab Control Sample	Total/NA	Water	9012B	

Analysis Batch: 490182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141617-1	LFM-03-07-SPR17	Total/NA	Water	9012B	490106
MB 680-490106/1-A	Method Blank	Total/NA	Water	9012B	490106
LCS 680-490106/2-A	Lab Control Sample	Total/NA	Water	9012B	490106

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Devens Spring 2017 LTM

TestAmerica Job ID: 680-141617-1

Client Sample ID: LFM-03-07-SPR17
Date Collected: 08/01/17 09:30
Date Received: 08/02/17 09:10

Lab Sample ID: 680-141617-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1047.1 mL	10 mL	490132	08/03/17 12:14	CEW	TAL SAV
Total/NA	Analysis	8081B 8082A		1	1 mL	1.0 mL	490325	08/04/17 16:22	JCK	TAL SAV
	Instrument ID: CSGJ									
Total/NA	Analysis	9056A		10	5 mL	5 mL	490671	08/08/17 19:19	ALR	TAL SAV
	Instrument ID: CICK									
Total/NA	Prep	3010A			50 mL	50 mL	490559	08/07/17 14:32	BJB	TAL SAV
Total/NA	Analysis	6010C		1			490871	08/08/17 18:11	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	3010A			50 mL	250 mL	490554	08/07/17 14:32	BJB	TAL SAV
Total/NA	Analysis	6020A		1			490813	08/08/17 21:56	BJB	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	7470A			50 mL	50 mL	490088	08/02/17 16:09	NVF	TAL SAV
Total/NA	Analysis	7470A		1			490240	08/03/17 14:30	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	383000	08/02/17 20:43	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	383824	08/10/17 09:36	CCJ	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	490106	08/03/17 05:30	DAM	TAL SAV
Total/NA	Analysis	9012B		1			490182	08/03/17 11:28	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	9060A		1			383492	08/07/17 16:58	CCJ	TAL DEN
	Instrument ID: WC_SHI2									
Total/NA	Analysis	SM 2320B		1			383785	08/09/17 15:30	A1D	TAL DEN
	Instrument ID: WC_AT2									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	383355	08/07/17 08:05	JAP	TAL DEN
	Instrument ID: NOEQUIP									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
Sk5423-1, 2, 3, 4, 5

Matrices: Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B ✓	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1] *All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 07/10/2017

TEST AMERICA SAVANNAH
DEVENS SPRING 2017 LTM
680-141617-1
SK6816

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA, SAVANNAH
DEVENS SPRING 2017 LTM, 680-141617-1
SK6816

Sample Receipt

The following samples were received on August 03, 2017 and were logged in under Katahdin Analytical Services work order number SK6816 for a hardcopy due date of August 15, 2017.

KATAHDIN	TEST AMERICA SAVANNAH
Sample No.	Sample Identification
SK6816-1	LFM-03-07-SPR17
SK6816-2	TRIP BLANK

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. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order SK6816 were analyzed in accordance with the Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MADEP, May 2004, Revision 1.1, and/or Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

MA-EPH Analysis

There were no protocol deviations or observations noted by the organics laboratory staff for this analysis.

MA-VPH Analysis

There were no protocol deviations or observations noted by the organics laboratory staff for this analysis.

There were no other protocol deviations or observations noted by the organics laboratory staff.

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 the Quality Assurance Officer, or their designee, as verified by the following signature.

K Brewer for L. Dimond 08/15/17

Leslie Dimond
Quality Assurance Officer

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.

Katahdin Analytical Services, LLC. Sample Receipt Condition Report

Client: Koman GS LLC	KAS PM: HHM	Sampled By: Client
Project:	KIMS Entry By: SD	Delivered By: FedEx
KAS Work Order#: - 5K6816	KIMS Review By: AMH	Received By: SD
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 08-03 0910

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): - 2.7
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
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 (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
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.

360325-Boston 360325-Boston 360325-Boston 360325-Boston

Chain of Custody Record

Page: 1 of: 1

PO #	17-636	Devens - DCL 1024-003
Company	KOMAN GS, LLC	
Address:	160 East Main Street, Suite 2F Westborough, MA	
Phone:	508-366-7442 Fax: 508-366-7445	
Sampled by [Print Name(s)]/Affiliation	Ryan G. Anderson	
Sampler(s) Signature(s)	SK6816	

Laboratory: Test America - Savannah
Address:
Contact: Jerry Lanier
Regulatory Facility No.
Project Name: Devens Spring 2017 LTM
Sampling QAP No.:
Approval Date:
TAT: Routine
Other:

Preservatives (see codes): H | H | I | N | O | I | S | I | I | S

Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40-ml VOA vials (HCl)	MA EPH 2-1liter amber glass(HCl)	Pesticides/SW8081 2-1liter amber glass	Total Metals* (SW6010/6020/7470) 1-250 ml poly (HNO3)	Total Cyanide/SW9012 1-250ml poly (NaOH)	Chloride/Sulfate (SW9056) 1-125ml poly	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4)	Alkalinity/SM2320B 1-250-ml poly	TDS/SM2540D 1-1liter poly	COD/SW9060 1-500-ml amber glass (H2SO4)	Remarks	Lab. No
	LFM-03-07-SPR17 *	8/1/17	930	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
				P	GW													
	Trip Blank	MA		O	O	2	X											

Total Number of Containers: 0

Shipping Details: courier pick up

Date Out: Via:
Returned: Via:

Additional Comments:
* = Total Metals include: Ba, Cd, Ca, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)

Item No.	Relinquished by/Affiliation	Date	Time	Date	Time
		8/1/17	1334	8/1/17	1335
		8-2-17	0900		
		8-3-17	0900		

email logins and results to:
lekes@komangs.com

Lab Comments
SK6816

Preserve Where Applicable ☐
On ICE ☐

Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info
☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater; SE = Sediment; SP = Soil; SW = Surface Water; O = Other
PRESERVATIVE CODES H = HCL + Ice; I = Ice Only; N = Nitric Acid + Ice; S = Sulfuric Acid + Ice; M = Methanol; O = Other
COLLECTION METHOD C = Composite; G=Grab; P= Pumping; O = Other

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Aug. 03, 2017
05:48 PM

Login Number: SK6816

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Quote/Incoming:

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 4.2 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	680-141617-1
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	W912WJ-10-D-0003
COOLER TEMPERATURE	:	2.7
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS033QC-XLS
LOGIN INITIALS	:	SO
PM	:	HHM
PROJECT NAME	:	Devens Spring 2017 LTM, 680-141617-1
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	Sample data summary needs all forms. Email PDF, EDD files and invoice to Jerry. No HC. Include Level 4 narrative and MCP forms. Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS.

Laboratory Sample ID	Client Sample Number	Collect Date/Time	SDG ID / SDG STATUS / VERBAL TAT	Receive Date	PR	Verbal Date	Due Date	Mailed
SK6816-1	LFM-03-07-SPR17	01-AUG-17 09:30		03-AUG-17			15-AUG-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	15-AUG-17	1L N-Amber Glass		
Aqueous	S	MA-VPH	15-AUG-17	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	SDG ID / SDG STATUS / VERBAL TAT	Receive Date	PR	Verbal Date	Due Date	Mailed
SK6816-2	TRIP BLANK	01-AUG-17 09:30		03-AUG-17			15-AUG-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	15-AUG-17	40mL Vial+HCl		

Total Samples: **2** ***Total Analyses:*** **3**

AMH 8/3/17

SAMPLE DATA SUMMARY PACKAGE

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KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U — Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* — Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D — Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E — Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J — Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J — Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B — Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C — Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L — Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M — Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N — Presumptive evidence of a compound based on a mass spectral library search.

A — Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P — Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK6816-1
Client ID: LFM-03-07-SPR17
Project: Devens Spring 2017 LTM, 680-141617-
SDG: SK6816
Lab File ID: CKH2114.D

Sample Date: 01-AUG-17
Received Date: 03-AUG-17
Extract Date: 03-AUG-17
Extracted By: KF
Extraction Method: SW846 3510C
Lab Prep Batch: WG210706

Analysis Date: 07-AUG-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 14-AUG-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C19-C36 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C11-C22 Aromatics	U	94	ug/L	1	100	94.	47.	71.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.85	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.94	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		53.7	%					
o-Terphenyl		53.8	%					
2-Fluorobiphenyl		63.2	%					
2-Bromonaphthalene		65.2	%					

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Report of Analytical Results

Client:
Lab ID: WG210706-1
Client ID: Method Blank Sample
Project:
SDG: SK6816
Lab File ID: CKH2104.D

Sample Date:
Received Date:
Extract Date: 03-AUG-17
Extracted By: KF
Extraction Method: SW846 3510C
Lab Prep Batch: WG210706

Analysis Date: 07-AUG-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 14-AUG-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		63.1	%					
o-Terphenyl		62.4	%					
2-Fluorobiphenyl		72.0	%					
2-Bromonaphthalene		73.8	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Devens Spring 2017 LTM, 680-141617-1 **Matrix:** AQ
Lab Code: KAS **SDG:** SK6816

Client Sample ID	Lab Sample ID	Col. ID	2BN	#	2FBP	#	5AA	#	OTP	#
LFM-03-07-SPR17	SK6816-1	B	65.2		63.2		53.7		53.8	
Method Blank Sample	WG210706-1	B	73.8		72.0		63.1		62.4	
Laboratory Control S	WG210706-2	B	80.7		75.3		72.3		72.2	
Laboratory Control S	WG210706-3	B	75.2		71.9		69.1		66.2	

		QC Limits
OTP	O-TERPHENYL	40-140
5AA	5-ALPHA ANDROSTANE	40-140
2FBP	2-FLUOROBIPHENYL	40-140
2BN	2-BROMONAPHTHALENE	40-140

= 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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LCS/LCSD Recovery Report

LCS ID: WG210706-2
LCSD ID: WG210706-3
Project:
SDG: SK6816
Report Date: 14-AUG-17
LCS File ID: CKH2105.D

Received Date:
Extract Date: 03-AUG-17
Extracted By: KF
Extraction Method: SW846 3510C
Lab Prep Batch: WG210706
LCSD File ID: CKH2106.d

Analysis Date: 07-AUG-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	1180	77.1	1100	71.9	ug/L	7	25	40-140
C9-C18 Aliphatics	540.	250.	46.3	313.	58.0	ug/L	22	25	40-140
C19-C36 Aliphatics	720.	620.	86.1	587.	81.5	ug/L	5	25	40-140
Naphthalene	90.0	56.4	62.7	54.3	60.3	ug/L	4	25	40-140
2-Methylnaphthalene	90.0	62.6	69.6	59.7	66.3	ug/L	5	25	40-140
Phenanthrene	90.0	62.7	69.7	58.4	64.9	ug/L	7	25	40-140
Acenaphthylene	90.0	57.4	63.8	53.5	59.4	ug/L	7	25	40-140
Acenaphthene	90.0	56.6	62.9	52.4	58.2	ug/L	8	25	40-140
Anthracene	90.0	70.1	77.9	64.8	72.0	ug/L	8	25	40-140
Benzo(a)anthracene	90.0	73.1	81.2	67.4	74.9	ug/L	8	25	40-140
Benzo(a)pyrene	90.0	78.0	86.7	72.1	80.1	ug/L	8	25	40-140
Benzo(b)fluoranthene	90.0	74.1	82.3	66.8	74.2	ug/L	10	25	40-140
Benzo(g,h,i)perylene	90.0	81.2	90.2	73.6	81.8	ug/L	10	25	40-140
Benzo(k)fluoranthene	90.0	74.7	83.0	69.8	77.6	ug/L	7	25	40-140
Chrysene	90.0	76.4	84.9	70.8	78.7	ug/L	8	25	40-140
Dibenzo(a,h)anthracene	90.0	81.6	90.7	76.0	84.4	ug/L	7	25	40-140
Fluoranthene	90.0	71.5	79.4	66.3	73.7	ug/L	8	25	40-140
Fluorene	90.0	57.8	64.2	53.1	59.0	ug/L	8	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	65.8	73.1	59.1	65.7	ug/L	11	25	40-140
Pyrene	90.0	71.4	79.3	66.1	73.4	ug/L	8	25	40-140
5-Alpha Androstane			72.3		69.1				40-140
o-Terphenyl			72.2		66.2				40-140
2-Fluorobiphenyl			75.3		71.9				40-140
2-Bromonaphthalene			80.7		75.2				40-140

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-141617-1
Lab File ID : CKH1104.D
Instrument ID : GC12

SDG : SK6816
Lab Sample ID : WG210706-1
Date Analyzed : 07-AUG-17
Time Analyzed : 16:20
Date Extracted : 03-AUG-17

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	WG210706-2	CKH1105.I	08/07/17	17:06
Laboratory Control S	WG210706-3	CKH1106.I	08/07/17	17:51
LFM-03-07-SPR17	SK6816-1	CKH1114.I	08/07/17	23:54

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-141617-1
Lab File ID : CKH1104A.D
Instrument ID : GC12

SDG : SK6816
Lab Sample ID : WG210706-1
Date Analyzed : 07-AUG-17
Time Analyzed : 16:20
Date Extracted : 03-AUG-17

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	WG210706-2	CKH1105A	08/07/17	17:06
Laboratory Control S	WG210706-3	CKH1106A	08/07/17	17:51
LFM-03-07-SPR17	SK6816-1	CKH1114A	08/07/17	23:54

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-141617-1
Lab File ID : CKH2104.D
Instrument ID : GC12

SDG : SK6816
Lab Sample ID : WG210706-1
Date Analyzed : 07-AUG-17
Time Analyzed : 16:20
Date Extracted : 03-AUG-17

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	WG210706-2	CKH2105.I	08/07/17	17:06
Laboratory Control S	WG210706-3	CKH2106.I	08/07/17	17:51
LFM-03-07-SPR17	SK6816-1	CKH2114.I	08/07/17	23:54

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SK6816
Project : Devens Spring 2017 LTM, 680-141617-1 **Instrument ID:** GC12
Lab File IDs : CJL2042.d CJL2041.d CJL2040.d CJL2039.d CJL2038.d **Calibration Date(s):** 12-DEC-16 13:21 12-DEC-16 16:23

	Level 1 1.0000	Level 2 10.0000	Level 3 50.0000	Level 4 100.0000	Level 5 200.0000		Crv New	b	m1	m2	%RSD	Max %RSD	
C9-C18 Aliphatic	7526	7182	7357	7167	7368		AVG		7320		2.03259	25.00000	M (
C19-C36 Aliphatic	7220	7092	7302	7139	7317		AVG		7214		1.36770	25.00000	S O
C-9	7310	7150	7322	7139	7389		AVG		7262		1.53498	30.00000	O
C-10	7778	7150	7360	7200	7393		AVG		7376		3.35050	25.00000	O
C-12	7510	7184	7394	7207	7395		AVG		7338		1.88894	25.00000	O
C-14	7462	7209	7358	7149	7332		AVG		7302		1.69941	25.00000	O
C-16	7420	7200	7387	7182	7367		AVG		7311		1.52920	25.00000	O
C-18	7673	7197	7318	7122	7329		AVG		7328		2.88483	25.00000	O
C-19	7548	7230	7430	7235	7417		AVG		7372		1.86151	25.00000	O
C-20	7386	7150	7360	7176	7361		AVG		7287		1.56168	25.00000	O
C-22	7434	7222	7396	7200	7377		AVG		7326		1.46069	25.00000	O
C-24	7191	6900	7069	6922	7097		AVG		7036		1.74718	25.00000	O
C-26	7371	7294	7464	7287	7479		AVG		7379		1.23021	25.00000	O
C-28	7546	7210	7370	7194	7367		AVG		7337		1.95633	25.00000	O
C-30	7146	7215	7425	7258	7431		AVG		7295		1.75430	25.00000	O
C-36	6136	6516	6901	6839	7008		AVG		6680		5.31606	25.00000	O
5-alpha androstane	7350	7308	7557	7362	7557		AVG		7427		1.62567	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SK6816
Project : Devens Spring 2017 LTM, 680-141617-1 **Instrument ID:** GC12
Lab File IDs : CKA1165.d CKA1164.d CKA1163.d CKA1162.d CKA1161.d **Calibration Date(s):** 27-JAN-17 08:52 27-JAN-17 11:55

	Level 1 1.0000	Level 2 10.0000	Level 3 50.0000	Level 4 100.0000	Level 5 200.0000		Crv New	b	m1	m2	%RSD	Max %RSD	
Unadjusted C11-C22 Aromatic	9604	10055	10742	10680	10816		AVG		10379		5.09618	25.00000	M (
Naphthalene	9069	10177	10803	10769	10802		AVG		10324		7.26770	25.00000	O
2-Methylnaphthalene	8366	9250	9877	9833	9872		AVG		9439		6.94979	25.00000	O
Acenaphthylene	9940	9974	10583	10497	10520		AVG		10303		3.08087	25.00000	O
Acenaphthene	10183	10248	10912	10778	10818		AVG		10588		3.24959	25.00000	O
Fluorene	10793	10271	10803	10737	10774		AVG		10676		2.13416	25.00000	O
Phenanthrene	11041	10209	10813	10735	10785		AVG		10717		2.86411	25.00000	O
Anthracene	9100	10068	10667	10650	10721		AVG		10241		6.74935	25.00000	O
Fluoranthene	10303	10316	10868	10776	10823		AVG		10617		2.66160	25.00000	O
Pyrene	10782	10411	11079	10982	11032		AVG		10857		2.52045	25.00000	O
Benzo(a)Anthracene	9227	10336	10982	10886	10969		AVG		10480		7.15158	25.00000	O
Chrysene	9274	10263	10924	10851	10890		AVG		10440		6.76602	25.00000	O
Benzo(b)Fluoranthene	9692	11159	11927	11685	10160		AVG		10925		8.85541	25.00000	O
Benzo(k)Fluoranthene	9547	9676	10302	10336	11922		AVG		10357		9.12417	25.00000	O
Benzo(a)Pyrene	8318	9971	10694	10588	10678		AVG		10050		10.0783	25.00000	O
Indeno(1,2,3-cd)Pyrene	9301	10184	11660	12539	12267		AVG		11190		12.4639	25.00000	O
Dibenzo(a,h)Anthracene	9470	9270	9493	8636	10553		AVG		9484		7.28145	25.00000	O
Benzo(g,h,i)Perylene	8857	9158	10229	10285	10287		AVG		9763		7.15219	25.00000	O
2-Fluorobiphenyl	8915	9124	9699	9610	9692		AVG		9408		3.86923	25.00000	
2-Bromonaphthalene	4210	5999	6619	6568	6632		AVG		6005		17.2823	25.00000	
O-Terphenyl	12233	10214	10840	10690	10761		AVG		10947		6.93035	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-1
Lab ID : WG211084-1
Lab File ID : CKH1090.d
Initial Calibration Date(s): 01/27/17 08:52 01/27/17 11:55

SDG: SK6816
Analytical Date: 08/07/17 04:15
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	10324	9230	0.010	-10.59737	25.00000	Averaged
60	2-Methylnaphthalene	9439	8300	0.010	-12.07267	25.00000	Averaged
70	Phenanthrene	10717	8998	0.010	-16.03690	25.00000	Averaged
80	Acenaphthylene	10303	9060	0.010	-12.05810	25.00000	Averaged
90	Acenaphthene	10588	9364	0.010	-11.56054	25.00000	Averaged
100	Anthracene	10241	9179	0.010	-10.36907	25.00000	Averaged
110	Benzo(a)Anthracene	10480	9198	0.010	-12.23453	25.00000	Averaged
120	Benzo(a)Pyrene	10050	9186	0.010	-8.59273	25.00000	Averaged
130	Benzo(b)Fluoranthene	10925	10761	0.010	-1.49491	25.00000	Averaged
140	Benzo(g,h,i)Perylene	9763	9036	0.010	-7.45037	25.00000	Averaged
150	Benzo(k)Fluoranthene	10357	8284	0.010	-20.00851	25.00000	Averaged
160	Chrysene	10440	9518	0.010	-8.83448	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	9484	9263	0.010	-2.32755	25.00000	Averaged
180	Fluoranthene	10617	9370	0.010	-11.74956	25.00000	Averaged
190	Fluorene	10676	9154	0.010	-14.25281	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	11190	8658	0.010	-22.62618	25.00000	Averaged
210	Pyrene	10857	9593	0.010	-11.64161	25.00000	Averaged
4	2-Fluorobiphenyl	9408	7588	0.010	-19.34550	25.00000	Averaged
6	2-Bromonaphthalene	6005	5296	0.010	-11.81007	25.00000	Averaged
11	O-Terphenyl	10947	10065	0.010	-8.05914	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-1
Lab ID : WG211084-2
Lab File ID : CKH1120.d
Initial Calibration Date(s): 01/27/17 08:52 01/27/17 11:55

SDG: SK6816
Analytical Date: 08/08/17 06:07
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	10324	9116	0.010	-11.70276	25.00000	Averaged
60	2-Methylnaphthalene	9439	8259	0.010	-12.50257	25.00000	Averaged
70	Phenanthrene	10717	8901	0.010	-16.94316	25.00000	Averaged
80	Acenaphthylene	10303	8928	0.010	-13.34144	25.00000	Averaged
90	Acenaphthene	10588	9237	0.010	-12.75473	25.00000	Averaged
100	Anthracene	10241	9090	0.010	-11.23792	25.00000	Averaged
110	Benzo(a)Anthracene	10480	9191	0.010	-12.29865	25.00000	Averaged
120	Benzo(a)Pyrene	10050	9126	0.010	-9.19255	25.00000	Averaged
130	Benzo(b)Fluoranthene	10925	9817	0.010	-10.13380	25.00000	Averaged
140	Benzo(g,h,i)Perylene	9763	8984	0.010	-7.97766	25.00000	Averaged
150	Benzo(k)Fluoranthene	10357	9042	0.010	-12.68810	25.00000	Averaged
160	Chrysene	10440	9491	0.010	-9.09080	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	9484	9120	0.010	-3.83828	25.00000	Averaged
180	Fluoranthene	10617	9263	0.010	-12.75115	25.00000	Averaged
190	Fluorene	10676	9053	0.010	-15.19720	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	11190	8811	0.010	-21.26318	25.00000	Averaged
210	Pyrene	10857	9468	0.010	-12.79329	25.00000	Averaged
4	2-Fluorobiphenyl	9408	7632	0.010	-18.87569	25.00000	Averaged
6	2-Bromonaphthalene	6005	5205	0.010	-13.32703	25.00000	Averaged
11	O-Terphenyl	10947	9928	0.010	-9.31149	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-1
Lab ID : WG211084-3
Lab File ID : CKH2090.d
Initial Calibration Date(s): 12/12/16 13:21 12/12/16 16:23

SDG: SK6816
Analytical Date: 08/07/17 04:15
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7320	7816	0.010	6.78032	25.00000	Averaged
30	C19-C36 Aliphatic	7214	7759	0.010	7.56132	25.00000	Averaged
370	C-9	7262	7903	0.010	8.83269	30.00000	Averaged
380	C-10	7376	7896	0.010	7.04758	25.00000	Averaged
390	C-12	7338	7891	0.010	7.53262	25.00000	Averaged
400	C-14	7302	7772	0.010	6.43231	25.00000	Averaged
410	C-16	7311	7803	0.010	6.73424	25.00000	Averaged
420	C-18	7328	7630	0.010	4.11750	25.00000	Averaged
430	C-19	7372	7918	0.010	7.41007	25.00000	Averaged
440	C-20	7287	7781	0.010	6.78099	25.00000	Averaged
450	C-22	7326	7854	0.010	7.20652	25.00000	Averaged
460	C-24	7036	7814	0.010	11.06705	25.00000	Averaged
470	C-26	7379	7593	0.010	2.90264	25.00000	Averaged
480	C-28	7337	7777	0.010	5.99539	25.00000	Averaged
490	C-30	7295	7759	0.010	6.36516	25.00000	Averaged
500	C-36	6680	7578	0.010	13.44978	25.00000	Averaged
44	5-alpha androstane	7427	8103	0.010	9.10980	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-1
Lab ID : WG211084-4
Lab File ID : CKH2120.d
Initial Calibration Date(s): 12/12/16 13:21 12/12/16 16:23

SDG: SK6816
Analytical Date: 08/08/17 06:07
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7320	7971	0.010	8.89563	25.00000	Averaged
30	C19-C36 Aliphatic	7214	8002	0.010	10.92253	25.00000	Averaged
370	C-9	7262	8079	0.010	11.24689	30.00000	Averaged
380	C-10	7376	8021	0.010	8.74196	25.00000	Averaged
390	C-12	7338	8038	0.010	9.53831	25.00000	Averaged
400	C-14	7302	7917	0.010	8.41501	25.00000	Averaged
410	C-16	7311	7972	0.010	9.03844	25.00000	Averaged
420	C-18	7328	7798	0.010	6.41287	25.00000	Averaged
430	C-19	7372	8094	0.010	9.78849	25.00000	Averaged
440	C-20	7287	7913	0.010	8.59939	25.00000	Averaged
450	C-22	7326	8004	0.010	9.25513	25.00000	Averaged
460	C-24	7036	7968	0.010	13.24423	25.00000	Averaged
470	C-26	7379	7856	0.010	6.46407	25.00000	Averaged
480	C-28	7337	8024	0.010	9.35820	25.00000	Averaged
490	C-30	7295	8035	0.010	10.13647	25.00000	Averaged
500	C-36	6680	8122	0.010	21.59301	25.00000	Averaged
44	5-alpha androstane	7427	8235	0.010	10.88715	25.00000	Averaged

*** = Compound out of QC criteria**

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://katahdinlab.com
sales@katahdinlab.com
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Katahdin Analytical Services A0000015
8/16/2017 (Rev 1)

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV001 SDG No.: SK6816

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 12/12/16 12/12/16

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.87

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG196528-11	12/12/16	1321	16.91	
02		WG196528-10	12/12/16	1406	16.89	
03		WG196528-9	12/12/16	1452	16.88	
04		WG196528-8	12/12/16	1537	16.87	
05		WG196528-7	12/12/16	1623	16.87	
06		WG196528-12	12/12/16	1752		
07		WG211084-3	08/07/17	0415	16.77	
08	WG210706-BLA	WG210706-1	08/07/17	1620	16.76	
09	WG210706-LCS	WG210706-2	08/07/17	1706	16.76	
10	WG210706-LCS	WG210706-3	08/07/17	1751	16.76	
11	LFM-03-07-SP	SK6816-1	08/07/17	2354	16.76	
12		WG211084-4	08/08/17	0607	16.77	
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 1

FORM VIII DRO

Katahdin Analytical Services A000016

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV001 SDG No.: SK6816

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 01/27/17 01/27/17

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.98 S2 : 10.36

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01		WG199227-5	01/27/17	0852	8.99		10.37	
02		WG199227-4	01/27/17	0937	8.98		10.36	
03		WG199227-3	01/27/17	1023	8.98		10.36	
04		WG199227-2	01/27/17	1109	8.98		10.36	
05		WG199227-1	01/27/17	1155	8.98		10.36	
06		WG199227-6	01/27/17	1240				
07		WG211084-1	08/07/17	0415	8.90		10.27	
08	WG210706-BLA	WG210706-1	08/07/17	1620	8.88		10.25	
09	WG210706-LCS	WG210706-2	08/07/17	1706	8.88		10.25	
10	WG210706-LCS	WG210706-3	08/07/17	1751	8.88		10.25	
11	LFM-03-07-SP	SK6816-1	08/07/17	2354	8.88		10.25	
12		WG211084-2	08/08/17	0607	8.90		10.27	
13								
14								
15								
16								
17								
18								
19								
20								

QC LIMITS

S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 2

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV001 SDG No.: SK6816

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 01/27/17 01/27/17

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.21

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG199227-5	01/27/17	0852	15.23	
02		WG199227-4	01/27/17	0937	15.22	
03		WG199227-3	01/27/17	1023	15.21	
04		WG199227-2	01/27/17	1109	15.21	
05		WG199227-1	01/27/17	1155	15.21	
06		WG199227-6	01/27/17	1240		
07		WG211084-1	08/07/17	0415	15.08	
08	WG210706-BLA	WG210706-1	08/07/17	1620	15.07	
09	WG210706-LCS	WG210706-2	08/07/17	1706	15.07	
10	WG210706-LCS	WG210706-3	08/07/17	1751	15.07	
11	LFM-03-07-SP	SK6816-1	08/07/17	2354	15.07	
12		WG211084-2	08/08/17	0607	15.09	
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 2 of 2

FORM VIII DRO

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK6816-1
Client ID: LFM-03-07-SPR17
Project: Devens Spring 2017 LTM, 68
SDG: SK6816
Lab File ID: 2KH10062.I

Sample Date: 01-AUG-17
Received Date: 03-AUG-17
Extract Date: 03-AUG-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG210699

Analysis Date: 03-AUG-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 08-AUG-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		98.8	%				
2,5-Dibromotoluene (PID)		96.8	%				

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK6816-2
Client ID: TRIP BLANK
Project: Devens Spring 2017 LTM, 68
SDG: SK6816
Lab File ID: 2KH10056.I

Sample Date: 01-AUG-17
Received Date: 03-AUG-17
Extract Date: 03-AUG-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG210699

Analysis Date: 03-AUG-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 08-AUG-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		97.6	%				
2,5-Dibromotoluene (PID)		97.0	%				

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Report of Analytical Results

Client:
Lab ID: WG210699-1
Client ID: Method Blank Sample
Project:
SDG: SK6816
Lab File ID: 2KH10053.D

Sample Date:
Received Date:
Extract Date: 03-AUG-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG210699

Analysis Date: 03-AUG-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 08-AUG-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		98.1	%				
2,5-Dibromotoluene (PID)		96.7	%				

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Devens Spring 2017 LTM, 680-141617-1 **Matrix:** AQ
Lab Code: KAS **SDG:** SK6816

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID #	DBT-PID #
LFM-03-07-SPR17	SK6816-1	B	98.8	96.8
TRIP BLANK	SK6816-2	B	97.6	97.0
Method Blank Sample	WG210699-1	B	98.1	96.7
Laboratory Control S	WG210699-2	B	78.6	77.7
Laboratory Control S	WG210699-3	B	81.2	80.2

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

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Katahdin
ANALYTICAL SERVICES

Cert No E87604

LCS/LCSD Recovery Report

LCS ID: WG210699-2
LCSD ID: WG210699-3
Project:
SDG: SK6816
Report Date: 08-AUG-17
LCS File ID: 2KH10054.D

Received Date:
Extract Date: 03-AUG-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG210699
LCSD File ID: 2KH10055.D

Analysis Date: 03-AUG-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	246.	82.0	244.	81.3	ug/L	1	25	70-130
C9-C12 Aliphatics	200.	192.	96.0	192.	96.0	ug/L	0	25	70-130
C9-C10 Aromatics	100.	90.0	90.0	90.3	90.3	ug/L	0	25	70-130
Benzene	100.	82.1	82.1	82.6	82.6	ug/L	1	25	70-130
Ethylbenzene	100.	84.4	84.4	84.7	84.7	ug/L	0	25	70-130
Methyl tert-butylether	100.	84.1	84.1	84.8	84.8	ug/L	1	25	70-130
Naphthalene	100.	89.3	89.3	89.8	89.8	ug/L	0	25	70-130
Toluene	100.	82.6	82.6	83.0	83.0	ug/L	0	25	70-130
m+p-Xylenes	200.	166.	83.0	167.	83.5	ug/L	1	25	70-130
o-Xylene	100.	83.2	83.2	83.6	83.6	ug/L	0	25	70-130
2,5-Dibromotoluene (FID)			78.6		81.2				70-130
2,5-Dibromotoluene (PID)			77.7		80.2				70-130

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Tel:(207) 874-2400 Fax:(207) 775-4029

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-141617-1
Lab File ID : 2KH10053.D
Instrument ID : GC02

SDG : SK6816
Lab Sample ID : WG210699-1
Date Analyzed : 03-AUG-17
Time Analyzed : 09:29
Date Extracted : 03-AUG-17

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	WG210699-2	2KH10054.	08/03/17	10:09
Laboratory Control S	WG210699-3	2KH10055.	08/03/17	10:50
TRIP BLANK	SK6816-2	2KH10056.	08/03/17	13:46
LFM-03-07-SPR17	SK6816-1	2KH10062.	08/03/17	17:51

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SK6816
Project : Devens Spring 2017 LTM, 680-141617-1 **Instrument ID:** GC02
Lab File IDs : 2KG10121.D2KG10122.D2KG10123.D **Calibration Date(s):** 12-JUL-17 09:13
2KG10124.D2KG10125.D2KG10126.D 12-JUL-17 12:37

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Crv					Max	
	1.0000	5.0000	10.0000	50.0000	100.0000	300.0000	New	b	m1	m2	%RSD	%RSD	
C9-C10 Aromatic	253	336	360	344	330	313	AVG		323		11.6180(	25.00000	M (
Methyl tert-butylether	162	171	173	183	176	163	AVG		171		4.75898	25.00000	O
Benzene	404	413	431	399	383	366	AVG		399		5.66196	25.00000	O
Toluene	361	381	398	371	355	338	AVG		367		5.76161	25.00000	O
Ethylbenzene	296	329	348	326	312	295	AVG		318		6.47182	25.00000	O
m+p-Xylene	340	395	414	371	351	319	AVG		365		9.74571	25.00000	O
o-Xylene	321	332	355	328	315	297	AVG		325		5.90719	25.00000	O
1,2,4-trimethylbenzene	253	336	360	344	330	313	AVG		323		11.6180(	25.00000	O
Naphthalene	227	255	302	321	311	305	AVG		287		13.0193<	25.00000	O
2,5-Dibromotoluene (PID)	+++++	224	259	270	239	237	AVG		246		7.45400	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SK6816
Project : Devens Spring 2017 LTM, 680-141617-1 **Instrument ID:** GC02
Lab File IDs : 2KG10121.D2KG10122.D2KG10123.D **Calibration Date(s):** 12-JUL-17 09:12
2KG10124.D2KG10125.D2KG10126.D 12-JUL-17 12:37

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Crv					Max	
	1.0000	5.0000	10.0000	50.0000	100.0000	300.0000	New	b	m1	m2	%RSD	%RSD	
C5-C8 Aliphatic	5280	5581	5836	5518	5253	5138	AVG		5434		4.75717	25.00000	M (
C9-C12 Aliphatic	3929	4834	5013	4850	5208	5810	AVG		4940		12.39715	25.00000	M (
n-Pentane	5092	4999	5176	4950	4687	4599	AVG		4917		4.62903	25.00000	O
2-Methylpentane	5079	5597	5944	5556	5298	5166	AVG		5440		5.91090	25.00000	O
Methyl tert-butylether	3533	3838	4079	3662	3600	3445	AVG		3693		6.24821	25.00000	O
2,2,4-Trimethylpentane	5669	6148	6387	6046	5773	5648	AVG		5945		4.99611	25.00000	O
Benzene	6965	7334	7615	7168	6925	6914	AVG		7154		3.90759	25.00000	O
Toluene	6620	7246	7528	7115	6960	6966	AVG		7073		4.32829	25.00000	O
n-Nonane	4502	5005	5312	5083	5069	5673	AVG		5107		7.53602	25.00000	O
n-Decane	3485	4079	4448	4517	5196	5754	AVG		4580		17.55028	25.00000	O
Ethylbenzene	6105	6795	7165	6887	6742	6787	AVG		6747		5.17863	25.00000	O
m+p-Xylene	6429	7095	7440	7032	6894	6907	AVG		6966		4.73020	25.00000	O
o-Xylene	6564	7135	7494	7091	6905	6885	AVG		7012		4.42814	25.00000	O
1,2,4-trimethylbenzene	5381	6609	7037	6868	6751	6748	AVG		6566		9.10385	25.00000	O
n-Butylcyclohexane	4372	5588	5578	5183	5219	5865	AVG		5301		9.84194	25.00000	O
Naphthalene	3158	4276	4824	4849	4764	4762	AVG		4439		14.92198	25.00000	O
2,5-Dibromotoluene (FID)	+++++	1835	2080	1994	1763	1713	AVG		1877		8.28463	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-1
Lab ID : WG210699-4
Lab File ID : 2KH10052.D
Initial Calibration Date(s): 07/12/17 09:12 07/12/17 12:37

SDG: SK6816
Analytical Date: 08/03/17 08:21
Instrument ID: GC02
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	Benzene	399	360	0.100	-9.90510	25.00000	Averaged
30	Ethylbenzene	318	294	0.100	-7.37742	25.00000	Averaged
40	Methyl tert-butylether	171	163	0.100	-4.72850	25.00000	Averaged
50	Naphthalene	287	273	0.100	-4.75497	25.00000	Averaged
60	Toluene	367	335	0.100	-8.78797	25.00000	Averaged
70	m+p-Xylene	365	337	0.100	-7.69940	25.00000	Averaged
80	o-Xylene	325	297	0.100	-8.61191	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	246	244	0.100	-0.79638	25.00000	Averaged
180	1,2,4-trimethylbenzene	323	311	0.100	-3.53336	25.00000	Averaged

*** = Compound out of QC criteria**

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://katahdinlab.com
sales@katahdinlab.com
Page 57 of 70
Katahdin Analytical Services A0000027
8/16/2017 Rev 1

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-1
Lab ID : WG210699-4
Lab File ID : 2KH10052.D
Initial Calibration Date(s): 07/12/17 09:12 07/12/17 12:37

SDG: SK6816
Analytical Date: 08/03/17 08:21
Instrument ID: GC02
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
60	Benzene	7154	6689	0.100	-6.48999	25.00000	Averaged
70	Ethylbenzene	6747	6444	0.100	-4.48872	25.00000	Averaged
80	Methyl tert-butylether	3693	3447	0.100	-6.67038	25.00000	Averaged
90	Naphthalene	4439	4329	0.100	-2.47158	25.00000	Averaged
100	Toluene	7073	6679	0.100	-5.56445	25.00000	Averaged
110	m+p-Xylene	6966	6598	0.100	-5.28475	25.00000	Averaged
120	o-Xylene	7012	6705	0.100	-4.38932	25.00000	Averaged
200	n-Pentane	4917	4167	0.100	-15.26241	25.00000	Averaged
210	2-Methylpentane	5440	5009	0.100	-7.91880	25.00000	Averaged
220	2,2,4-Trimethylpentane	5945	5653	0.100	-4.92569	25.00000	Averaged
230	n-Nonane	5107	4798	0.100	-6.06271	30.00000	Averaged
240	n-Decane	4580	4164	0.100	-9.09211	25.00000	Averaged
250	n-Butylcyclohexane	5301	4941	0.100	-6.79618	25.00000	Averaged
260	1,2,4-trimethylbenzene	6566	6466	0.100	-1.51204	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1877	1892	0.100	0.79052	25.00000	Averaged

*** = Compound out of QC criteria**

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Tel:(207) 874-2400 Fax:(207) 775-4029
http://katahdinlab.com
sales@katahdinlab.com

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-1
Lab ID : WG210699-5
Lab File ID : 2KH10073.D
Initial Calibration Date(s): 07/12/17 09:12 07/12/17 12:37

SDG: SK6816
Analytical Date: 08/04/17 01:18
Instrument ID: GC02
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	Benzene	399	381	0.100	-4.69702	25.00000	Averaged
30	Ethylbenzene	318	311	0.100	-2.25376	25.00000	Averaged
40	Methyl tert-butylether	171	170	0.100	-0.76080	25.00000	Averaged
50	Naphthalene	287	282	0.100	-1.77813	25.00000	Averaged
60	Toluene	367	355	0.100	-3.41871	25.00000	Averaged
70	m+p-Xylene	365	354	0.100	-3.06739	25.00000	Averaged
80	o-Xylene	325	313	0.100	-3.55258	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	246	226	0.100	-7.89224	25.00000	Averaged
180	1,2,4-trimethylbenzene	323	323	0.100	0.19071	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-1
Lab ID : WG210699-5
Lab File ID : 2KH10073.D
Initial Calibration Date(s): 07/12/17 09:12 07/12/17 12:37

SDG: SK6816
Analytical Date: 08/04/17 01:18
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
60	Benzene	7154	7112	0.100	-0.58276	25.00000	Averaged
70	Ethylbenzene	6747	6813	0.100	0.97595	25.00000	Averaged
80	Methyl tert-butylether	3693	3575	0.100	-3.19178	25.00000	Averaged
90	Naphthalene	4439	4522	0.100	1.86525	25.00000	Averaged
100	Toluene	7073	7081	0.100	0.12397	25.00000	Averaged
110	m+p-Xylene	6966	7015	0.100	0.69436	25.00000	Averaged
120	o-Xylene	7012	7002	0.100	-0.14799	25.00000	Averaged
200	n-Pentane	4917	4132	0.100	-15.96686	25.00000	Averaged
210	2-Methylpentane	5440	4955	0.100	-8.91989	25.00000	Averaged
220	2,2,4-Trimethylpentane	5945	5567	0.100	-6.35605	25.00000	Averaged
230	n-Nonane	5107	4418	0.100	-13.49328	30.00000	Averaged
240	n-Decane	4580	3841	0.100	-16.13407	25.00000	Averaged
250	n-Butylcyclohexane	5301	4668	0.100	-11.93946	25.00000	Averaged
260	1,2,4-trimethylbenzene	6566	6730	0.100	2.51044	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1877	1775	0.100	-5.42610	25.00000	Averaged

*** = Compound out of QC criteria**

Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services **SDG :** SK6816
Project : Devens Spring 2017 LTM, 680-141617-1
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG209154-1	07/12/17	09:12	31.541	
Initial Calibration	WG209154-1	07/12/17	09:13		31.555
Initial Calibration	WG209154-2	07/12/17	09:53		31.551
Initial Calibration	WG209154-2	07/12/17	09:53	31.54	
Initial Calibration	WG209154-3	07/12/17	10:35		31.551
Initial Calibration	WG209154-3	07/12/17	10:35	31.541	
Initial Calibration	WG209154-4	07/12/17	11:15		31.553
Initial Calibration	WG209154-4	07/12/17	11:15	31.543	
Initial Calibration	WG209154-5	07/12/17	11:56		31.552
Initial Calibration	WG209154-5	07/12/17	11:56	31.542	
Initial Calibration	WG209154-6	07/12/17	12:37		31.551
Initial Calibration	WG209154-6	07/12/17	12:37	31.541	
Independent Source	WG209154-7	07/12/17	13:39	31.542	31.552
Continuing Calibrati	WG210699-4	08/03/17	08:21	31.532	31.543
Method Blank Sample	WG210699-1	08/03/17	09:29	31.532	31.543
Laboratory Control S	WG210699-2	08/03/17	10:09	31.534	31.544
Laboratory Control S	WG210699-3	08/03/17	10:50	31.534	31.544
TRIP BLANK	SK6816-2	08/03/17	13:46	31.528	31.539
LFM-03-07-SPR17	SK6816-1	08/03/17	17:51	31.532	31.542
Continuing Calibrati	WG210699-5	08/04/17	01:18	31.529	31.539

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Tel:(207) 874-2400 Fax:(207) 775-4029
http://katahdinlab.com
sales@katahdinlab.com

350325-Boston
350325-Boston
350325-Boston

PO # 17-636 | Devens - DCL 1024-003

Chain of Custody Record

Page: 1 of: 1

Company	KOMAN GS, LLC
Address:	160 East Main Street, Suite 2F, Westborough, MA
Phone:	508-366-7442 Fax: 508-366-7445
Sampled by [Print Name(s)]/Affiliation	Kevin G. Anderson
Sampler(s) Signature(s)	

Laboratory: Test America - Savannah
Address:
Contact: Jerry Lanier
Regulatory Facility No.
Project Name: Devens Spring 2017 LTM
Sampling QAP No.:
Approval Date:
TAT: Routine
Other:

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40-ml VOA vials (HCl)	MA EPH 2-1liter amber glass(HCl)	Pesticides/SW8081 2-1liter amber glass	Total Metals* (SW6010/6020/7470) 1-250 ml poly (HNO3)	Total Cyanide/SW9012 1-250ml poly (NaOH)	Chloride/Sulfate (SW9056) 1-125ml poly	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4)	Alkalinity/SM2320B 1-250-ml poly	TDS/SM2540D 1-1liter poly	COD/SW9060 1-500-ml amber glass (H2SO4)	Remarks	Lab. No.
	LFM-03-07-SPR17 *	8/1/17	930	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
				P	GW													
	Trip Blank	MA	→	O	O	2	X											

Preservatives (see codes): H H I N O I S I I S

Analyses Requested

680-141617 Chain of Custody

Shipping Details: courier pick up | Total Number of Containers: 0

Date Out:	Via:
Returned:	Via:

Additional Comments:
* = Total Metals include: Ba, Cd, Ca, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)

Item No.	Relinquished by/Affiliation	Date	Time		Date	Time
		8/1/17	1334		8/1/17	1334
		8-1-17			8/4/17	0910

email logins and results to:
lekes@komangs.com

Lab Comments
1.1 (CS+0.3)
1.4

Preserve Where Applicable ☐
On ICE ☐
Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info
☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater SE = Sediment SP = Soil SW = Surface Water O = Other
PRESERVATIVE CODES H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other
COLLECTION METHOD C = Composite G=Grab P= Pumping O = Other

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Detail Report

Aug. 03, 2017
05:48 PM

Login Number: SK6816

Account: TASAV001
Test America Savannah

Project: TASAV-DEVENS

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Quote/Incoming:

Login Information

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 4.2 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	680-141617-1
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	W912WJ-10-D-0003
COOLER TEMPERATURE	:	2.7
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS033QC-XLS
LOGIN INITIALS	:	SO
PM	:	HHM
PROJECT NAME	:	Devens Spring 2017 LTM, 680-141617-1
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	Sample data summary needs all forms. Email PDF, EDD files and invoice to Jerry. No HC. Include Level 4 narrative and MCP forms. Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS.
SDG ID	:	

Laboratory Sample ID	Client Sample Number	Collect Date/Time	SDG STAT/VERBAL TAT	Receive Date	PR	Due Date	Verbal Due Date	Mailed
SK6816-1	LFM-03-07-SPR17	01-AUG-17 09:30		03-AUG-17		15-AUG-17		

Sample Comments:

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Unit Price
Aqueous	S	MA-EPH	15-AUG-17	1L N-Amber Glass		$ 175.00
Aqueous	S	MA-VPH	15-AUG-17	40mL Vial+HCl		$ 75.00

SK6816-2	TRIP BLANK	01-AUG-17 09:30		03-AUG-17		15-AUG-17		

Sample Comments:

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Unit Price
Aqueous	S	MA-VPH	15-AUG-17	40mL Vial+HCl		$ 75.00

Total Samples: 2 ***Total Analyses: 3*** ***Total Price : $ 325.00***

AMH 8/3/17

Run Reports: Logindetail

Chain of Custody Record

Page: 1 of: 1

PO # 17-636 | Devens - DCL 1024-003

Company: KOMAN GS, LLC

Address: 160 East Main Street, Suite 2F, Westborough, MA

Phone: 508-366-7442 Fax: 508-366-7445

Sampled by [Print Name(s)]/Affiliation: Ken G. Anderson

Sampler(s) Signature(s): SK68816

Laboratory: Test America - Savannah
Address:
Contact: Jerry Lanier
Regulatory Facility No.
Project Name: Devens Spring 2017 LTM
Sampling QAP No.:
Approval Date:
TAT: Routine
Other:

Preservatives (see codes): H | H | I | N | O | I | S | I | I | S

Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40-ml VOA vials (HCl)	MA EPH 2-1liter amber glass(HCl)	Pesticides/SW8081 2-liter amber glass	Total Metals* (SW6010/6020/7470) 1-250 ml poly (HNO3)	Total Cyanide/SW9012 1-250ml poly (NaOH)	Chloride/Sulfate (SW9056) 1-125ml poly	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4)	Alkalinity/SM2320B 1-250-ml poly	TDS/SM2540D 1-1liter poly	COD/SW9060 1-500-ml amber glass (H2SO4)	Remarks	Lab. No
	LFM-03-07-SPR17 *	8/1/17	930	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
				P	GW													
	Trip Blank	MA	→	O	O	2	X											

Total Number of Containers: courier pick up | 0

Shipping Details
Date Out: Via:
Returned: Via:

Additional Comments:
* = Total Metals include: Ba, Cd, Ca, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)

Item No.	Relinquished by/Affiliation	Date	Time	Date	Time
		8/1/17	1335	8-2-17	1325
		8-2-17			
		8-3-17			

email logins and results to:
lekes@komangs.com

Lab Comments
SK68816

Preserve Where Applicable ☐
On ICE ☐
Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info
☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater SE = Sediment SP = Soil SW = Surface Water O = Other
PRESERVATIVE CODES H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other
COLLECTION METHOD C = Composite G=Grab P= Pumping O = Other

8/16/2017 (Rev. 1)

Katahdin Analytical Services, LLC. — Sample Receipt Condition Report

Client: Komen GS LLC	KAS PM: HHM	Sampled By: Client
Project:	KIMS Entry By: SD	Delivered By: FedEx
KAS Work Order#: 18K6816	KIMS Review By: AMH	Received By: SD
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 08-03 0910

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): 2.7
Samples received at <6 °C w/o freezing?	√				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	√				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	√				
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 (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	√				
Soil/Sediment:					
Received in airtight container?				√	
Received in methanol?				√	
Methanol covering soil?				√	
D.I. Water - Received within 48 hour HT?				√	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
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.

PO #	17-636	Devens - DCL 1024-003	**Chain of Custody Record**	Page: 1 of: 1

Company	KOMAN GS, LLC		Laboratory: Test America - Savannah
Address:	160 East Main Street, Suite 2F Westborough, MA		Address:
Phone:	508-366-7442 Fax: 508-366-7445		Contact: Jerry Lanier
Sampled by [Print Name(s)]/Affiliation	Kevin G. Anderson		Regulatory Facility No.
Sampler(s) Signature(s)			Project Name: Devens Spring 2017 LTM
			Sampling QAP No.:
			Approval Date:
			TAT Routine
			Other:

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40-ml VOA vials (HCl)	MA EPH 2-1liter amber glass(HCl)	Pesticides/SW8081 2-1liter amber glass	Total Metals* (SW6010/6020/7470) 1-250 ml poly (HNO3)	Total Cyanide/SW9012 1-250ml poly (NaOH)	Chloride/Sulfate (SW9056) 1-125ml poly	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4)	Alkalinity/SM2320B 1-250-ml poly	TDS/SM2540D 1-1liter poly	COD/SW9060 1-500-ml amber glass (H2SO4)	Remarks	Lab. No.
				Preservatives (see codes)			H	H	I	N	O	I	S	I	I	S		
				Analyses Requested														
LFM-03-07-SPR17 *		8/1/17	930	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
				P	GW								D	D	D	D		
	Trip Blank	MA	→	O	O	2	X											

680-141617 Chain of Custody

Shipping Details	courier pick up	0	← Total Number of Containers

Date Out:	Via:	Item No.	Relinquished by/Affiliation	Date	Time		Date	Time
Returned:	Via:			8/1/17	1334		8-2-17	1325
Additional Comments:				8-1-17			8-2-17	0935
* = Total Metals include: Ba, Cd, Ca, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)								

email logins and results to:

lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐

On ICE ☐

Temperature 3.5 C
IR#7 +0.1

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater	SE = Sediment	SP = Soil	SW = Surface Water		O = Other
PRESERVATIVE CODES H = HCL + Ice	I = Ice Only	N = Nitric Acid + Ice	S = Sulfuric Acid + Ice	M = Methanol	O = Other
COLLECTION METHOD C = Composite	G=Grab	P= Pumping			O = Other

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-141617-1

Login Number: 141617

List Source: TestAmerica Savannah

List Number: 1

Creator: Edwards, Jessica R

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

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-141617-1

Login Number: 141617
List Number: 2
Creator: Pottruff, Reed W

List Source: TestAmerica Denver
List Creation: 08/02/17 03:17 PM

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens Spring 2017 LTM

TestAmerica Job ID: 680-141617-1

Laboratory: TestAmerica Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-18
Alaska	State Program	10		06-30-18
Alaska (UST)	State Program	10	UST-104	11-05-17
Arizona	State Program	9	AZ808	12-14-17
Arkansas DEQ	State Program	6	88-0692	02-01-18
California	State Program	9	2939	06-30-17 *
Colorado	State Program	8	N/A	12-31-17
Connecticut	State Program	1	PH-0161	03-31-19
Florida	NELAP	4	E87052	06-30-18
GA Dept. of Agriculture	State Program	4	N/A	06-12-18
Georgia	State Program	4	803	06-30-18
Guam	State Program	9	15-005r	04-16-18
Hawaii	State Program	9	N/A	06-30-18
Illinois	NELAP	5	200022	11-30-17
Indiana	State Program	5	N/A	06-30-18
Iowa	State Program	7	353	06-30-19
Kentucky (DW)	State Program	4	90084	12-31-17
Kentucky (UST)	State Program	4	18	06-30-18
Kentucky (WW)	State Program	4	90084	12-31-17
L-A-B	DoD ELAP		L2463	09-22-19
L-A-B	ISO/IEC 17025		L2463.01	09-22-19
Louisiana	NELAP	6	30690	06-30-18
Louisiana (DW)	NELAP	6	LA160019	12-31-17
Maine	State Program	1	GA00006	09-24-18
Maryland	State Program	3	250	12-31-17
Massachusetts	State Program	1	M-GA006	06-30-18
Michigan	State Program	5	9925	06-30-17 *
Mississippi	State Program	4	N/A	06-30-18
Nebraska	State Program	7	TestAmerica-Savannah	06-30-18
New Jersey	NELAP	2	GA769	06-30-18
New Mexico	State Program	6	N/A	06-30-18
New York	NELAP	2	10842	03-31-18
North Carolina (DW)	State Program	4	13701	07-31-18
North Carolina (WW/SW)	State Program	4	269	12-31-17
Oklahoma	State Program	6	9984	08-31-17 *
Pennsylvania	NELAP	3	68-00474	06-30-18
Puerto Rico	State Program	2	GA00006	12-31-17
South Carolina	State Program	4	98001	06-30-17 *
Tennessee	State Program	4	TN02961	06-30-18
Texas	NELAP	6	T104704185-16-9	11-30-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		SAV 3-04	06-14-20 *
Virginia	NELAP	3	460161	06-14-18
Washington	State Program	10	C805	06-10-18
West Virginia (DW)	State Program	3	9950C	12-31-17
West Virginia DEP	State Program	3	094	06-30-18
Wisconsin	State Program	5	999819810	08-31-17 *
Wyoming	State Program	8	8TMS-L	06-30-16 *

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens Spring 2017 LTM

TestAmerica Job ID: 680-141617-1

Laboratory: TestAmerica Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17

B.2

Fall 2017 LTM Event

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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

TestAmerica Job ID: 680-144887-1
Client Project/Site: Devens - DCL
Revision: 1

For:
KOMAN Government Solutions, LLC
293 Boston Post Road
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Michele R Kersey

Authorized for release by:
12/20/2017 3:48:12 PM
Michele Kersey, Project Manager II
(912)354-7858
michele.kersey@testamericainc.com

Designee for

Jerry Lanier, Project Manager I
(912)354-7858 e.3410
jerry.lanier@testamericainc.com

LINKS

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

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

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

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Job ID: 680-144887-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: Devens - DCL

Report Number: 680-144887-1

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

RECEIPT
The samples were received on 10/28/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.0º C and 3.2º C.

NOTE: Report revised 12/20/17 to include Arsenic results.

PESTICIDES AND PCBS
Samples LFM-99-02B-FALL17 (680-144887-1), LFM-99-05A-FALL17 (680-144887-2), LFM-DUP01-FALL17 (680-144887-3) and LFM-99-06A RP-FALL17 (680-144887-4) were analyzed for Pesticides and PCBs in accordance with EPA SW-846 Method 8081B_8082A. The samples were prepared on 11/01/2017 and analyzed on 11/03/2017.

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

METALS
Samples LFM-99-02B-FALL17 (680-144887-1), LFM-99-05A-FALL17 (680-144887-2), LFM-DUP01-FALL17 (680-144887-3) and LFM-99-06A RP-FALL17 (680-144887-4) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 10/31/2017 and analyzed on 11/01/2017.

The interference check standard solution (ICSA) associated with the following samples showed results for chromium at a level greater than the limit of detection (LOD). It is believed that the solution contains trace impurities of this element / these elements and the results are not due to matrix interference. These results are consistent with those found by the manufacturer of the ICSA solution. (ICSA 680-501004/17)

Silver failed the recovery criteria low for the MSD of sample LFM-99-02B-FALL17MSD (680-144887-1) in batch 680-501004.

Refer to the QC report for details.

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

MERCURY
Samples LFM-99-02B-FALL17 (680-144887-1), LFM-99-05A-FALL17 (680-144887-2), LFM-DUP01-FALL17 (680-144887-3) and LFM-99-06A RP-FALL17 (680-144887-4) were analyzed for mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared and analyzed on 10/30/2017.

The initial calibration blank (ICB) ran later on in the sequence. There is a valid CCB that ran before any samples.

Job ID: 680-144887-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

(ICB 680-500688/128)

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

ALKALINITY
Samples LFM-99-02B-FALL17 (680-144887-1), LFM-99-05A-FALL17 (680-144887-2), LFM-DUP01-FALL17 (680-144887-3) and LFM-99-06A RP-FALL17 (680-144887-4) were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 11/08/2017.

The method blank for method 2320B analytical batch 280-394502 contained alkalinity above the method detection limit (MDL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

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

TOTAL DISSOLVED SOLIDS
Samples LFM-99-02B-FALL17 (680-144887-1), LFM-99-05A-FALL17 (680-144887-2), LFM-DUP01-FALL17 (680-144887-3) and LFM-99-06A RP-FALL17 (680-144887-4) were analyzed for total dissolved solids in accordance with SM 2540C. The samples were analyzed on 11/01/2017.

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

NITRATE-NITRITE AS NITROGEN
Samples LFM-99-02B-FALL17 (680-144887-1), LFM-99-05A-FALL17 (680-144887-2), LFM-DUP01-FALL17 (680-144887-3) and LFM-99-06A RP-FALL17 (680-144887-4) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 10/30/2017.

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

CHEMICAL OXYGEN DEMAND
Samples LFM-99-02B-FALL17 (680-144887-1), LFM-99-05A-FALL17 (680-144887-2), LFM-DUP01-FALL17 (680-144887-3) and LFM-99-06A RP-FALL17 (680-144887-4) were analyzed for chemical oxygen demand in accordance with EPA Method 410.4. The samples were analyzed on 10/31/2017.

Chemical Oxygen Demand was detected in method blank MB 280-393378/5 at a level exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Chemical Oxygen Demand failed the recovery criteria low for the MSD of sample LFM-99-02B-FALL17MSD (680-144887-1) in batch 280-393378.

Refer to the QC report for details.

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

CYANIDE
Samples LFM-99-02B-FALL17 (680-144887-1), LFM-99-05A-FALL17 (680-144887-2), LFM-DUP01-FALL17 (680-144887-3) and LFM-99-06A RP-FALL17 (680-144887-4) were analyzed for cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared and analyzed on 11/06/2017.

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

ANIONS BY ION CHROMATOGRAPHY (28 DAY)
Samples LFM-99-02B-FALL17 (680-144887-1), LFM-99-05A-FALL17 (680-144887-2), LFM-DUP01-FALL17 (680-144887-3) and LFM-99-06A RP-FALL17 (680-144887-4) were analyzed for Anions by Ion Chromatography (28 Day) in accordance with SW 846 9056A. The samples were analyzed on 11/03/2017.

Job ID: 680-144887-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

Samples LFM-99-02B-FALL17 (680-144887-1)[10X], LFM-99-05A-FALL17 (680-144887-2)[10X], LFM-DUP01-FALL17 (680-144887-3)[10X] and LFM-99-06A RP-FALL17 (680-144887-4)[25X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL

TestAmerica Job ID: 680-144887-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-144887-1	LFM-99-02B-FALL17	Water	10/26/17 13:30	10/28/17 10:40
680-144887-2	LFM-99-05A-FALL17	Water	10/27/17 09:35	10/28/17 10:40
680-144887-3	LFM-DUP01-FALL17	Water	10/27/17 09:40	10/28/17 10:40
680-144887-4	LFM-99-06A RP-FALL17	Water	10/26/17 11:35	10/28/17 10:40
680-144887-5	Trip Blank	Water	10/26/17 08:00	10/28/17 10:40

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL

TestAmerica Job ID: 680-144887-1

Method	Method Description	Protocol	Laboratory
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	TAL SAV
9056A	Anions, Ion Chromatography	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL DEN
410.4	COD	MCAWW	TAL DEN
9012B	Cyanide, Total and/or Amenable	EPA	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
MA EPH	MADEP EPH (Extractable Petroleum Hydroca	NONE	
MA VPH	MADEP VPH Volatile Petroleum Hydrocarbon	NONE	

Protocol References:

EPA = US Environmental Protection Agency

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

NONE = NONE

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

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

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

HPLC/IC

Qualifier	Qualifier Description
D	The reported value is from a dilution.
M	Manual integrated compound.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
Q	One or more quality control criteria failed.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

General Chemistry

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
U	Undetected at the Limit of Detection.
B	Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.

Glossary

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

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL

TestAmerica Job ID: 680-144887-1

Client Sample ID: LFM-99-02B-FALL17
Date Collected: 10/26/17 13:30
Date Received: 10/28/17 10:40

Lab Sample ID: 680-144887-1
Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.017	U	0.048	0.017	0.0069	ug/L		11/03/17 16:17	1
alpha-BHC	0.0096	U	0.048	0.0096	0.0033	ug/L		11/03/17 16:17	1
beta-BHC	0.017	U	0.048	0.017	0.0087	ug/L		11/03/17 16:17	1
Chlordane (technical)	0.29	U	0.48	0.29	0.091	ug/L		11/03/17 16:17	1
4,4'-DDD	0.0096	U	0.048	0.0096	0.0060	ug/L		11/03/17 16:17	1
4,4'-DDE	0.0096	U	0.048	0.0096	0.0049	ug/L		11/03/17 16:17	1
4,4'-DDT	0.017	U	0.048	0.017	0.0067	ug/L		11/03/17 16:17	1
delta-BHC	0.017	U	0.048	0.017	0.0072	ug/L		11/03/17 16:17	1
Dieldrin	0.0096	U	0.048	0.0096	0.0036	ug/L		11/03/17 16:17	1
Endosulfan I	0.0096	U	0.048	0.0096	0.0034	ug/L		11/03/17 16:17	1
Endosulfan II	0.0096	U	0.048	0.0096	0.0040	ug/L		11/03/17 16:17	1
Endosulfan sulfate	0.0096	U	0.048	0.0096	0.0049	ug/L		11/03/17 16:17	1
Endrin	0.0096	U	0.048	0.0096	0.0051	ug/L		11/03/17 16:17	1
Endrin aldehyde	0.0096	U	0.048	0.0096	0.0058	ug/L		11/03/17 16:17	1
Endrin ketone	0.0096	U	0.048	0.0096	0.0044	ug/L		11/03/17 16:17	1
gamma-BHC (Lindane)	0.0096	U	0.048	0.0096	0.0034	ug/L		11/03/17 16:17	1
Heptachlor	0.017	U	0.048	0.017	0.0068	ug/L		11/03/17 16:17	1
Heptachlor epoxide	0.0096	U	0.048	0.0096	0.0035	ug/L		11/03/17 16:17	1
Methoxychlor	0.017	U	0.048	0.017	0.0094	ug/L		11/03/17 16:17	1
Toxaphene	0.77	U	4.8	0.77	0.38	ug/L		11/03/17 16:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*43*		*14 - 130*	*11/01/17 16:06*	*11/03/17 16:17*	*1*
Tetrachloro-m-xylene	*58*		*44 - 124*	*11/01/17 16:06*	*11/03/17 16:17*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**440**	**D**	5.0	5.0	2.0	mg/L		11/03/17 12:42	10
Sulfate	**21**	**M**	1.0	1.0	0.40	mg/L		11/03/17 14:12	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		11/01/17 10:46	1
Barium	**19**		5.0	1.5	0.61	ug/L		11/01/17 10:46	1
Cadmium	0.40	U	0.50	0.40	0.15	ug/L		11/01/17 10:46	1
Chromium	4.0	U Q	5.0	4.0	1.6	ug/L		11/01/17 10:46	1
Copper	4.0	U	5.0	4.0	1.7	ug/L		11/01/17 10:46	1
Iron	75	U	100	75	25	ug/L		11/01/17 10:46	1
Lead	2.5	U	2.5	2.5	0.98	ug/L		11/01/17 10:46	1
Manganese	5.0	U	5.0	5.0	1.8	ug/L		11/01/17 10:46	1
Selenium	2.5	U	2.5	2.5	1.0	ug/L		11/01/17 10:46	1
Silver	**0.56**	**J**	1.0	0.30	0.10	ug/L		11/01/17 10:46	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/30/17 16:37	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	**0.78**		0.10	0.050	0.019	mg/L		10/30/17 18:04	1

Client Sample ID: LFM-99-02B-FALL17

Lab Sample ID: 680-144887-1

Date Collected: 10/26/17 13:30

Matrix: Water

Date Received: 10/28/17 10:40

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chemical Oxygen Demand	**8.1**	**J**	20	10	4.1	mg/L		10/31/17 09:22	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		11/06/17 11:26	1
Alkalinity	**87**		5.0	3.2	1.1	mg/L		11/08/17 12:59	1
Total Dissolved Solids (TDS)	**790**		10	10	4.7	mg/L		11/01/17 07:12	1

Client Sample ID: LFM-99-05A-FALL17

Lab Sample ID: 680-144887-2

Date Collected: 10/27/17 09:35

Matrix: Water

Date Received: 10/28/17 10:40

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.018	U	0.050	0.018	0.0072	ug/L		11/03/17 17:57	1
alpha-BHC	0.010	U	0.050	0.010	0.0034	ug/L		11/03/17 17:57	1
beta-BHC	0.018	U	0.050	0.018	0.0091	ug/L		11/03/17 17:57	1
Chlordane (technical)	0.30	U	0.50	0.30	0.095	ug/L		11/03/17 17:57	1
4,4'-DDD	0.010	U	0.050	0.010	0.0063	ug/L		11/03/17 17:57	1
4,4'-DDE	0.010	U	0.050	0.010	0.0051	ug/L		11/03/17 17:57	1
4,4'-DDT	0.018	U	0.050	0.018	0.0070	ug/L		11/03/17 17:57	1
delta-BHC	0.018	U	0.050	0.018	0.0075	ug/L		11/03/17 17:57	1
Dieldrin	0.010	U	0.050	0.010	0.0038	ug/L		11/03/17 17:57	1
Endosulfan I	0.010	U	0.050	0.010	0.0035	ug/L		11/03/17 17:57	1
Endosulfan II	0.010	U	0.050	0.010	0.0042	ug/L		11/03/17 17:57	1
Endosulfan sulfate	0.010	U	0.050	0.010	0.0051	ug/L		11/03/17 17:57	1
Endrin	0.010	U	0.050	0.010	0.0053	ug/L		11/03/17 17:57	1
Endrin aldehyde	0.010	U	0.050	0.010	0.0061	ug/L		11/03/17 17:57	1
Endrin ketone	0.010	U	0.050	0.010	0.0046	ug/L		11/03/17 17:57	1
gamma-BHC (Lindane)	0.010	U	0.050	0.010	0.0036	ug/L		11/03/17 17:57	1
Heptachlor	0.018	U	0.050	0.018	0.0071	ug/L		11/03/17 17:57	1
Heptachlor epoxide	0.010	U	0.050	0.010	0.0037	ug/L		11/03/17 17:57	1
Methoxychlor	0.018	U	0.050	0.018	0.0098	ug/L		11/03/17 17:57	1
Toxaphene	0.80	U	5.0	0.80	0.40	ug/L		11/03/17 17:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*38*		*14 - 130*	*11/01/17 16:06*	*11/03/17 17:57*	*1*
Tetrachloro-m-xylene	*58*		*44 - 124*	*11/01/17 16:06*	*11/03/17 17:57*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**270**	**D**	5.0	5.0	2.0	mg/L		11/03/17 15:25	10
Sulfate	**23**	**M**	1.0	1.0	0.40	mg/L		11/03/17 15:07	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		11/01/17 11:59	1
Barium	**24**		5.0	1.5	0.61	ug/L		11/01/17 11:59	1
Cadmium	0.40	U	0.50	0.40	0.15	ug/L		11/01/17 11:59	1
Chromium	4.0	U Q	5.0	4.0	1.6	ug/L		11/01/17 11:59	1
Copper	4.0	U	5.0	4.0	1.7	ug/L		11/01/17 11:59	1
Iron	**64**	**J**	100	75	25	ug/L		11/01/17 11:59	1
Lead	2.5	U	2.5	2.5	0.98	ug/L		11/01/17 11:59	1

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL

TestAmerica Job ID: 680-144887-1

Client Sample ID: LFM-99-05A-FALL17

Lab Sample ID: 680-144887-2

Date Collected: 10/27/17 09:35

Matrix: Water

Date Received: 10/28/17 10:40

Method: 6020A - Metals (ICP/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**2.7**	**J**	5.0	5.0	1.8	ug/L		11/01/17 11:59	1
Selenium	2.5	U	2.5	2.5	1.0	ug/L		11/01/17 11:59	1
Silver	0.30	U	1.0	0.30	0.10	ug/L		11/01/17 11:59	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/30/17 16:47	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	**3.3**		0.10	0.050	0.019	mg/L		10/30/17 18:10	1
Chemical Oxygen Demand	**6.8**	**J**	20	10	4.1	mg/L		10/31/17 09:22	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		11/06/17 11:31	1
Alkalinity	**78**		5.0	3.2	1.1	mg/L		11/08/17 13:04	1
Total Dissolved Solids (TDS)	**550**		10	10	4.7	mg/L		11/01/17 07:12	1

Client Sample ID: LFM-DUP01-FALL17

Lab Sample ID: 680-144887-3

Date Collected: 10/27/17 09:40

Matrix: Water

Date Received: 10/28/17 10:40

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.017	U	0.048	0.017	0.0069	ug/L		11/03/17 18:14	1
alpha-BHC	0.0096	U	0.048	0.0096	0.0033	ug/L		11/03/17 18:14	1
beta-BHC	0.017	U	0.048	0.017	0.0087	ug/L		11/03/17 18:14	1
Chlordane (technical)	0.29	U	0.48	0.29	0.091	ug/L		11/03/17 18:14	1
4,4'-DDD	0.0096	U	0.048	0.0096	0.0060	ug/L		11/03/17 18:14	1
4,4'-DDE	0.0096	U	0.048	0.0096	0.0049	ug/L		11/03/17 18:14	1
4,4'-DDT	0.017	U	0.048	0.017	0.0067	ug/L		11/03/17 18:14	1
delta-BHC	0.017	U	0.048	0.017	0.0072	ug/L		11/03/17 18:14	1
Dieldrin	0.0096	U	0.048	0.0096	0.0036	ug/L		11/03/17 18:14	1
Endosulfan I	0.0096	U	0.048	0.0096	0.0034	ug/L		11/03/17 18:14	1
Endosulfan II	0.0096	U	0.048	0.0096	0.0040	ug/L		11/03/17 18:14	1
Endosulfan sulfate	0.0096	U	0.048	0.0096	0.0049	ug/L		11/03/17 18:14	1
Endrin	0.0096	U	0.048	0.0096	0.0051	ug/L		11/03/17 18:14	1
Endrin aldehyde	0.0096	U	0.048	0.0096	0.0059	ug/L		11/03/17 18:14	1
Endrin ketone	0.0096	U	0.048	0.0096	0.0044	ug/L		11/03/17 18:14	1
gamma-BHC (Lindane)	0.0096	U	0.048	0.0096	0.0035	ug/L		11/03/17 18:14	1
Heptachlor	0.017	U	0.048	0.017	0.0068	ug/L		11/03/17 18:14	1
Heptachlor epoxide	0.0096	U	0.048	0.0096	0.0036	ug/L		11/03/17 18:14	1
Methoxychlor	0.017	U	0.048	0.017	0.0094	ug/L		11/03/17 18:14	1
Toxaphene	0.77	U	4.8	0.77	0.38	ug/L		11/03/17 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*49*		*14 - 130*	*11/01/17 16:06*	*11/03/17 18:14*	*1*
Tetrachloro-m-xylene	*57*		*44 - 124*	*11/01/17 16:06*	*11/03/17 18:14*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**270**	**D**	5.0	5.0	2.0	mg/L		11/03/17 16:01	10
Sulfate	**23**	**M**	1.0	1.0	0.40	mg/L		11/03/17 15:43	1

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL

TestAmerica Job ID: 680-144887-1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**4.3**		3.0	3.0	1.5	ug/L		11/01/17 11:55	1
Barium	**31**		5.0	1.5	0.61	ug/L		11/01/17 11:55	1
Cadmium	0.40	U	0.50	0.40	0.15	ug/L		11/01/17 11:55	1
Chromium	**3.5**	**J Q**	5.0	4.0	1.6	ug/L		11/01/17 11:55	1
Copper	4.0	U	5.0	4.0	1.7	ug/L		11/01/17 11:55	1
Iron	**1500**		100	75	25	ug/L		11/01/17 11:55	1
Lead	**3.8**		2.5	2.5	0.98	ug/L		11/01/17 11:55	1
Manganese	**91**		5.0	5.0	1.8	ug/L		11/01/17 11:55	1
Selenium	2.5	U	2.5	2.5	1.0	ug/L		11/01/17 11:55	1
Silver	0.30	U	1.0	0.30	0.10	ug/L		11/01/17 11:55	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/30/17 16:51	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	**3.3**		0.10	0.050	0.019	mg/L		10/30/17 18:12	1
Chemical Oxygen Demand	**5.2**	**J**	20	10	4.1	mg/L		10/31/17 09:22	1
Cyanide, Total	**0.0038**	**J**	0.010	0.0050	0.0025	mg/L		11/06/17 11:32	1
Alkalinity	**79**		5.0	3.2	1.1	mg/L		11/08/17 13:09	1
Total Dissolved Solids (TDS)	**550**		10	10	4.7	mg/L		11/01/17 07:12	1

Client Sample ID: LFM-99-06A RP-FALL17

Date Collected: 10/26/17 11:35
Date Received: 10/28/17 10:40

Lab Sample ID: 680-144887-4

Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.017	U	0.048	0.017	0.0069	ug/L		11/03/17 18:30	1
alpha-BHC	0.0096	U	0.048	0.0096	0.0033	ug/L		11/03/17 18:30	1
beta-BHC	0.017	U	0.048	0.017	0.0087	ug/L		11/03/17 18:30	1
Chlordane (technical)	0.29	U	0.48	0.29	0.091	ug/L		11/03/17 18:30	1
4,4'-DDD	0.0096	U	0.048	0.0096	0.0060	ug/L		11/03/17 18:30	1
4,4'-DDE	0.0096	U	0.048	0.0096	0.0049	ug/L		11/03/17 18:30	1
4,4'-DDT	0.017	U	0.048	0.017	0.0067	ug/L		11/03/17 18:30	1
delta-BHC	0.017	U	0.048	0.017	0.0072	ug/L		11/03/17 18:30	1
Dieldrin	0.0096	U	0.048	0.0096	0.0036	ug/L		11/03/17 18:30	1
Endosulfan I	0.0096	U	0.048	0.0096	0.0033	ug/L		11/03/17 18:30	1
Endosulfan II	0.0096	U	0.048	0.0096	0.0040	ug/L		11/03/17 18:30	1
Endosulfan sulfate	0.0096	U	0.048	0.0096	0.0049	ug/L		11/03/17 18:30	1
Endrin	0.0096	U	0.048	0.0096	0.0051	ug/L		11/03/17 18:30	1
Endrin aldehyde	0.0096	U	0.048	0.0096	0.0058	ug/L		11/03/17 18:30	1
Endrin ketone	0.0096	U	0.048	0.0096	0.0044	ug/L		11/03/17 18:30	1
gamma-BHC (Lindane)	0.0096	U	0.048	0.0096	0.0034	ug/L		11/03/17 18:30	1
Heptachlor	0.017	U	0.048	0.017	0.0068	ug/L		11/03/17 18:30	1
Heptachlor epoxide	0.0096	U	0.048	0.0096	0.0035	ug/L		11/03/17 18:30	1
Methoxychlor	0.017	U	0.048	0.017	0.0094	ug/L		11/03/17 18:30	1
Toxaphene	0.76	U	4.8	0.76	0.38	ug/L		11/03/17 18:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*52*		*14 - 130*	*11/01/17 16:06*	*11/03/17 18:30*	*1*
Tetrachloro-m-xylene	*59*		*44 - 124*	*11/01/17 16:06*	*11/03/17 18:30*	*1*

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL

TestAmerica Job ID: 680-144887-1

Client Sample ID: LFM-99-06A RP-FALL17
Date Collected: 10/26/17 11:35
Date Received: 10/28/17 10:40

Lab Sample ID: 680-144887-4
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**390**	**D**	13	13	5.0	mg/L		11/03/17 16:37	25
Sulfate	**34**	**M**	1.0	1.0	0.40	mg/L		11/03/17 16:19	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		11/01/17 12:04	1
Barium	**10**		5.0	1.5	0.61	ug/L		11/01/17 12:04	1
Cadmium	0.40	U	0.50	0.40	0.15	ug/L		11/01/17 12:04	1
Chromium	4.0	U Q	5.0	4.0	1.6	ug/L		11/01/17 12:04	1
Copper	4.0	U	5.0	4.0	1.7	ug/L		11/01/17 12:04	1
Iron	75	U	100	75	25	ug/L		11/01/17 12:04	1
Lead	2.5	U	2.5	2.5	0.98	ug/L		11/01/17 12:04	1
Manganese	**7.7**		5.0	5.0	1.8	ug/L		11/01/17 12:04	1
Selenium	2.5	U	2.5	2.5	1.0	ug/L		11/01/17 12:04	1
Silver	0.30	U	1.0	0.30	0.10	ug/L		11/01/17 12:04	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/30/17 16:54	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	**1.7**		0.10	0.050	0.019	mg/L		10/30/17 18:14	1
Chemical Oxygen Demand	**8.5**	**J**	20	10	4.1	mg/L		10/31/17 09:22	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		11/06/17 11:34	1
Alkalinity	**140**	**B**	5.0	3.2	1.1	mg/L		11/08/17 16:02	1
Total Dissolved Solids (TDS)	**810**		10	10	4.7	mg/L		11/01/17 07:12	1

Surrogate Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL

TestAmerica Job ID: 680-144887-1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)									
		DCBP1	TCX1								
Lab Sample ID	Client Sample ID	(14-130)	(44-124)								
680-144887-1	LFM-99-02B-FALL17	43	58								
680-144887-1 MS	LFM-99-02B-FALL17	44	52								
680-144887-1 MSD	LFM-99-02B-FALL17	46	62								
680-144887-2	LFM-99-05A-FALL17	38	58								
680-144887-3	LFM-DUP01-FALL17	49	57								
680-144887-4	LFM-99-06A RP-FALL17	52	59								
LCS 680-500854/17-A	Lab Control Sample	43	61								
MB 680-500854/16-A	Method Blank	37	54								

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-500854/16-A
Matrix: Water
Analysis Batch: 501243

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500854

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.018	U	0.050	0.018	0.0072	ug/L		11/03/17 14:21	1
alpha-BHC	0.010	U	0.050	0.010	0.0034	ug/L		11/03/17 14:21	1
beta-BHC	0.018	U	0.050	0.018	0.0091	ug/L		11/03/17 14:21	1
Chlordane (technical)	0.30	U	0.50	0.30	0.095	ug/L		11/03/17 14:21	1
4,4'-DDD	0.010	U	0.050	0.010	0.0063	ug/L		11/03/17 14:21	1
4,4'-DDE	0.010	U	0.050	0.010	0.0051	ug/L		11/03/17 14:21	1
4,4'-DDT	0.018	U	0.050	0.018	0.0070	ug/L		11/03/17 14:21	1
delta-BHC	0.018	U	0.050	0.018	0.0075	ug/L		11/03/17 14:21	1
Dieldrin	0.010	U	0.050	0.010	0.0038	ug/L		11/03/17 14:21	1
Endosulfan I	0.010	U	0.050	0.010	0.0035	ug/L		11/03/17 14:21	1
Endosulfan II	0.010	U	0.050	0.010	0.0042	ug/L		11/03/17 14:21	1
Endosulfan sulfate	0.010	U	0.050	0.010	0.0051	ug/L		11/03/17 14:21	1
Endrin	0.010	U	0.050	0.010	0.0053	ug/L		11/03/17 14:21	1
Endrin aldehyde	0.010	U	0.050	0.010	0.0061	ug/L		11/03/17 14:21	1
Endrin ketone	0.010	U	0.050	0.010	0.0046	ug/L		11/03/17 14:21	1
gamma-BHC (Lindane)	0.010	U	0.050	0.010	0.0036	ug/L		11/03/17 14:21	1
Heptachlor	0.018	U	0.050	0.018	0.0071	ug/L		11/03/17 14:21	1
Heptachlor epoxide	0.010	U	0.050	0.010	0.0037	ug/L		11/03/17 14:21	1
Methoxychlor	0.018	U	0.050	0.018	0.0098	ug/L		11/03/17 14:21	1
Toxaphene	0.80	U	5.0	0.80	0.40	ug/L		11/03/17 14:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*37*		*14 - 130*	*11/01/17 16:06*	*11/03/17 14:21*	*1*
Tetrachloro-m-xylene	*54*		*44 - 124*	*11/01/17 16:06*	*11/03/17 14:21*	*1*

Lab Sample ID: LCS 680-500854/17-A
Matrix: Water
Analysis Batch: 501243

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 500854

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.100	0.0807		ug/L		81	45 - 134
alpha-BHC	0.100	0.0865		ug/L		86	54 - 138
beta-BHC	0.100	0.0791		ug/L		79	56 - 136
4,4'-DDD	0.100	0.0896		ug/L		90	56 - 143
4,4'-DDE	0.100	0.0840		ug/L		84	57 - 135
4,4'-DDT	0.100	0.0973		ug/L		97	51 - 143
delta-BHC	0.100	0.0871		ug/L		87	52 - 142
Dieldrin	0.100	0.0949		ug/L		95	60 - 136
Endosulfan I	0.100	0.0722		ug/L		72	62 - 126
Endosulfan II	0.100	0.0873		ug/L		87	52 - 135
Endosulfan sulfate	0.100	0.0931		ug/L		93	62 - 133
Endrin	0.100	0.0928		ug/L		93	60 - 138
Endrin aldehyde	0.100	0.106		ug/L		106	51 - 132
Endrin ketone	0.100	0.0885		ug/L		88	58 - 134
gamma-BHC (Lindane)	0.100	0.0888		ug/L		89	59 - 134
Heptachlor	0.100	0.0696		ug/L		70	54 - 130
Heptachlor epoxide	0.100	0.0929		ug/L		93	61 - 133
Methoxychlor	0.100	0.0900		ug/L		90	54 - 145

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	43		14 - 130
Tetrachloro-m-xylene	61		44 - 124

Lab Sample ID: 680-144887-1 MS
Matrix: Water
Analysis Batch: 501243

Client Sample ID: LFM-99-02B-FALL17
Prep Type: Total/NA
Prep Batch: 500854

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.017	U	0.0951	0.0657		ug/L		69	45 - 134
alpha-BHC	0.0096	U	0.0951	0.0707		ug/L		74	54 - 138
beta-BHC	0.017	U	0.0951	0.0750		ug/L		79	56 - 136
4,4'-DDD	0.0096	U	0.0951	0.0821		ug/L		86	56 - 143
4,4'-DDE	0.0096	U	0.0951	0.0739		ug/L		78	57 - 135
4,4'-DDT	0.017	U	0.0951	0.0937		ug/L		99	51 - 143
delta-BHC	0.017	U	0.0951	0.0843		ug/L		89	52 - 142
Dieldrin	0.0096	U	0.0951	0.0853		ug/L		90	60 - 136
Endosulfan I	0.0096	U	0.0951	0.0633		ug/L		67	62 - 126
Endosulfan II	0.0096	U	0.0951	0.0771		ug/L		81	52 - 135
Endosulfan sulfate	0.0096	U	0.0951	0.0869		ug/L		91	62 - 133
Endrin	0.0096	U	0.0951	0.0885		ug/L		93	60 - 138
Endrin aldehyde	0.0096	U	0.0951	0.0912		ug/L		96	51 - 132
Endrin ketone	0.0096	U	0.0951	0.0823		ug/L		87	58 - 134
gamma-BHC (Lindane)	0.0096	U	0.0951	0.0758		ug/L		80	59 - 134
Heptachlor	0.017	U	0.0951	0.0575		ug/L		60	54 - 130
Heptachlor epoxide	0.0096	U	0.0951	0.0814		ug/L		86	61 - 133
Methoxychlor	0.017	U	0.0951	0.0842		ug/L		89	54 - 145

Surrogate	MS %Recovery	MS Qualifier	Limits
DCB Decachlorobiphenyl	44		14 - 130
Tetrachloro-m-xylene	52		44 - 124

Lab Sample ID: 680-144887-1 MSD
Matrix: Water
Analysis Batch: 501243

Client Sample ID: LFM-99-02B-FALL17
Prep Type: Total/NA
Prep Batch: 500854

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin	0.017	U	0.106	0.0844		ug/L		80	45 - 134	25	30
alpha-BHC	0.0096	U	0.106	0.0958		ug/L		90	54 - 138	30	30
beta-BHC	0.017	U	0.106	0.0884		ug/L		83	56 - 136	16	30
4,4'-DDD	0.0096	U	0.106	0.0952		ug/L		90	56 - 143	15	30
4,4'-DDE	0.0096	U	0.106	0.0906		ug/L		85	57 - 135	20	30
4,4'-DDT	0.017	U	0.106	0.107		ug/L		101	51 - 143	14	30
delta-BHC	0.017	U	0.106	0.0989		ug/L		93	52 - 142	16	30
Dieldrin	0.0096	U	0.106	0.0986		ug/L		93	60 - 136	14	30
Endosulfan I	0.0096	U	0.106	0.0764		ug/L		72	62 - 126	19	30
Endosulfan II	0.0096	U	0.106	0.0887		ug/L		84	52 - 135	14	30
Endosulfan sulfate	0.0096	U	0.106	0.0993		ug/L		94	62 - 133	13	30
Endrin	0.0096	U	0.106	0.102		ug/L		97	60 - 138	15	30
Endrin aldehyde	0.0096	U	0.106	0.107		ug/L		101	51 - 132	16	30
Endrin ketone	0.0096	U	0.106	0.0956		ug/L		90	58 - 134	15	30
gamma-BHC (Lindane)	0.0096	U	0.106	0.0962		ug/L		91	59 - 134	24	30
Heptachlor	0.017	U	0.106	0.0759		ug/L		72	54 - 130	28	30
Heptachlor epoxide	0.0096	U	0.106	0.0975		ug/L		92	61 - 133	18	30

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: 680-144887-1 MSD
Matrix: Water
Analysis Batch: 501243

Client Sample ID: LFM-99-02B-FALL17
Prep Type: Total/NA
Prep Batch: 500854

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methoxychlor	0.017	U	0.106	0.0937		ug/L		88	54 - 145	11	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*46*		*14 - 130*
Tetrachloro-m-xylene	*62*		*44 - 124*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 680-501178/2
Matrix: Water
Analysis Batch: 501178

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	0.50	U	0.50	0.50	0.20	mg/L		11/03/17 08:48	1
Sulfate	1.0	U	1.0	1.0	0.40	mg/L		11/03/17 08:48	1

Lab Sample ID: LCS 680-501178/3
Matrix: Water
Analysis Batch: 501178

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.91		mg/L		99	87 - 111
Sulfate	10.0	9.02		mg/L		90	87 - 112

Lab Sample ID: LCSD 680-501178/4
Matrix: Water
Analysis Batch: 501178

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	9.92		mg/L		99	87 - 111	0	15
Sulfate	10.0	9.17		mg/L		92	87 - 112	2	15

Lab Sample ID: 680-144887-1 MS
Matrix: Water
Analysis Batch: 501178

Client Sample ID: LFM-99-02B-FALL17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	440	D	100	532	D J 4	mg/L		92	87 - 111

Lab Sample ID: 680-144887-1 MS
Matrix: Water
Analysis Batch: 501178

Client Sample ID: LFM-99-02B-FALL17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	21	M	10.0	30.7	M	mg/L		99	87 - 112

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: 680-144887-1 MSD
Matrix: Water
Analysis Batch: 501178

Client Sample ID: LFM-99-02B-FALL17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	440	D	100	531	D J 4	mg/L		91	87 - 111	0	15

Lab Sample ID: 680-144887-1 MSD
Matrix: Water
Analysis Batch: 501178

Client Sample ID: LFM-99-02B-FALL17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	21	M	10.0	30.9	M	mg/L		101	87 - 112	0	15

Lab Sample ID: 680-144887-4 DU
Matrix: Water
Analysis Batch: 501178

Client Sample ID: LFM-99-06A RP-FALL17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	390	D	397	D	mg/L		1	15
Sulfate	20	J D M	19.7	J D M	mg/L		0	15

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-500708/1-A
Matrix: Water
Analysis Batch: 501004

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500708

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		11/01/17 10:37	1
Barium	1.5	U	5.0	1.5	0.61	ug/L		11/01/17 10:37	1
Cadmium	0.40	U	0.50	0.40	0.15	ug/L		11/01/17 10:37	1
Chromium	4.0	U Q	5.0	4.0	1.6	ug/L		11/01/17 10:37	1
Copper	4.0	U	5.0	4.0	1.7	ug/L		11/01/17 10:37	1
Iron	75	U	100	75	25	ug/L		11/01/17 10:37	1
Lead	2.5	U	2.5	2.5	0.98	ug/L		11/01/17 10:37	1
Manganese	5.0	U	5.0	5.0	1.8	ug/L		11/01/17 10:37	1
Selenium	2.5	U	2.5	2.5	1.0	ug/L		11/01/17 10:37	1
Silver	0.30	U	1.0	0.30	0.10	ug/L		11/01/17 10:37	1

Lab Sample ID: LCS 680-500708/2-A
Matrix: Water
Analysis Batch: 501004

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 500708

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	104		ug/L		104	84 - 116
Barium	100	108		ug/L		108	86 - 114
Cadmium	50.0	54.9		ug/L		110	87 - 115
Chromium	100	106	Q	ug/L		106	85 - 116
Copper	100	107		ug/L		107	85 - 118
Iron	5000	5080		ug/L		102	87 - 118
Lead	500	535		ug/L		107	88 - 115
Manganese	500	524		ug/L		105	87 - 115
Selenium	100	105		ug/L		105	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 680-500708/2-A
Matrix: Water
Analysis Batch: 501004

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 500708

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Silver			50.0	52.4		ug/L		105	85 - 116		

Lab Sample ID: 680-144887-1 MS
Matrix: Water
Analysis Batch: 501004

Client Sample ID: LFM-99-02B-FALL17
Prep Type: Total/NA
Prep Batch: 500708

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic	3.0	U	100	99.8		ug/L		100	84 - 116		
Barium	19		100	120		ug/L		101	86 - 114		
Cadmium	0.40	U	50.0	50.1		ug/L		100	87 - 115		
Chromium	4.0	U Q	100	96.6	Q	ug/L		97	85 - 116		
Copper	4.0	U	100	96.4		ug/L		96	85 - 118		
Iron	75	U	5000	4660		ug/L		93	87 - 118		
Lead	2.5	U	500	491		ug/L		98	88 - 115		
Manganese	5.0	U	500	483		ug/L		97	87 - 115		
Selenium	2.5	U	100	99.6		ug/L		100	80 - 120		
Silver	0.56	J	50.0	43.5		ug/L		86	85 - 116		

Lab Sample ID: 680-144887-1 MSD
Matrix: Water
Analysis Batch: 501004

Client Sample ID: LFM-99-02B-FALL17
Prep Type: Total/NA
Prep Batch: 500708

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	3.0	U	100	104		ug/L		104	84 - 116	4	20
Barium	19		100	123		ug/L		104	86 - 114	3	20
Cadmium	0.40	U	50.0	53.7		ug/L		107	87 - 115	7	20
Chromium	4.0	U Q	100	103	Q	ug/L		103	85 - 116	6	20
Copper	4.0	U	100	102		ug/L		102	85 - 118	6	20
Iron	75	U	5000	4950		ug/L		99	87 - 118	6	20
Lead	2.5	U	500	517		ug/L		103	88 - 115	5	20
Manganese	5.0	U	500	514		ug/L		103	87 - 115	6	20
Selenium	2.5	U	100	103		ug/L		103	80 - 120	4	20
Silver	0.56	J	50.0	41.4	J	ug/L		82	85 - 116	5	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-500496/13-A
Matrix: Water
Analysis Batch: 500688

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500496

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/30/17 16:30	1

Lab Sample ID: LCS 680-500496/14-A
Matrix: Water
Analysis Batch: 500688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 500496

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			2.50	2.58		ug/L		103	80 - 124		

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL

TestAmerica Job ID: 680-144887-1

Lab Sample ID: 680-144887-1 MS — **Client Sample ID: LFM-99-02B-FALL17**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 500688 — **Prep Batch: 500496**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.20	U	1.00	1.05		ug/L		105	80 - 124

Lab Sample ID: 680-144887-1 MSD — **Client Sample ID: LFM-99-02B-FALL17**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 500688 — **Prep Batch: 500496**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.20	U	1.00	1.06		ug/L		106	80 - 124	2	20

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 280-393314/22 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 393314

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	0.050	U	0.10	0.050	0.019	mg/L		10/30/17 18:02	1

Lab Sample ID: LCS 280-393314/21 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 393314

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate/Nitrite-N	5.00	4.96		mg/L		99	90 - 110

Lab Sample ID: 680-144887-1 MS — **Client Sample ID: LFM-99-02B-FALL17**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 393314

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate/Nitrite-N	0.78		4.00	4.97		mg/L		105	90 - 110

Lab Sample ID: 680-144887-1 MSD — **Client Sample ID: LFM-99-02B-FALL17**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 393314

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate/Nitrite-N	0.78		4.00	4.95		mg/L		104	90 - 110	0	10

Method: 410.4 - COD

Lab Sample ID: MB 280-393378/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 393378

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chemical Oxygen Demand	6.16	J	20	10	4.1	mg/L		10/31/17 09:22	1

Method: 410.4 - COD (Continued)

Lab Sample ID: LCS 280-393378/3
Matrix: Water
Analysis Batch: 393378

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	100	97.7		mg/L		98	90 - 110

Lab Sample ID: LCSD 280-393378/4
Matrix: Water
Analysis Batch: 393378

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	100	100		mg/L		100	90 - 110	3	11

Lab Sample ID: 680-144887-1 MS
Matrix: Water
Analysis Batch: 393378

Client Sample ID: LFM-99-02B-FALL17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	8.1	J	50.0	54.7		mg/L		93	90 - 110

Lab Sample ID: 680-144887-1 MSD
Matrix: Water
Analysis Batch: 393378

Client Sample ID: LFM-99-02B-FALL17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	8.1	J	50.0	52.8	J	mg/L		89	90 - 110	4	11

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-501381/1-A
Matrix: Water
Analysis Batch: 501485

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 501381

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		11/06/17 11:03	1

Lab Sample ID: LCS 680-501381/2-A
Matrix: Water
Analysis Batch: 501485

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 501381

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0500	0.0522		mg/L		104	83 - 116

Lab Sample ID: 680-144887-1 MS
Matrix: Water
Analysis Batch: 501485

Client Sample ID: LFM-99-02B-FALL17
Prep Type: Total/NA
Prep Batch: 501381

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0050	U	0.0500	0.0526		mg/L		105	83 - 116

Method: 9012B - Cyanide, Total and/or Amenable (Continued)

Lab Sample ID: 680-144887-1 MSD — **Client Sample ID: LFM-99-02B-FALL17**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 501485 — **Prep Batch: 501381**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	0.0050	U	0.0500	0.0512		mg/L		102	83 - 116	3	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-394471/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 394471

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	3.2	U	5.0	3.2	1.1	mg/L		11/08/17 11:29	1

Lab Sample ID: LCS 280-394471/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 394471

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	199		mg/L		99	90 - 110

Lab Sample ID: MB 280-394502/31 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 394502

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	2.64	J	5.0	3.2	1.1	mg/L		11/08/17 14:37	1

Lab Sample ID: LCS 280-394502/30 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 394502

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	193		mg/L		97	90 - 110

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-393492/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 393492

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	10	U	10	10	4.7	mg/L		11/01/17 07:12	1

Lab Sample ID: LCS 280-393492/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 393492

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	486		mg/L		97	86 - 110

GC Semi VOA

Prep Batch: 500854

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	3520C	
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	3520C	
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	3520C	
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	3520C	
MB 680-500854/16-A	Method Blank	Total/NA	Water	3520C	
LCS 680-500854/17-A	Lab Control Sample	Total/NA	Water	3520C	
680-144887-1 MS	LFM-99-02B-FALL17	Total/NA	Water	3520C	
680-144887-1 MSD	LFM-99-02B-FALL17	Total/NA	Water	3520C	

Analysis Batch: 501243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	8081B 8082A	500854
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	8081B 8082A	500854
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	8081B 8082A	500854
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	8081B 8082A	500854
MB 680-500854/16-A	Method Blank	Total/NA	Water	8081B 8082A	500854
LCS 680-500854/17-A	Lab Control Sample	Total/NA	Water	8081B 8082A	500854
680-144887-1 MS	LFM-99-02B-FALL17	Total/NA	Water	8081B 8082A	500854
680-144887-1 MSD	LFM-99-02B-FALL17	Total/NA	Water	8081B 8082A	500854

HPLC/IC

Analysis Batch: 501178

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	9056A	
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	9056A	
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	9056A	
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	9056A	
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	9056A	
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	9056A	
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	9056A	
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	9056A	
MB 680-501178/2	Method Blank	Total/NA	Water	9056A	
LCS 680-501178/3	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-501178/4	Lab Control Sample Dup	Total/NA	Water	9056A	
680-144887-1 MS	LFM-99-02B-FALL17	Total/NA	Water	9056A	
680-144887-1 MS	LFM-99-02B-FALL17	Total/NA	Water	9056A	
680-144887-1 MSD	LFM-99-02B-FALL17	Total/NA	Water	9056A	
680-144887-1 MSD	LFM-99-02B-FALL17	Total/NA	Water	9056A	
680-144887-4 DU	LFM-99-06A RP-FALL17	Total/NA	Water	9056A	

Metals

Prep Batch: 500496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	7470A	
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	7470A	
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	7470A	
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	7470A	
MB 680-500496/13-A	Method Blank	Total/NA	Water	7470A	

Metals (Continued)

Prep Batch: 500496 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-500496/14-A	Lab Control Sample	Total/NA	Water	7470A	
680-144887-1 MS	LFM-99-02B-FALL17	Total/NA	Water	7470A	
680-144887-1 MSD	LFM-99-02B-FALL17	Total/NA	Water	7470A	

Analysis Batch: 500688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	7470A	500496
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	7470A	500496
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	7470A	500496
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	7470A	500496
MB 680-500496/13-A	Method Blank	Total/NA	Water	7470A	500496
LCS 680-500496/14-A	Lab Control Sample	Total/NA	Water	7470A	500496
680-144887-1 MS	LFM-99-02B-FALL17	Total/NA	Water	7470A	500496
680-144887-1 MSD	LFM-99-02B-FALL17	Total/NA	Water	7470A	500496

Prep Batch: 500708

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	3010A	
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	3010A	
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	3010A	
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	3010A	
MB 680-500708/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-500708/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-144887-1 MS	LFM-99-02B-FALL17	Total/NA	Water	3010A	
680-144887-1 MSD	LFM-99-02B-FALL17	Total/NA	Water	3010A	

Analysis Batch: 501004

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	6020A	500708
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	6020A	500708
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	6020A	500708
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	6020A	500708
MB 680-500708/1-A	Method Blank	Total/NA	Water	6020A	500708
LCS 680-500708/2-A	Lab Control Sample	Total/NA	Water	6020A	500708
680-144887-1 MS	LFM-99-02B-FALL17	Total/NA	Water	6020A	500708
680-144887-1 MSD	LFM-99-02B-FALL17	Total/NA	Water	6020A	500708

General Chemistry

Analysis Batch: 393314

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	353.2	
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	353.2	
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	353.2	
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	353.2	
MB 280-393314/22	Method Blank	Total/NA	Water	353.2	
LCS 280-393314/21	Lab Control Sample	Total/NA	Water	353.2	
680-144887-1 MS	LFM-99-02B-FALL17	Total/NA	Water	353.2	
680-144887-1 MSD	LFM-99-02B-FALL17	Total/NA	Water	353.2	

General Chemistry (Continued)

Analysis Batch: 393378

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	410.4	
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	410.4	
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	410.4	
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	410.4	
MB 280-393378/5	Method Blank	Total/NA	Water	410.4	
LCS 280-393378/3	Lab Control Sample	Total/NA	Water	410.4	
LCSD 280-393378/4	Lab Control Sample Dup	Total/NA	Water	410.4	
680-144887-1 MS	LFM-99-02B-FALL17	Total/NA	Water	410.4	
680-144887-1 MSD	LFM-99-02B-FALL17	Total/NA	Water	410.4	

Analysis Batch: 393492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	SM 2540C	
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	SM 2540C	
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	SM 2540C	
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	SM 2540C	
MB 280-393492/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-393492/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 394471

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	SM 2320B	
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	SM 2320B	
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	SM 2320B	
MB 280-394471/5	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-394471/4	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 394502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	SM 2320B	
MB 280-394502/31	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-394502/30	Lab Control Sample	Total/NA	Water	SM 2320B	

Prep Batch: 501381

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	9012B	
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	9012B	
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	9012B	
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	9012B	
MB 680-501381/1-A	Method Blank	Total/NA	Water	9012B	
LCS 680-501381/2-A	Lab Control Sample	Total/NA	Water	9012B	
680-144887-1 MS	LFM-99-02B-FALL17	Total/NA	Water	9012B	
680-144887-1 MSD	LFM-99-02B-FALL17	Total/NA	Water	9012B	

Analysis Batch: 501485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144887-1	LFM-99-02B-FALL17	Total/NA	Water	9012B	501381
680-144887-2	LFM-99-05A-FALL17	Total/NA	Water	9012B	501381
680-144887-3	LFM-DUP01-FALL17	Total/NA	Water	9012B	501381
680-144887-4	LFM-99-06A RP-FALL17	Total/NA	Water	9012B	501381
MB 680-501381/1-A	Method Blank	Total/NA	Water	9012B	501381

General Chemistry (Continued)

Analysis Batch: 501485 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-501381/2-A	Lab Control Sample	Total/NA	Water	9012B	501381
680-144887-1 MS	LFM-99-02B-FALL17	Total/NA	Water	9012B	501381
680-144887-1 MSD	LFM-99-02B-FALL17	Total/NA	Water	9012B	501381

Client Sample ID: LFM-99-02B-FALL17

Lab Sample ID: 680-144887-1

Date Collected: 10/26/17 13:30

Matrix: Water

Date Received: 10/28/17 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1043.9 mL	10 mL	500854	11/01/17 16:06	CEW	TAL SAV
Total/NA	Analysis	8081B 8082A		1			501243	11/03/17 16:17	JCK	TAL SAV
	Instrument ID: CSGK									
Total/NA	Analysis	9056A		10	5 mL	5 mL	501178	11/03/17 12:42	CJM	TAL SAV
	Instrument ID: CICL									
Total/NA	Analysis	9056A		1	5 mL	5 mL	501178	11/03/17 14:12	CJM	TAL SAV
	Instrument ID: CICL									
Total/NA	Prep	3010A			50 mL	250 mL	500708	10/31/17 10:57	AJR	TAL SAV
Total/NA	Analysis	6020A		1			501004	11/01/17 10:46	BWR	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	7470A			50 mL	50 mL	500496	10/30/17 08:47	NVF	TAL SAV
Total/NA	Analysis	7470A		1			500688	10/30/17 16:37	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	393314	10/30/17 18:04	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	393378	10/31/17 09:22	CCJ	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	501381	11/06/17 06:31	DAM	TAL SAV
Total/NA	Analysis	9012B		1			501485	11/06/17 11:26	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	SM 2320B		1			394471	11/08/17 12:59	A1D	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	393492	11/01/17 07:12	JAP	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-99-05A-FALL17

Lab Sample ID: 680-144887-2

Date Collected: 10/27/17 09:35

Matrix: Water

Date Received: 10/28/17 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			997 mL	10 mL	500854	11/01/17 16:06	CEW	TAL SAV
Total/NA	Analysis	8081B 8082A		1			501243	11/03/17 17:57	JCK	TAL SAV
	Instrument ID: CSGK									
Total/NA	Analysis	9056A		1	5 mL	5 mL	501178	11/03/17 15:07	CJM	TAL SAV
	Instrument ID: CICL									
Total/NA	Analysis	9056A		10	5 mL	5 mL	501178	11/03/17 15:25	CJM	TAL SAV
	Instrument ID: CICL									
Total/NA	Prep	3010A			50 mL	250 mL	500708	10/31/17 10:57	AJR	TAL SAV
Total/NA	Analysis	6020A		1			501004	11/01/17 11:59	BWR	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	7470A			50 mL	50 mL	500496	10/30/17 08:47	NVF	TAL SAV
Total/NA	Analysis	7470A		1			500688	10/30/17 16:47	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL

TestAmerica Job ID: 680-144887-1

Client Sample ID: LFM-99-05A-FALL17

Lab Sample ID: 680-144887-2

Date Collected: 10/27/17 09:35

Matrix: Water

Date Received: 10/28/17 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	353.2		1	100 mL	100 mL	393314	10/30/17 18:10	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	393378	10/31/17 09:22	CCJ	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	501381	11/06/17 06:31	DAM	TAL SAV
Total/NA	Analysis	9012B		1			501485	11/06/17 11:31	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	SM 2320B		1			394471	11/08/17 13:04	A1D	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	393492	11/01/17 07:12	JAP	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-DUP01-FALL17

Lab Sample ID: 680-144887-3

Date Collected: 10/27/17 09:40

Matrix: Water

Date Received: 10/28/17 10:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1042 mL	10 mL	500854	11/01/17 16:06	CEW	TAL SAV
Total/NA	Analysis	8081B 8082A		1			501243	11/03/17 18:14	JCK	TAL SAV
	Instrument ID: CSGK									
Total/NA	Analysis	9056A		1	5 mL	5 mL	501178	11/03/17 15:43	CJM	TAL SAV
	Instrument ID: CICL									
Total/NA	Analysis	9056A		10	5 mL	5 mL	501178	11/03/17 16:01	CJM	TAL SAV
	Instrument ID: CICL									
Total/NA	Prep	3010A			50 mL	250 mL	500708	10/31/17 10:57	AJR	TAL SAV
Total/NA	Analysis	6020A		1			501004	11/01/17 11:55	BWR	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	7470A			50 mL	50 mL	500496	10/30/17 08:47	NVF	TAL SAV
Total/NA	Analysis	7470A		1			500688	10/30/17 16:51	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	393314	10/30/17 18:12	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	393378	10/31/17 09:22	CCJ	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	501381	11/06/17 06:31	DAM	TAL SAV
Total/NA	Analysis	9012B		1			501485	11/06/17 11:32	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	SM 2320B		1			394471	11/08/17 13:09	A1D	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	393492	11/01/17 07:12	JAP	TAL DEN
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL

TestAmerica Job ID: 680-144887-1

Client Sample ID: LFM-99-06A RP-FALL17
Date Collected: 10/26/17 11:35
Date Received: 10/28/17 10:40

Lab Sample ID: 680-144887-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1045.8 mL	10 mL	500854	11/01/17 16:06	CEW	TAL SAV
Total/NA	Analysis	8081B 8082A		1			501243	11/03/17 18:30	JCK	TAL SAV
	Instrument ID: CSGK									
Total/NA	Analysis	9056A		1	5 mL	5 mL	501178	11/03/17 16:19	CJM	TAL SAV
	Instrument ID: CICL									
Total/NA	Analysis	9056A		25	5 mL	5 mL	501178	11/03/17 16:37	CJM	TAL SAV
	Instrument ID: CICL									
Total/NA	Prep	3010A			50 mL	250 mL	500708	10/31/17 10:57	AJR	TAL SAV
Total/NA	Analysis	6020A		1			501004	11/01/17 12:04	BWR	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	7470A			50 mL	50 mL	500496	10/30/17 08:47	NVF	TAL SAV
Total/NA	Analysis	7470A		1			500688	10/30/17 16:54	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	393314	10/30/17 18:14	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	393378	10/31/17 09:22	CCJ	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	501381	11/06/17 06:31	DAM	TAL SAV
Total/NA	Analysis	9012B		1			501485	11/06/17 11:34	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	SM 2320B		1			394502	11/08/17 16:02	A1D	TAL DEN
	Instrument ID: WC_AT2									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	393492	11/01/17 07:12	JAP	TAL DEN
	Instrument ID: NOEQUIP									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: Devons Spring RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
TK0122-1, 2, 3, 4, 5

Matrices: (Groundwater/Surface Water) Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B ✓	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1] *All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 11/13/2017

TEST AMERICA SAVANNAH
DEVENS SPRING 2017 LTM
680-14167-1
TK0122

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
DEVENS FALL 2017 LTM, 680-14167-1
TK0122

Sample Receipt

The following samples were received on October 28, 2017 and were logged in under Katahdin Analytical Services work order number TK0122 for a hardcopy due date of November 09, 2017.

KATAHDIN Sample No.	TEST AMERICA Sample Identification
TK0122-1	LFM-99-02B-FALL17
TK0122-2	LFM-99-05A-FALL17
TK0122-3	LFM-DUP01-FALL17
TK0122-4	LFM-99-06A RP-FALL17
TK0122-5	TRIP BLANK

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. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order TK0122 were analyzed in accordance with the Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MADEP, May 2004, Revision 1.1, and/or the Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

Sample TK0122-1 was used for the matrix spike (MS) and matrix spike duplicate (MSD), as per client request.

MA-EPH Analysis

There were no protocol deviations or observations noted by the organics laboratory staff for this analysis.

MA-VPH Analysis

Sample TK0122-5 had high recoveries for the surrogate 2,5-dibromotoluene on the PID and FID which were outside of the method acceptance limits. Since a high recovery would indicate a high bias and there were no target analytes or ranges detected above the MDL, no further action was taken.

The closing calibration standard (CV) (file 2KJ10298) had a low response for the compound n-decane that resulted in a %D that was greater than the method acceptance limit of 25%.

There were no other protocol deviations or observations noted by the organics laboratory staff.

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 the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond
11.10.17

Leslie Dimond
Quality Assurance Officer

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.

Katahdin Analytical Services, LLC. — Sample Receipt Condition Report

Client: Koman/TA	KAS PM: HHM	Sampled By: Client
Project:	KIMS Entry By: So	Delivered By: Fedex
KAS Work Order#: TK0120 → 0122	KIMS Review By: AMH	Received By: SO
SDG #:	Cooler: 1 of 2	Date/Time Rec.: 10-28-17 1030

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): 0.3
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
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 (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?					
Soil/Sediment:					
Received in airtight container?					
Received in methanol?					
Methanol covering soil?					
D.I. Water - Received within 48 hour HT?					
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
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, LLC. — Sample Receipt Condition Report

Client: Koman/TA	KAS PM: HHM	Sampled By: Client
Project:	KIMS Entry By: So	Delivered By: Fedex
KAS Work Order#: TK0120 → TK0122	KIMS Review By: AMH	Received By: SO
SDG #:	Cooler: 2 of 2	Date/Time Rec.: 10-28-17 1030

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): 3.2
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
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 (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
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.

TK0122

Chain of Custody Record

Page: 1 of: 1

PO #	17-636
	Devens - DCL 1024-003
Company	KOMAN GS, LLC
Address:	293 Boston Post Road, Suite 100 Marlborough, MA 01752
Phone:	508-366-7442
Fax:	508-366-7445
Sampled by [Print Name(s)]/Affilliation	[signature]
Sampler(s) Signature(s)	[signature]

KGS

Laboratory:	Test America - Savannah
Address:	510 LaRoche Ave Savannah, GA 31404
Contact:	Jerry Lanier
Regulatory Facility No.	
Project Name:	Devens Fall 2017 LTM
Sampling QAP No.:	
Approval Date:	
TAT	Routine
Other:	

Preservatives (see codes): H, H, I, N, O, I, S, I, I, S

Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40-ml VOA vials (HCl)	MA EPH 2-1liter amber glass(HCl)	Pesticides/SW8081 2-1liter amber glass	Total Metals* (SW6010/6020/7470) 1-250 ml poly (HNO3)	Total Cyanide/SW9012 1-250ml poly (NaOH)	Chloride/Sulfate (SW9056) 1-125ml poly	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4)	Alkalinity/SM2320B 1-250-ml poly	TDS/SM2540D 1-1liter poly	COD/SW9060 1-500-ml amber glass (H2SO4)	Remarks	Lab. No.
	LFM-99-02B-FAL17	10/26	1330	P	GW	45	X	X	X	X	X	X	X	X	X	X	MS/MSD	
	LFM-99-05A-FAL17	10/27	935	P	GW	15	X	X	X	X	X	X	X	X	X	X		
	LFM-DUP01-FAL17	10/27	940	P	GW	15	X	X	X	X	X	X	X	X	X	X		
	LFM-99-06A RP-FAL17	10/26	1135	P	GW	15	X	X	X	X	X	X	X	X	X	X		
	~~LFM-03-07-FAL17~~	~~MA~~		~~P~~	~~GW~~		~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~		
	Trip Blank	10/26	800	O	O	1	X											

Total Number of Containers

courier pick up

Shipping Details		Item No.	Relinquished by/Affiliation	Date	Time		Date	Time
Date Out:	Via:		[signature]	10/27/17		[signature]	10-27-17	1340
Returned:	Via:					[signature] KAS	10/28	1030

Additional Comments:
* = Total Metals include: Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)

email logins and results to:
lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐
On ICE ☐
Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater SE = Sediment SP = Soil SW = Surface Water S = Sulfuric Acid + Ice M = Methanol O = Other
PRESERVATIVE CODES H = HCL + Ice I = Ice Only N = Nitric Acid + Ice O = Other
COLLECTION METHOD C = Composite G=Grab P= Pumping O = Other

0000007

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Oct. 30, 2017
12:41 PM

Login Number: TK0122

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Quote/Incoming:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 4.2 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative. Sample data summary needs all forms.
CHECK NO.	:	
CLIENT PO#	:	
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	W912WJ-10-D-0003
COOLER TEMPERATURE	:	0.3, 3.2
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS033QC-XLS
LOGIN INITIALS	:	GN
PM	:	HHM
PROJECT NAME	:	Devens Spring 2017 LTM, 680-141617-1
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	Email PDF, EDD files and invoice to Jerry. No HC. Include Level 4 narrative and MCP forms. Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Sample data summary needs all forms. Email PDF, EDD files and invoice to Jerry. No HC.
SDG ID	:	
SDG13430S	:	
VERBAL TAT	:	

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TK0122-1	LFM-99-02B-FALL17	26-OCT-17 14:30	28-OCT-17			09-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	09-NOV-17	1L N-Amber Glass		**MS/MSD**
Aqueous	S	MA-VPH	09-NOV-17	40mL Vial+HCl		

TK0122-2	LFM-99-05A-FALL17	27-OCT-17 09:35	28-OCT-17			09-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	10-NOV-17	1L N-Amber Glass		
Aqueous	S	MA-VPH	10-NOV-17	40mL Vial+HCl		

TK0122-3	LFM-DUP01-FALL17	27-OCT-17 09:40	28-OCT-17			09-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	10-NOV-17	1L N-Amber Glass		
Aqueous	S	MA-VPH	10-NOV-17	40mL Vial+HCl		

TK0122-4	LFM-99-06A RP-FALL17	26-OCT-17 11:35	28-OCT-17			09-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	09-NOV-17	1L N-Amber Glass		
Aqueous	S	MA-VPH	09-NOV-17	40mL Vial+HCl		

TK0122-5	TRIP BLANK	26-OCT-17 08:00	28-OCT-17			09-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	09-NOV-17	40mL Vial+HCl		

Total Samples: **5** ***Total Analyses:*** **9**

AMH 10/30/17

0000008

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U — Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* — Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D — Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E — Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J — Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J — Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B — Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C — Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L — Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M — Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N — Presumptive evidence of a compound based on a mass spectral library search.

A — Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P — Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0122-1
Client ID: LFM-99-02B-FALL17
Project: Devens Spring 2017 LTM, 680-141617-
SDG: TK0122
Lab File ID: CKK2047.D

Sample Date: 26-OCT-17
Received Date: 28-OCT-17
Extract Date: 02-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216908

Analysis Date: 06-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 07-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	96	ug/L	1	100	96.	48.	72.
C19-C36 Aliphatics	U	96	ug/L	1	100	96.	48.	72.
C11-C22 Aromatics	U	96	ug/L	1	100	96.	48.	72.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.86	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.96	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		80.2	%					
o-Terphenyl		63.9	%					
2-Fluorobiphenyl		72.8	%					
2-Bromonaphthalene		75.6	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0122-2
Client ID: LFM-99-05A-FALL17
Project: Devens Spring 2017 LTM, 680-141617-
SDG: TK0122
Lab File ID: CKK2048.D

Sample Date: 27-OCT-17
Received Date: 28-OCT-17
Extract Date: 02-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216908

Analysis Date: 06-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 07-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	52.	77.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	52.	77.
C11-C22 Aromatics	U	100	ug/L	1	100	100	52.	77.
Naphthalene	U	2.1	ug/L	1	2	2.1	0.93	1.5
2-Methylnaphthalene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Phenanthrene	U	2.1	ug/L	1	2	2.1	0.93	1.5
Acenaphthylene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Acenaphthene	U	2.1	ug/L	1	2	2.1	1.8	2.0
Anthracene	U	2.1	ug/L	1	2	2.1	1.4	1.5
Benzo(a)anthracene	U	2.1	ug/L	1	2	2.1	1.4	1.5
Benzo(a)pyrene	U	2.1	ug/L	1	2	2.1	1.3	1.5
Benzo(b)fluoranthene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Benzo(g,h,i)perylene	U	2.1	ug/L	1	2	2.1	1.3	1.5
Benzo(k)fluoranthene	U	2.1	ug/L	1	2	2.1	1.0	1.5
Chrysene	U	2.1	ug/L	1	2	2.1	0.93	1.5
Dibenzo(a,h)anthracene	U	2.1	ug/L	1	2	2.1	1.2	1.5
Fluoranthene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Fluorene	U	2.1	ug/L	1	2	2.1	0.93	1.5
Indeno(1,2,3-cd)pyrene	U	2.1	ug/L	1	2	2.1	1.4	1.5
Pyrene	U	2.1	ug/L	1	2	2.1	1.1	1.5
5-Alpha Androstane		69.6	%					
o-Terphenyl		77.2	%					
2-Fluorobiphenyl		83.6	%					
2-Bromonaphthalene		82.0	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0122-3
Client ID: LFM-DUP01-FALL17
Project: Devens Spring 2017 LTM, 680-141617-
SDG: TK0122
Lab File ID: CKK2049.D

Sample Date: 27-OCT-17
Received Date: 28-OCT-17
Extract Date: 02-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216908

Analysis Date: 06-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 07-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	110	ug/L	1	100	110	54.	81.
C19-C36 Aliphatics	U	110	ug/L	1	100	110	54.	81.
C11-C22 Aromatics	U	110	ug/L	1	100	110	54.	81.
Naphthalene	U	2.2	ug/L	1	2	2.2	0.97	1.6
2-Methylnaphthalene	U	2.2	ug/L	1	2	2.2	0.86	1.6
Phenanthrene	U	2.2	ug/L	1	2	2.2	0.97	1.6
Acenaphthylene	U	2.2	ug/L	1	2	2.2	0.86	1.6
Acenaphthene	U	2.2	ug/L	1	2	2.2	1.9	2.0
Anthracene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Benzo(a)anthracene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Benzo(a)pyrene	U	2.2	ug/L	1	2	2.2	1.4	1.6
Benzo(b)fluoranthene	U	2.2	ug/L	1	2	2.2	0.86	1.6
Benzo(g,h,i)perylene	U	2.2	ug/L	1	2	2.2	1.4	1.6
Benzo(k)fluoranthene	U	2.2	ug/L	1	2	2.2	1.1	1.6
Chrysene	U	2.2	ug/L	1	2	2.2	0.97	1.6
Dibenzo(a,h)anthracene	U	2.2	ug/L	1	2	2.2	1.3	1.6
Fluoranthene	U	2.2	ug/L	1	2	2.2	0.86	1.6
Fluorene	U	2.2	ug/L	1	2	2.2	0.97	1.6
Indeno(1,2,3-cd)pyrene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Pyrene	U	2.2	ug/L	1	2	2.2	1.2	1.6
5-Alpha Androstane		69.5	%					
o-Terphenyl		59.7	%					
2-Fluorobiphenyl		70.6	%					
2-Bromonaphthalene		68.0	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
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http://www.katahdinlab.com

Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0122-4
Client ID: LFM-99-06A RP-FALL17
Project: Devens Spring 2017 LTM, 680-141617-
SDG: TK0122
Lab File ID: CKK2050.D

Sample Date: 26-OCT-17
Received Date: 28-OCT-17
Extract Date: 02-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216908

Analysis Date: 06-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 07-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	95	ug/L	1	100	95.	48.	71.
C19-C36 Aliphatics	U	95	ug/L	1	100	95.	48.	71.
C11-C22 Aromatics	U	95	ug/L	1	100	95.	48.	71.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.86	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.95	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		65.5	%					
o-Terphenyl		55.5	%					
2-Fluorobiphenyl		67.4	%					
2-Bromonaphthalene		67.6	%					

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Report of Analytical Results

Client:
Lab ID: WG216908-1
Client ID: Method Blank Sample
Project:
SDG: TK0122
Lab File ID: CKK2042.D

Sample Date:
Received Date:
Extract Date: 02-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216908

Analysis Date: 06-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 07-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		71.3	%					
o-Terphenyl		69.4	%					
2-Fluorobiphenyl		77.7	%					
2-Bromonaphthalene		65.7	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Devens Spring 2017 LTM, 680-141617-1 **Matrix:** AQ
Lab Code: KAS **SDG:** TK0122

Client Sample ID	Lab Sample ID	Col. ID	2BN	#	2FBP	#	5AA	#	OTP	#
LFM-99-02B-FALL17	TK0122-1	B	75.6		72.8		80.2		63.9	
LFM-99-05A-FALL17	TK0122-2	B	82.0		83.6		69.6		77.2	
LFM-DUP01-FALL17	TK0122-3	B	68.0		70.6		69.5		59.7	
LFM-99-06A RP-FALL17	TK0122-4	B	67.6		67.4		65.5		55.5	
Method Blank Sample	WG216908-1	B	65.7		77.7		71.3		69.4	
Laboratory Control S	WG216908-2	B	86.4		85.4		77.0		77.8	
Laboratory Control S	WG216908-3	B	97.1		91.9		81.9		80.0	
Matrix Spike	WG216908-4	B	84.1		80.7		74.1		73.1	
Matrix Spike Duplica	WG216908-5	B	91.2		90.6		84.1		85.9	

		QC Limits
5AA	5-ALPHA ANDROSTANE	40-140
OTP	O-TERPHENYL	40-140
2FBP	2-FLUOROBIPHENYL	40-140
2BN	2-BROMONAPHTHALENE	40-140

= 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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LCS/LCSD Recovery Report

LCS ID: WG216908-2
LCSD ID: WG216908-3
Project:
SDG: TK0122
Report Date: 07-NOV-17
LCS File ID: CKK2043.D

Received Date:
Extract Date: 02-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216908
LCSD File ID: CKK1044.d

Analysis Date: 06-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	1230	80.4	1310	85.6	ug/L	6	25	40-140
C9-C18 Aliphatics	540.	481.	89.1	490.	90.7	ug/L	2	25	40-140
C19-C36 Aliphatics	720.	553.	76.8	572.	79.4	ug/L	3	25	40-140
Naphthalene	90.0	66.5	73.9	73.7	81.9	ug/L	10	25	40-140
2-Methylnaphthalene	90.0	72.2	80.2	79.4	88.2	ug/L	9	25	40-140
Phenanthrene	90.0	64.4	71.6	70.3	78.1	ug/L	9	25	40-140
Acenaphthylene	90.0	63.8	70.9	70.5	78.3	ug/L	10	25	40-140
Acenaphthene	90.0	64.3	71.4	71.0	78.9	ug/L	10	25	40-140
Anthracene	90.0	67.1	74.6	73.6	81.8	ug/L	9	25	40-140
Benzo(a)anthracene	90.0	73.1	81.2	78.4	87.1	ug/L	7	25	40-140
Benzo(a)pyrene	90.0	77.3	85.9	83.1	92.3	ug/L	7	25	40-140
Benzo(b)fluoranthene	90.0	78.6	87.3	81.2	90.2	ug/L	3	25	40-140
Benzo(g,h,i)perylene	90.0	81.4	90.4	83.1	92.3	ug/L	2	25	40-140
Benzo(k)fluoranthene	90.0	70.7	78.6	78.0	86.7	ug/L	10	25	40-140
Chrysene	90.0	76.2	84.7	81.2	90.2	ug/L	6	25	40-140
Dibenzo(a,h)anthracene	90.0	76.6	85.1	82.6	91.8	ug/L	8	25	40-140
Fluoranthene	90.0	71.5	79.4	76.6	85.1	ug/L	7	25	40-140
Fluorene	90.0	63.0	70.0	69.4	77.1	ug/L	10	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	73.3	81.4	74.7	83.0	ug/L	2	25	40-140
Pyrene	90.0	70.3	78.1	75.3	83.7	ug/L	7	25	40-140
5-Alpha Androstane			77.0		81.9				40-140
o-Terphenyl			77.8		80.0				40-140
2-Fluorobiphenyl			85.4		91.9				40-140
2-Bromonaphthalene			86.4		97.1				40-140

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MS/MSD Recovery Report

MS ID: WG216908-4
MSD ID: WG216908-5
Sample ID: TK0122-1
Client ID: LFM-99-02B-FALL17
Project:
SDG: TK0122
MS File ID: CKK2045.D

Received Date:
Extract Date: 02-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216908
Report Date: 07-NOV-17
MSD File ID: CKK1046.d

Analysis Date: 06-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
C9-C18 Aliphatics	509.	509.	ug/L	U96	418	490	82.0	96.2	16	25	40-140
C19-C36 Aliphatics	679.	679.	ug/L	U96	480	575	70.7	84.6	18	25	40-140
Naphthalene	84.9	84.9	ug/L	U1.9	61.2	71.2	72.1	83.8	15	25	40-140
2-Methylnaphthalene	84.9	84.9	ug/L	U1.9	66.2	78.4	78.0	92.3	17	25	40-140
Phenanthrene	84.9	84.9	ug/L	U1.9	61	72	71.8	84.8	16	25	40-140
Acenaphthylene	84.9	84.9	ug/L	U1.9	58.7	70	69.1	82.4	18	25	40-140
Acenaphthene	84.9	84.9	ug/L	U1.9	59.7	70.5	70.3	83.0	16	25	40-140
Anthracene	84.9	84.9	ug/L	U1.9	63.6	75	74.9	88.3	16	25	40-140
Benzo(a)anthracene	84.9	84.9	ug/L	U1.9	68.9	80.9	81.1	95.3	16	25	40-140
Benzo(a)pyrene	84.9	84.9	ug/L	U1.9	72.8	84.6	85.7	99.6	15	25	40-140
Benzo(b)fluoranthene	84.9	84.9	ug/L	U1.9	68.6	82.5	80.8	97.2	18	25	40-140
Benzo(g,h,i)perylene	84.9	84.9	ug/L	U1.9	74.2	85.9	87.4	101.	15	25	40-140
Benzo(k)fluoranthene	84.9	84.9	ug/L	U1.9	71.5	80.6	84.2	94.9	12	25	40-140
Chrysene	84.9	84.9	ug/L	U1.9	71.1	82.7	83.7	97.4	15	25	40-140
Dibenzo(a,h)anthracene	84.9	84.9	ug/L	U1.9	73.5	80.3	86.6	94.6	9	25	40-140
Fluoranthene	84.9	84.9	ug/L	U1.9	67.8	79.6	79.8	93.8	16	25	40-140
Fluorene	84.9	84.9	ug/L	U1.9	59.9	70.8	70.5	83.4	17	25	40-140
Indeno(1,2,3-cd)pyrene	84.9	84.9	ug/L	U1.9	65.3	81.8	76.9	96.3	22	25	40-140
Pyrene	84.9	84.9	ug/L	U1.9	67	78.5	78.9	92.4	16	25	40-140
5-Alpha Androstane							74.1	84.1			40-140
o-Terphenyl							73.1	85.9			40-140
2-Fluorobiphenyl							80.7	90.6			40-140
2-Bromonaphthalene							84.1	91.2			40-140

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-141617-1
Lab File ID : CKK1042.D
Instrument ID : GC12

SDG : TK0122
Lab Sample ID : WG216908-1
Date Analyzed : 06-NOV-17
Time Analyzed : 12:37
Date Extracted : 02-NOV-17

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	WG216908-2	CKK1043.I	11/06/17	13:22
Laboratory Control S	WG216908-3	CKK1044.I	11/06/17	14:07
Matrix Spike	WG216908-4	CKK1045.I	11/06/17	14:52
Matrix Spike Duplica	WG216908-5	CKK1046.I	11/06/17	15:38
LFM-99-02B-FALL17	TK0122-1	CKK1047.I	11/06/17	16:23
LFM-99-05A-FALL17	TK0122-2	CKK1048.I	11/06/17	17:08
LFM-DUP01-FALL17	TK0122-3	CKK1049.I	11/06/17	17:54
LFM-99-06A RP-FALL17	TK0122-4	CKK1050.I	11/06/17	18:39

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-141617-1
Lab File ID : CKK1042A.D
Instrument ID : GC12

SDG : TK0122
Lab Sample ID : WG216908-1
Date Analyzed : 06-NOV-17
Time Analyzed : 12:37
Date Extracted : 02-NOV-17

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	WG216908-2	CKK1043A	11/06/17	13:22
Laboratory Control S	WG216908-3	CKK1044A	11/06/17	14:07
Matrix Spike	WG216908-4	CKK1045A	11/06/17	14:52
Matrix Spike Duplica	WG216908-5	CKK1046A	11/06/17	15:38
LFM-99-02B-FALL17	TK0122-1	CKK1047A	11/06/17	16:23
LFM-99-05A-FALL17	TK0122-2	CKK1048A	11/06/17	17:08
LFM-DUP01-FALL17	TK0122-3	CKK1049A	11/06/17	17:54
LFM-99-06A RP-FALL17	TK0122-4	CKK1050A	11/06/17	18:39

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-141617-1
Lab File ID : CKK2042.D
Instrument ID : GC12

SDG : TK0122
Lab Sample ID : WG216908-1
Date Analyzed : 06-NOV-17
Time Analyzed : 12:37
Date Extracted : 02-NOV-17

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	WG216908-2	CKK2043.I	11/06/17	13:22
Laboratory Control S	WG216908-3	CKK2044.I	11/06/17	14:07
Matrix Spike	WG216908-4	CKK2045.I	11/06/17	14:52
Matrix Spike Duplica	WG216908-5	CKK2046.I	11/06/17	15:38
LFM-99-02B-FALL17	TK0122-1	CKK2047.I	11/06/17	16:23
LFM-99-05A-FALL17	TK0122-2	CKK2048.I	11/06/17	17:08
LFM-DUP01-FALL17	TK0122-3	CKK2049.I	11/06/17	17:54
LFM-99-06A RP-FALL17	TK0122-4	CKK2050.I	11/06/17	18:39

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TK0122

Project : Devens Spring 2017 LTM, 680-141617-1 **Instrument ID:** GC12

Lab File IDs : CJL2042.d CJL2041.d CJL2040.d CJL2039.d CJL2038.d **Calibration Date(s):** 12-DEC-16 13:21 12-DEC-16 16:23

	Level 1	Level 2	Level 3	Level 4	Level 5		Crv					Max	
	1.0000	10.0000	50.0000	100.0000	200.0000		New	b	m1	m2	%RSD	%RSD	
C9-C18 Aliphatic	7526	7182	7357	7167	7368		AVG		7320		2.03259	25.00000	M (
C19-C36 Aliphatic	7220	7092	7302	7139	7317		AVG		7214		1.36770	25.00000	S O
C-9	7310	7150	7322	7139	7389		AVG		7262		1.53498	30.00000	O
C-10	7778	7150	7360	7200	7393		AVG		7376		3.35050	25.00000	O
C-12	7510	7184	7394	7207	7395		AVG		7338		1.88894	25.00000	O
C-14	7462	7209	7358	7149	7332		AVG		7302		1.69941	25.00000	O
C-16	7420	7200	7387	7182	7367		AVG		7311		1.52920	25.00000	O
C-18	7673	7197	7318	7122	7329		AVG		7328		2.88483	25.00000	O
C-19	7548	7230	7430	7235	7417		AVG		7372		1.86151	25.00000	O
C-20	7386	7150	7360	7176	7361		AVG		7287		1.56168	25.00000	O
C-22	7434	7222	7396	7200	7377		AVG		7326		1.46069	25.00000	O
C-24	7191	6900	7069	6922	7097		AVG		7036		1.74718	25.00000	O
C-26	7371	7294	7464	7287	7479		AVG		7379		1.23021	25.00000	O
C-28	7546	7210	7370	7194	7367		AVG		7337		1.95633	25.00000	O
C-30	7146	7215	7425	7258	7431		AVG		7295		1.75430	25.00000	O
C-36	6136	6516	6901	6839	7008		AVG		6680		5.31606	25.00000	O
5-alpha androstane	7350	7308	7557	7362	7557		AVG		7427		1.62567	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TK0122

Project : Devens Spring 2017 LTM, 680-141617-1 **Instrument ID:** GC12

Lab File IDs : CKA1165.d CKA1164.d CKA1163.d CKA1162.d CKA1161.d **Calibration Date(s):** 27-JAN-17 08:52 27-JAN-17 11:55

	Level 1 1.0000	Level 2 10.0000	Level 3 50.0000	Level 4 100.0000	Level 5 200.0000		Crv New	b	m1	m2	%RSD	Max %RSD	
Unadjusted C11-C22 Aromatic	9604	10055	10742	10680	10816		AVG		10379		5.09618	25.00000	M (
Naphthalene	9069	10177	10803	10769	10802		AVG		10324		7.26770	25.00000	O
2-Methylnaphthalene	8366	9250	9877	9833	9872		AVG		9439		6.94979	25.00000	O
Acenaphthylene	9940	9974	10583	10497	10520		AVG		10303		3.08087	25.00000	O
Acenaphthene	10183	10248	10912	10778	10818		AVG		10588		3.24959	25.00000	O
Fluorene	10793	10271	10803	10737	10774		AVG		10676		2.13416	25.00000	O
Phenanthrene	11041	10209	10813	10735	10785		AVG		10717		2.86411	25.00000	O
Anthracene	9100	10068	10667	10650	10721		AVG		10241		6.74935	25.00000	O
Fluoranthene	10303	10316	10868	10776	10823		AVG		10617		2.66160	25.00000	O
Pyrene	10782	10411	11079	10982	11032		AVG		10857		2.52045	25.00000	O
Benzo(a)Anthracene	9227	10336	10982	10886	10969		AVG		10480		7.15158	25.00000	O
Chrysene	9274	10263	10924	10851	10890		AVG		10440		6.76602	25.00000	O
Benzo(b)Fluoranthene	9692	11159	11927	11685	10160		AVG		10925		8.85541	25.00000	O
Benzo(k)Fluoranthene	9547	9676	10302	10336	11922		AVG		10357		9.12417	25.00000	O
Benzo(a)Pyrene	8318	9971	10694	10588	10678		AVG		10050		10.0783	25.00000	O
Indeno(1,2,3-cd)Pyrene	9301	10184	11660	12539	12267		AVG		11190		12.4639	25.00000	O
Dibenzo(a,h)Anthracene	9470	9270	9493	8636	10553		AVG		9484		7.28145	25.00000	O
Benzo(g,h,i)Perylene	8857	9158	10229	10285	10287		AVG		9763		7.15219	25.00000	O
2-Fluorobiphenyl	8915	9124	9699	9610	9692		AVG		9408		3.86923	25.00000	
2-Bromonaphthalene	4210	5999	6619	6568	6632		AVG		6005		17.2823	25.00000	
O-Terphenyl	12233	10214	10840	10690	10761		AVG		10947		6.93035	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-1
Lab ID : WG217218-1
Lab File ID : CKK1040.d
Initial Calibration Date(s): 01/27/17 08:52 01/27/17 11:55

SDG: TK0122
Analytical Date: 11/06/17 10:04
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	10324	9086	0.010	-11.98695	25.00000	Averaged
60	2-Methylnaphthalene	9439	8194	0.010	-13.19752	25.00000	Averaged
70	Phenanthrene	10717	8635	0.010	-19.42250	25.00000	Averaged
80	Acenaphthylene	10303	8669	0.010	-15.86018	25.00000	Averaged
90	Acenaphthene	10588	8936	0.010	-15.59761	25.00000	Averaged
100	Anthracene	10241	8717	0.010	-14.88535	25.00000	Averaged
110	Benzo(a)Anthracene	10480	8838	0.010	-15.66414	25.00000	Averaged
120	Benzo(a)Pyrene	10050	8848	0.010	-11.95861	25.00000	Averaged
130	Benzo(b)Fluoranthene	10925	9887	0.010	-9.49926	25.00000	Averaged
140	Benzo(g,h,i)Perylene	9763	8784	0.010	-10.02660	25.00000	Averaged
150	Benzo(k)Fluoranthene	10357	8590	0.010	-17.05656	25.00000	Averaged
160	Chrysene	10440	9208	0.010	-11.80870	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	9484	8166	0.010	-13.90284	25.00000	Averaged
180	Fluoranthene	10617	8932	0.010	-15.87008	25.00000	Averaged
190	Fluorene	10676	8814	0.010	-17.43968	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	11190	9645	0.010	-13.80351	25.00000	Averaged
210	Pyrene	10857	9158	0.010	-15.65314	25.00000	Averaged
4	2-Fluorobiphenyl	9408	8093	0.010	-13.98097	25.00000	Averaged
6	2-Bromonaphthalene	6005	5312	0.010	-11.55030	25.00000	Averaged
11	O-Terphenyl	10947	8596	0.010	-21.48051	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-1
Lab ID : WG217218-2
Lab File ID : CKK1057.d
Initial Calibration Date(s): 01/27/17 08:52 01/27/17 11:55

SDG: TK0122
Analytical Date: 11/06/17 23:57
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	10324	11271	0.010	9.17477	25.00000	Averaged
60	2-Methylnaphthalene	9439	10155	0.010	7.57693	25.00000	Averaged
70	Phenanthrene	10717	10750	0.010	0.31461	25.00000	Averaged
80	Acenaphthylene	10303	10821	0.010	5.02603	25.00000	Averaged
90	Acenaphthene	10588	11231	0.010	6.07530	25.00000	Averaged
100	Anthracene	10241	10659	0.010	4.08200	25.00000	Averaged
110	Benzo(a)Anthracene	10480	11042	0.010	5.35876	25.00000	Averaged
120	Benzo(a)Pyrene	10050	11068	0.010	10.12830	25.00000	Averaged
130	Benzo(b)Fluoranthene	10925	12885	0.010	17.94388	25.00000	Averaged
140	Benzo(g,h,i)Perylene	9763	10691	0.010	9.50447	25.00000	Averaged
150	Benzo(k)Fluoranthene	10357	10078	0.010	-2.68823	25.00000	Averaged
160	Chrysene	10440	11456	0.010	9.72554	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	9484	10454	0.010	10.22853	25.00000	Averaged
180	Fluoranthene	10617	11059	0.010	4.15798	25.00000	Averaged
190	Fluorene	10676	10956	0.010	2.62704	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	11190	11627	0.010	3.90188	25.00000	Averaged
210	Pyrene	10857	11324	0.010	4.29489	25.00000	Averaged
4	2-Fluorobiphenyl	9408	10118	0.010	7.54359	25.00000	Averaged
6	2-Bromonaphthalene	6005	6748	0.010	12.36964	25.00000	Averaged
11	O-Terphenyl	10947	10754	0.010	-1.77093	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-1
Lab ID : WG217218-4
Lab File ID : CKK2040.d
Initial Calibration Date(s): 12/12/16 13:21 12/12/16 16:23

SDG: TK0122
Analytical Date: 11/06/17 10:04
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7320	8160	0.010	11.47949	25.00000	Averaged
30	C19-C36 Aliphatic	7214	8117	0.010	12.51485	25.00000	Averaged
370	C-9	7262	8349	0.010	14.96430	30.00000	Averaged
380	C-10	7376	8288	0.010	12.36202	25.00000	Averaged
390	C-12	7338	8232	0.010	12.17467	25.00000	Averaged
400	C-14	7302	8076	0.010	10.59903	25.00000	Averaged
410	C-16	7311	8107	0.010	10.88387	25.00000	Averaged
420	C-18	7328	7908	0.010	7.91319	25.00000	Averaged
430	C-19	7372	8177	0.010	10.91164	25.00000	Averaged
440	C-20	7287	8071	0.010	10.77104	25.00000	Averaged
450	C-22	7326	8139	0.010	11.10198	25.00000	Averaged
460	C-24	7036	8065	0.010	14.63457	25.00000	Averaged
470	C-26	7379	8080	0.010	9.50294	25.00000	Averaged
480	C-28	7337	8117	0.010	10.62406	25.00000	Averaged
490	C-30	7295	8151	0.010	11.72795	25.00000	Averaged
500	C-36	6680	8134	0.010	21.76696	25.00000	Averaged
44	5-alpha androstane	7427	8266	0.010	11.29513	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-1
Lab ID : WG217218-5
Lab File ID : CKK2057.d
Initial Calibration Date(s): 12/12/16 13:21 12/12/16 16:23

SDG: TK0122
Analytical Date: 11/06/17 23:57
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7320	8278	0.010	13.09800	25.00000	Averaged
30	C19-C36 Aliphatic	7214	8226	0.010	14.02327	25.00000	Averaged
370	C-9	7262	8414	0.010	15.86817	30.00000	Averaged
380	C-10	7376	8438	0.010	14.39236	25.00000	Averaged
390	C-12	7338	8304	0.010	13.16539	25.00000	Averaged
400	C-14	7302	8223	0.010	12.61131	25.00000	Averaged
410	C-16	7311	8237	0.010	12.66639	25.00000	Averaged
420	C-18	7328	8053	0.010	9.89796	25.00000	Averaged
430	C-19	7372	8350	0.010	13.26699	25.00000	Averaged
440	C-20	7287	8198	0.010	12.50627	25.00000	Averaged
450	C-22	7326	8201	0.010	11.94173	25.00000	Averaged
460	C-24	7036	8232	0.010	17.00989	25.00000	Averaged
470	C-26	7379	8158	0.010	10.55782	25.00000	Averaged
480	C-28	7337	8274	0.010	12.76980	25.00000	Averaged
490	C-30	7295	8243	0.010	12.98798	25.00000	Averaged
500	C-36	6680	8149	0.010	21.98553	25.00000	Averaged
44	5-alpha androstane	7427	8343	0.010	12.33730	25.00000	Averaged

*** = Compound out of QC criteria**

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SDGA02536

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 12/12/16 12/12/16

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.87

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG196528-11	12/12/16	1321	16.91	
02		WG196528-10	12/12/16	1406	16.89	
03		WG196528-9	12/12/16	1452	16.88	
04		WG196528-8	12/12/16	1537	16.87	
05		WG196528-7	12/12/16	1623	16.87	
06		WG196528-12	12/12/16	1752		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 01/27/17 01/27/17

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.98 S2 : 10.36

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01		WG199227-5	01/27/17	0852	8.99		10.37	
02		WG199227-4	01/27/17	0937	8.98		10.36	
03		WG199227-3	01/27/17	1023	8.98		10.36	
04		WG199227-2	01/27/17	1109	8.98		10.36	
05		WG199227-1	01/27/17	1155	8.98		10.36	
06		WG199227-6	01/27/17	1240				
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 01/27/17 01/27/17

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.21

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG199227-5	01/27/17	0852	15.23	
02		WG199227-4	01/27/17	0937	15.22	
03		WG199227-3	01/27/17	1023	15.21	
04		WG199227-2	01/27/17	1109	15.21	
05		WG199227-1	01/27/17	1155	15.21	
06		WG199227-6	01/27/17	1240		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: TK0122

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 12/12/16 12/12/16

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.70

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01		WG217218-4	11/06/17	1004	16.71			
02	WG216908-BLA	WG216908-1	11/06/17	1237	16.71			
03	WG216908-LCS	WG216908-2	11/06/17	1322	16.71			
04	WG216908-LCS	WG216908-3	11/06/17	1407	16.71			
05	LFM-99-02B-F	WG216908-4	11/06/17	1452	16.71			
06	LFM-99-02B-F	WG216908-5	11/06/17	1538	16.71			
07	LFM-99-02B-F	TK0122-1	11/06/17	1623	16.70			
08	LFM-99-05A-F	TK0122-2	11/06/17	1708	16.70			
09	LFM-DUP01-FA	TK0122-3	11/06/17	1754	16.70			
10	FM-99-06A RP	TK0122-4	11/06/17	1839	16.70			
11		WG217218-5	11/06/17	2357	16.70			
12								
13								
14								
15								
16								
17								
18								
19								
20								

QC LIMITS
S1 = 5-alpha androstane (+/- 0.33 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: TK0122

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 01/27/17 01/27/17

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.84 S2 : 10.21

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01		WG217218-1	11/06/17	1004	8.87		10.24	
02	WG216908-BLA	WG216908-1	11/06/17	1237	8.90		10.26	
03	WG216908-LCS	WG216908-2	11/06/17	1322	8.87		10.24	
04	WG216908-LCS	WG216908-3	11/06/17	1407	8.86		10.23	
05	LFM-99-02B-F	WG216908-4	11/06/17	1452	8.86		10.23	
06	LFM-99-02B-F	WG216908-5	11/06/17	1538	8.85		10.22	
07	LFM-99-02B-F	TK0122-1	11/06/17	1623	8.85		10.22	
08	LFM-99-05A-F	TK0122-2	11/06/17	1708	8.85		10.22	
09	LFM-DUP01-FA	TK0122-3	11/06/17	1754	8.84		10.21	
10	FM-99-06A RP	TK0122-4	11/06/17	1839	8.85		10.22	
11		WG217218-2	11/06/17	2357	8.85		10.22	
12								
13								
14								
15								
16								
17								
18								
19								
20								

QC LIMITS

S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: TK0122

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 01/27/17 01/27/17

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.03

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG217218-1	11/06/17	1004	15.05	
02	WG216908-BLA	WG216908-1	11/06/17	1237	15.08	
03	WG216908-LCS	WG216908-2	11/06/17	1322	15.06	
04	WG216908-LCS	WG216908-3	11/06/17	1407	15.05	
05	LFM-99-02B-F	WG216908-4	11/06/17	1452	15.04	
06	LFM-99-02B-F	WG216908-5	11/06/17	1538	15.04	
07	LFM-99-02B-F	TK0122-1	11/06/17	1623	15.04	
08	LFM-99-05A-F	TK0122-2	11/06/17	1708	15.04	
09	LFM-DUP01-FA	TK0122-3	11/06/17	1754	15.03	
10	FM-99-06A RP	TK0122-4	11/06/17	1839	15.04	
11		WG217218-2	11/06/17	2357	15.03	
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0122-1
Client ID: LFM-99-02B-FALL17
Project: Devens Spring 2017 LTM, 680-141617-1
SDG: TK0122
Lab File ID: 2KJ10285.D

Sample Date: 26-OCT-17
Received Date: 28-OCT-17
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 02-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		93.3	%				
2,5-Dibromotoluene (PID)		92.0	%				

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0122-2
Client ID: LFM-99-05A-FALL17
Project: Devens Spring 2017 LTM, 680-141617-1
SDG: TK0122
Lab File ID: 2KJ10286.D

Sample Date: 27-OCT-17
Received Date: 28-OCT-17
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 02-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		85.6	%				
2,5-Dibromotoluene (PID)		82.9	%				

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0122-3
Client ID: LFM-DUP01-FALL17
Project: Devens Spring 2017 LTM, 680-141617-1
SDG: TK0122
Lab File ID: 2KJ10287.D

Sample Date: 27-OCT-17
Received Date: 28-OCT-17
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 02-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		93.0	%				
2,5-Dibromotoluene (PID)		90.6	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0122-4
Client ID: LFM-99-06A RP-FALL17
Project: Devens Spring 2017 LTM, 680-141617-1
SDG: TK0122
Lab File ID: 2KJ10288.D

Sample Date: 26-OCT-17
Received Date: 28-OCT-17
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 02-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		86.4	%				
2,5-Dibromotoluene (PID)		84.5	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0122-5
Client ID: TRIP BLANK
Project: Devens Spring 2017 LTM, 680-141617-1
SDG: TK0122
Lab File ID: 2KJ10282.D

Sample Date: 26-OCT-17
Received Date: 28-OCT-17
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 02-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)	*	199.	%				
2,5-Dibromotoluene (PID)	*	195.	%				

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Report of Analytical Results

Client:
Lab ID: WG216748-1RA
Client ID: Method Blank Sample
Project:
SDG: TK0122
Lab File ID: 2KJ10278.D

Sample Date:
Received Date:
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 02-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		112.	%				
2,5-Dibromotoluene (PID)		109.	%				

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Devens Spring 2017 LTM, 680-141617-1 **Matrix:** AQ
Lab Code: KAS **SDG:** TK0122

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
LFM-99-02B-FALL17	TK0122-1	B	93.3		92.0	
LFM-99-05A-FALL17	TK0122-2	B	85.6		82.9	
LFM-DUP01-FALL17	TK0122-3	B	93.0		90.6	
LFM-99-06A RP-FALL17	TK0122-4	B	86.4		84.5	
TRIP BLANK	TK0122-5	B	199.	*	195.	*
Method Blank Sample	WG216748-1RA	B	112.		109.	
Laboratory Control S	WG216748-2	B	81.8		81.3	
Laboratory Control S	WG216748-3	B	82.9		81.8	
Matrix Spike	WG216748-4	B	77.1		76.8	
Matrix Spike Duplica	WG216748-5	B	72.2		71.8	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= 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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LCS/LCSD Recovery Report

LCS ID: WG216748-2
LCSD ID: WG216748-3
Project:
SDG: TK0122
Report Date: 02-NOV-17
LCS File ID: 2KJ10276.D

Received Date:
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748
LCSD File ID: 2KJ10277.D

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	304.	101.	303.	101.	ug/L	0	25	70-130
C9-C12 Aliphatics	200.	197.	98.5	197.	98.5	ug/L	0	25	70-130
C9-C10 Aromatics	100.	99.6	99.6	100.	100.	ug/L	0	25	70-130
Benzene	100.	90.0	90.0	90.8	90.8	ug/L	1	25	70-130
Ethylbenzene	100.	92.7	92.7	93.2	93.2	ug/L	0	25	70-130
Methyl tert-butylether	100.	91.0	91.0	92.2	92.2	ug/L	1	25	70-130
Naphthalene	100.	97.7	97.7	99.1	99.1	ug/L	1	25	70-130
Toluene	100.	89.0	89.0	89.6	89.6	ug/L	1	25	70-130
m+p-Xylenes	200.	179.	89.5	180.	90.0	ug/L	0	25	70-130
o-Xylene	100.	89.1	89.1	89.6	89.6	ug/L	0	25	70-130
2,5-Dibromotoluene (FID)			81.8		82.9				70-130
2,5-Dibromotoluene (PID)			81.3		81.8				70-130

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MS/MSD Recovery Report

MS ID: WG216748-4
MSD ID: WG216748-5
Sample ID: TK0122-1
Client ID: LFM-99-02B-FALL17
Project:
SDG: TK0122
MS File ID: 2KJ10294.D

Received Date:
Extract Date: 01-NOV-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748
Report Date: 02-NOV-17
MSD File ID: 2KJ10295.D

Analysis Date: 01-NOV-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	300.	ug/L	U100	297	284	99.0	94.7	4	50	70-130
C9-C12 Aliphatics	200.	200.	ug/L	U100	145	152	72.5	76.0	5	50	70-130
C9-C10 Aromatics	100.	100.	ug/L	U100	99.5	95.2	99.5	95.2	4	50	70-130
Benzene	100.	100.	ug/L	U3.0	93	89.8	93.0	89.8	4	50	70-130
Ethylbenzene	100.	100.	ug/L	U5.0	94.7	90.9	94.7	90.9	4	50	70-130
Methyl tert-butylether	100.	100.	ug/L	U5.0	89.8	87.1	89.8	87.1	3	50	70-130
Naphthalene	100.	100.	ug/L	U5.0	94.2	91.3	94.2	91.3	3	50	70-130
Toluene	100.	100.	ug/L	U5.0	91.4	88	91.4	88.0	4	50	70-130
m+p-Xylenes	200.	200.	ug/L	U10	182	174	91.0	87.0	4	50	70-130
o-Xylene	100.	100.	ug/L	U5.0	90.1	86.7	90.1	86.7	4	50	70-130
2,5-Dibromotoluene (FID)							77.1	72.2			70-130
2,5-Dibromotoluene (PID)							76.8	71.8			70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-141617-1
Lab File ID : 2KJ10278.D
Instrument ID : GC02

SDG : TK0122
Lab Sample ID : WG216748-1RA
Date Analyzed : 31-OCT-17
Time Analyzed : 10:59
Date Extracted : 31-OCT-17

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	WG216748-2	2KJ10276.I	10/31/17	09:24
Laboratory Control S	WG216748-3	2KJ10277.I	10/31/17	10:06
TRIP BLANK	TK0122-5	2KJ10282.I	10/31/17	16:19
LFM-99-02B-FALL17	TK0122-1	2KJ10285.I	10/31/17	18:24
LFM-99-05A-FALL17	TK0122-2	2KJ10286.I	10/31/17	19:05
LFM-DUP01-FALL17	TK0122-3	2KJ10287.I	10/31/17	19:46
LFM-99-06A RP-FALL17	TK0122-4	2KJ10288.I	10/31/17	20:28
Matrix Spike	WG216748-4	2KJ10294.I	11/01/17	00:35
Matrix Spike Duplica	WG216748-5	2KJ10295.I	11/01/17	01:16

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TK0122
Project : Devens Spring 2017 LTM, 680-141617-1 **Instrument ID:** GC02
Lab File IDs : 2KJ10242.D 2KJ10243.D 2KJ10244.D 2KJ10241.D 2KJ10245.D 2KJ10246.D **Calibration Date(s):** 28-OCT-17 08:51 28-OCT-17 12:26

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	191	171	198	230	241	226	AVG		209		12.9443(	25.00000	M (
Methyl tert-butylether	107	120	119	125	130	124	AVG		121		6.38746	25.00000	O
Benzene	309	254	265	272	281	263	AVG		274		7.02796	25.00000	O
Toluene	285	231	245	255	263	243	AVG		254		7.41945	25.00000	O
Ethylbenzene	219	189	204	222	230	212	AVG		213		6.95726	25.00000	O
m+p-Xylene	268	229	248	257	259	231	AVG		249		6.44870	25.00000	O
o-Xylene	246	202	210	225	232	214	AVG		222		7.18332	25.00000	O
1,2,4-trimethylbenzene	191	171	198	230	241	226	AVG		209		12.9443(	25.00000	O
Naphthalene	186	136	142	191	220	228	AVG		184		20.8737!	25.00000	O
2,5-Dibromotoluene (PID)	158	488	808	6774	16227	60183	QUA	2.12060	0.00663	-2.789e-0	0.99945	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TK0122

Project : Devens Spring 2017 LTM, 680-141617-1 **Instrument ID:** GC02

Lab File IDs : 2KJ10242.D 2KJ10243.D 2KJ10244.D 2KJ10241.D 2KJ10245.D 2KJ10246.D **Calibration Date(s):** 28-OCT-17 08:51 28-OCT-17 12:26

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	4726	4419	4420	4862	5145	5047	AVG		4770		6.45080	25.00000	M (
C9-C12 Aliphatic	4628	3913	4171	4450	5217	5631	AVG		4668		13.86355	25.00000	M (
n-Pentane	4141	3328	3468	4224	4473	4438	AVG		4012		12.30544	25.00000	O
2-Methylpentane	4639	4783	4678	4956	5251	5128	AVG		4906		5.07151	25.00000	O
Methyl tert-butylether	3009	3577	3542	3607	3750	3693	AVG		3530		7.54517	25.00000	O
2,2,4-Trimethylpentane	5399	5146	5114	5407	5712	5574	AVG		5392		4.33484	25.00000	O
Benzene	7840	6312	6524	6596	6994	6823	AVG		6848		7.89394	25.00000	O
Toluene	7510	6200	6388	6576	7012	6795	AVG		6747		6.98991	25.00000	O
n-Nonane	4710	3917	4095	4714	5165	5486	AVG		4681		12.85353	25.00000	O
n-Decane	4428	2906	3281	3934	5115	5569	AVG		4206		24.60511	25.00000	O
Ethylbenzene	6265	5402	5794	6322	6756	6594	AVG		6189		8.18658	25.00000	O
m+p-Xylene	6688	5844	6346	6588	6953	6728	AVG		6525		5.94226	25.00000	O
o-Xylene	6491	5930	6338	6475	6897	6698	AVG		6472		5.09472	25.00000	O
1,2,4-trimethylbenzene	5592	5002	5432	6169	6650	6533	AVG		5896		11.13554	25.00000	O
n-Butylcyclohexane	4828	4921	5061	4965	5318	5693	AVG		5131		6.27894	25.00000	O
Naphthalene	3656	2861	3495	4175	4685	4730	AVG		3934		18.60235	25.00000	O
2,5-Dibromotoluene (FID)	1367	5024	8264	73200	170513	590015	QUA	2.15029	0.00062	-1.937e-0	0.99954	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-141617-1 **SDG:** TK0122
Lab ID : WG216748-8 **Analytical Date:** 10/31/17 08:01
Lab File ID : 2KJ10274.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/28/17 08:51 10/28/17 12:26 **Column ID:** A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
2	Methyl tert-butylether	121	114	114	0.100	-5.60104	25.00000	Averaged
3	Benzene	274	254	254	0.100	-7.36348	25.00000	Averaged
4	Toluene	254	240	240	0.100	-5.37730	25.00000	Averaged
5	Ethylbenzene	213	213	213	0.100	-0.03448	25.00000	Averaged
6	m+p-Xylene	249	246	246	0.100	-1.20864	25.00000	Averaged
7	o-Xylene	222	215	215	0.100	-2.90284	25.00000	Averaged
8	1,2,4-trimethylbenzene	209	222	222	0.100	6.06574	25.00000	Averaged
10	Naphthalene	184	200	200	0.100	8.87224	25.00000	Averaged
11	2,5-Dibromotoluene (PID)	50.00000	53.71386	161	0.100	7.42773	25.00000	Quadratic

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-141617-1 **SDG:** TK0122
Lab ID : WG216748-8 **Analytical Date:** 10/31/17 08:01
Lab File ID : 2KJ10274.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/28/17 08:51 10/28/17 12:26 **Column ID:** B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
5	n-Pentane	4012	3826	3826	0.100	-4.63219	25.00000	Averaged
6	2-Methylpentane	4906	4543	4543	0.100	-7.39922	25.00000	Averaged
7	Methyl tert-butylether	3530	3301	3301	0.100	-6.47236	25.00000	Averaged
8	2,2,4-Trimethylpentane	5392	5097	5097	0.100	-5.46280	25.00000	Averaged
9	Benzene	6848	6196	6196	0.100	-9.52966	25.00000	Averaged
11	Toluene	6747	6261	6261	0.100	-7.20534	25.00000	Averaged
12	n-Nonane	4681	4563	4563	0.100	-2.53667	30.00000	Averaged
13	n-Decane	4206	3899	3899	0.100	-7.28032	25.00000	Averaged
14	Ethylbenzene	6189	6094	6094	0.100	-1.53739	25.00000	Averaged
15	m+p-Xylene	6525	6350	6350	0.100	-2.66971	25.00000	Averaged
16	o-Xylene	6472	6288	6288	0.100	-2.83501	25.00000	Averaged
18	1,2,4-trimethylbenzene	5896	5997	5997	0.100	1.71120	25.00000	Averaged
19	n-Butylcyclohexane	5131	4789	4789	0.100	-6.67387	25.00000	Averaged
20	Naphthalene	3934	4289	4289	0.100	9.03355	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	50.00000	54.55567	1741	0.100	9.11135	25.00000	Quadratic

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-141617-1 **SDG:** TK0122
Lab ID : WG216748-9 **Analytical Date:** 11/01/17 03:20
Lab File ID : 2KJ10298.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/28/17 08:51 10/28/17 12:26 **Column ID:** A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
2	Methyl tert-butylether	121	116	116	0.100	-3.89463	25.00000	Averaged
3	Benzene	274	258	258	0.100	-5.91182	25.00000	Averaged
4	Toluene	254	244	244	0.100	-3.62663	25.00000	Averaged
5	Ethylbenzene	213	214	214	0.100	0.73672	25.00000	Averaged
6	m+p-Xylene	249	247	247	0.100	-0.70972	25.00000	Averaged
7	o-Xylene	222	217	217	0.100	-2.26244	25.00000	Averaged
8	1,2,4-trimethylbenzene	209	221	221	0.100	5.55967	25.00000	Averaged
10	Naphthalene	184	186	186	0.100	1.40584	25.00000	Averaged
11	2,5-Dibromotoluene (PID)	50.00000	44.64940	132	0.100	-10.70119	25.00000	Quadratic

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Spring 2017 LTM, 680-141617-1 **SDG:** TK0122
Lab ID : WG216748-9 **Analytical Date:** 11/01/17 03:20
Lab File ID : 2KJ10298.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/28/17 08:51 10/28/17 12:26 **Column ID:** B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
5	n-Pentane	4012	3709	3709	0.100	-7.54803	25.00000	Averaged	
6	2-Methylpentane	4906	4355	4355	0.100	-11.22490	25.00000	Averaged	
7	Methyl tert-butylether	3530	3301	3301	0.100	-6.46386	25.00000	Averaged	
8	2,2,4-Trimethylpentane	5392	4726	4726	0.100	-12.35143	25.00000	Averaged	
9	Benzene	6848	6177	6177	0.100	-9.79776	25.00000	Averaged	
11	Toluene	6747	6245	6245	0.100	-7.44575	25.00000	Averaged	
12	n-Nonane	4681	3667	3667	0.100	-21.65927	30.00000	Averaged	
13	n-Decane	4206	3017	3017	0.100	-28.25030	25.00000	Averaged	*
14	Ethylbenzene	6189	6047	6047	0.100	-2.28198	25.00000	Averaged	
15	m+p-Xylene	6525	6288	6288	0.100	-3.63070	25.00000	Averaged	
16	o-Xylene	6472	6222	6222	0.100	-3.85301	25.00000	Averaged	
18	1,2,4-trimethylbenzene	5896	5860	5860	0.100	-0.61566	25.00000	Averaged	
19	n-Butylcyclohexane	5131	4047	4047	0.100	-21.13428	25.00000	Averaged	
20	Naphthalene	3934	4002	4002	0.100	1.73180	25.00000	Averaged	
21	2,5-Dibromotoluene (FID)	50.00000	45.04165	1418	0.100	-9.91671	25.00000	Quadratic	

*** = Compound out of QC criteria**

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://katahdinlab.com
sales@katahdinlab.com

Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services **SDG :** TK0122
Project : Devens Spring 2017 LTM, 680-141617-1
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG216757-4	10/28/17	08:51		31.542
Initial Calibration	WG216757-4	10/28/17	08:51	31.532	
Initial Calibration	WG216757-1	10/28/17	09:34		31.537
Initial Calibration	WG216757-1	10/28/17	09:34	31.523	
Initial Calibration	WG216757-2	10/28/17	10:17		31.537
Initial Calibration	WG216757-2	10/28/17	10:17	31.529	
Initial Calibration	WG216757-3	10/28/17	11:00		31.541
Initial Calibration	WG216757-3	10/28/17	11:00	31.531	
Initial Calibration	WG216757-5	10/28/17	11:43		31.542
Initial Calibration	WG216757-5	10/28/17	11:43	31.532	
Initial Calibration	WG216757-6	10/28/17	12:26		31.543
Initial Calibration	WG216757-6	10/28/17	12:26	31.533	
Independent Source	WG216757-7	10/28/17	13:08	31.53	31.54
Continuing Calibrati	WG216748-8	10/31/17	08:01	31.533	31.543
Laboratory Control S	WG216748-2	10/31/17	09:24	31.533	31.543
Laboratory Control S	WG216748-3	10/31/17	10:06	31.532	31.542
Method Blank Sample	WG216748-1RA	10/31/17	10:59	31.532	31.542
TRIP BLANK	TK0122-5	10/31/17	16:19	31.533	31.543
LFM-99-02B-FALL17	TK0122-1	10/31/17	18:24	31.531	31.541
LFM-99-05A-FALL17	TK0122-2	10/31/17	19:05	31.527	31.538
LFM-DUP01-FALL17	TK0122-3	10/31/17	19:46	31.526	31.536
LFM-99-06A RP-FALL17	TK0122-4	10/31/17	20:28	31.524	31.534
Matrix Spike	WG216748-4	11/01/17	00:35	31.52	31.53
Matrix Spike Duplica	WG216748-5	11/01/17	01:16	31.519	31.529
Continuing Calibrati	WG216748-9	11/01/17	03:20	31.52	31.53

360325-F ... 360325-Boston

PO #	17-636	Devens - DCL 1024-003	Chain of Custody Record	Page: 1 of: 1

Company	KOMAN GS, LLC
Address:	293 Boston Post Road, Suite 100 Marlborough, MA 01752
Phone:	508-366-7442 Fax: 508-366-7445
Sampled by [Print Name(s)]/Affilliation	Kam L. Adeen
Sampler(s) Signature(s)	

Laboratory:	Test America - Savannah
Address:	510 LaRoche Ave Savannah, GA 31404
Contact:	Jerry Lanier
Regulatory Facility No.	
Project Name:	Devens Fall 2017 LTM
Sampling QAP No.:	
Approval Date:	
TAT	Routine
Other:	

Preservatives (see codes) / Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40-ml VOA vials (HCl)	MA EPH 2-1liter amber glass(HCl)	Pesticides/SW8081 2-1liter amber glass	Total Metals* (SW6010/6020/7470) 1-250 ml poly (HNO3)	Total Cyanide/SW9012 1-250ml poly (NaOH)	Chloride/Sulfate (SW9056) 1-125ml poly	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4)	Alkalinity/SM2320B 1-250-ml poly	TDS/SM2540D 1-1liter poly	COD/SW9060 1-500-ml amber glass (H2SO4)	Remarks
							H	H	I	N	O	I	S	I	I	S	
LFM-99-02B-FAL17		10/26	1330	P	GW	45	X	X	X	X	X	X	X	X	X	X	MS/MSD
LFM-99-05A-FAL17		10/27	935	P	GW	15	X	X	X	X	X	X	X	X	X	X	
LFM-DUP01-FAL17		10/27	940	P	GW	15	X	X	X	X	X	X	X	X	X	X	
LFM-99-06A RP-FAL17		10/26	1135	P	GW	15	X	X	X	X	X	X	X	X	X	X	
~~LFM-03-07-FAL17~~		~~VOA~~		~~P~~	~~GW~~		~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	
	Trip Blank	10/26	800	O	O	1	X										

Shipping Details: courier pick up ← Total Number of Containers

Date Out:	Via:	Item No.	Relinquished by/Affiliation	Date	Time		Date	Time
Returned:	Via:		[signature]	10/27/17		[signature]	10/27/17	1440
						[signature]	10/28/17	1040

Additional Comments:
* = Total Metals include: Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)

email logins and results to:
lekes@komangs.com

Lab Comments
Preserve Where Applicable ☐
On ICE ☐
Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info
☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater	SE = Sediment	SP = Soil	SW = Surface Water		O = Other
PRESERVATIVE CODES H = HCL + Ice	I = Ice Only	N = Nitric Acid + Ice	S = Sulfuric Acid + Ice	M = Methanol	O = Other
COLLECTION METHOD C = Composite	G=Grab	P= Pumping			O = Other

3.0°C (CF) 3.2°C

680-144887 Chain of Custody

PO # 17-636 | Devens - DCL 1024-003

Chain of Custody Record

Page: 1 of: 1

Company	KOMAN GS, LLC
Address:	293 Boston Post Road, Suite 100 Marlborough, MA 01752
Phone: 508-366-7442	Fax: 508-366-7445
Sampled by [Print Name(s)]/Affiliation	Ken b. Allen
Sampler(s) Signature(s)	

Laboratory:	Test America - Savannah
Address:	510 LaRoche Ave Savannah, GA 31404
Contact:	Jerry Lanier
Regulatory Facility No.	
Project Name:	Devens Fall 2017 LTM
Sampling QAP No.:	
Approval Date:	
TAT	Routine
Other:	

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	Preservatives (see codes) H	H	I	N	O	I	S	I	I	S	Analyses Requested: MA VPH 3-40-ml VOA vials (HCl)	MA EPH 2-1liter amber glass(HCl)	Pesticides/SW8081 2-1liter amber glass	Total Metals* (SW6010/6020/7470) 1-250 ml poly (HNO3)	Total Cyanide/SW9012 1-250ml poly (NaOH)	Chloride/Sulfate (SW9056) 1-125ml poly	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4)	Alkalinity/SM2320B 1-250-ml poly	TDS/SM2540D 1-1liter poly	COD/SW9060 1-500-ml amber glass (H2SO4)	Remarks	Lab. No.
	LFM-99-02B-FAL17	10/26	1330	P	GW	45	X	X	X	X	X	X	X	X	X	X											MS/MSD	
	LFM-99-05A-FAL17	10/27	935	P	GW	15	X	X	X	X	X	X	X	X	X	X												
	LFM-DUP01-FAL17	10/27	940	P	GW	15	X	X	X	X	X	X	X	X	X	X												
	LFM-99-06A RP-FAL17	10/26	1135	P	GW	15	X	X	X	X	X	X	X	X	X	X												
	~~LFM-03-07-FAL17~~	~~VOA~~		P	GW		X	X	X	X	X	X	X	X	X	X												
	Trip Blank	10/26	800	O	O	1	X																					

680-144887 Chain of Custody

Total Number of Containers

Shipping Details	courier pick up
Date Out:	Via:
Returned:	Via:

Additional Comments:
* = Total Metals include: Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)

Item No.	Relinquished by/Affiliation	Date	Time		Date	Time
		10/27/17			10-27-17	1440
		10/28/17	0845			

email logins and results to:
lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐
On ICE ☐
Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater | SE = Sediment | SP = Soil | SW = Surface Water | O = Other
PRESERVATIVE CODES H = HCL + Ice | I = Ice Only | N = Nitric Acid + Ice | S = Sulfuric Acid + Ice | M = Methanol | O = Other
COLLECTION METHOD C = Composite | G=Grab | P= Pumping | O = Other

2.0+0.2 IR#5 transfered by 35 10-28-17

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-144887-1

Login Number: 144887

List Source: TestAmerica Savannah

List Number: 1

Creator: Anderson, Jordan K

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

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-144887-1

Login Number: 144887
List Number: 2
Creator: True, Joshua A

List Source: TestAmerica Denver
List Creation: 10/30/17 11:05 AM

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL

TestAmerica Job ID: 680-144887-1

Laboratory: TestAmerica Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-18
Alaska	State Program	10		06-30-18
Alaska (UST)	State Program	10	UST-104	11-05-17 *
Arizona	State Program	9	AZ808	12-14-17 *
Arkansas DEQ	State Program	6	88-0692	02-01-18
California	State Program	9	2939	06-30-18
Colorado	State Program	8	N/A	12-31-17
Connecticut	State Program	1	PH-0161	03-31-19
Florida	NELAP	4	E87052	06-30-18
GA Dept. of Agriculture	State Program	4	N/A	06-12-18
Georgia	State Program	4	803	06-30-18
Guam	State Program	9	15-005r	04-16-18
Hawaii	State Program	9	N/A	06-30-18
Illinois	NELAP	5	200022	11-30-18
Indiana	State Program	5	N/A	06-30-18
Iowa	State Program	7	353	06-30-19
Kentucky (DW)	State Program	4	90084	12-31-17
Kentucky (UST)	State Program	4	18	06-30-18
Kentucky (WW)	State Program	4	90084	12-31-18 *
L-A-B	DoD ELAP		L2463	09-22-19
L-A-B	ISO/IEC 17025		L2463.01	09-22-19
Louisiana	NELAP	6	30690	06-30-18
Louisiana (DW)	NELAP	6	LA160019	12-31-18
Maine	State Program	1	GA00006	09-24-18
Maryland	State Program	3	250	12-31-17
Massachusetts	State Program	1	M-GA006	06-30-18
Michigan	State Program	5	9925	06-30-18
Mississippi	State Program	4	N/A	06-30-18
Nebraska	State Program	7	TestAmerica-Savannah	06-30-18
New Jersey	NELAP	2	GA769	06-30-18
New Mexico	State Program	6	N/A	06-30-18
New York	NELAP	2	10842	03-31-18
North Carolina (DW)	State Program	4	13701	07-31-18
North Carolina (WW/SW)	State Program	4	269	12-31-17
Oklahoma	State Program	6	9984	08-31-18
Pennsylvania	NELAP	3	68-00474	06-30-18
Puerto Rico	State Program	2	GA00006	12-31-17
South Carolina	State Program	4	98001	06-30-18
Tennessee	State Program	4	TN02961	06-30-18
Texas	NELAP	6	T104704185-16-9	11-30-18
Texas	State Program	6	T104704185	06-30-18
US Fish & Wildlife	Federal		LE058448-0	07-31-18
USDA	Federal		SAV 3-04	06-14-20 *
Virginia	NELAP	3	460161	06-14-18
Washington	State Program	10	C805	06-10-18
West Virginia (DW)	State Program	3	9950C	12-31-17
West Virginia DEP	State Program	3	094	06-30-18
Wisconsin	State Program	5	999819810	08-31-18
Wyoming	State Program	8	8TMS-L	06-30-16 *

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens - DCL

TestAmerica Job ID: 680-144887-1

Laboratory: TestAmerica Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19 *

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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

TestAmerica Job ID: 680-146353-2
Client Project/Site: Devens / DCL

For:
KOMAN Government Solutions, LLC
293 Boston Post Road
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Kathryn Smith

Authorized for release by:
12/21/2017 5:34:38 PM
Kathryn Smith, Manager of Project Management
(912)354-7858
kathy.smith@testamericainc.com

Designee for

Jerry Lanier, Project Manager I
(912)354-7858 e.3410
jerry.lanier@testamericainc.com

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

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

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

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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Job ID: 680-146353-2

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE
Client: KOMAN Government Solutions, LLC
Project: Devens / DCL

Report Number: 680-146353-2

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

RECEIPT
The samples were received on 12/06/2017; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.4º C and 2.7º C.

PESTICIDES AND PCBS
Sample LFM-93-07_Fall17 (680-146353-4) was analyzed for Pesticides and PCBs in accordance with EPA SW-846 Method 8081B_8082A. The samples were prepared on 12/08/2017 and analyzed on 12/11/2017.

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

METALS
Sample LFM-93-07_Fall17 (680-146353-4) was analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 12/12/2017 and analyzed on 12/13/2017.

Chromium was detected in method blank MB 680-506037/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

The interference check standard solution (ICSA) associated with batch 680-506397 had results for one or more elements at a level greater than 2 times the limit of detection (LOD).

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

MERCURY
Sample LFM-93-07_Fall17 (680-146353-4) was analyzed for mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared and analyzed on 12/08/2017.

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

ALKALINITY
Sample LFM-93-07_Fall17 (680-146353-4) was analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 12/18/2017.

Alkalinity was detected in method blank MB 280-399189/5 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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

TOTAL DISSOLVED SOLIDS
Sample LFM-93-07_Fall17 (680-146353-4) was analyzed for total dissolved solids in accordance with SM 2540C. The samples were

Job ID: 680-146353-2 (Continued)

Laboratory: TestAmerica Savannah (Continued)

analyzed on 12/07/2017.

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

NITRATE-NITRITE AS NITROGEN
Sample LFM-93-07_Fall17 (680-146353-4) was analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 12/11/2017.

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

CHEMICAL OXYGEN DEMAND
Sample LFM-93-07_Fall17 (680-146353-4) was analyzed for chemical oxygen demand in accordance with EPA Method 410.4. The samples were analyzed on 12/12/2017.

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

CYANIDE
Sample LFM-93-07_Fall17 (680-146353-4) was analyzed for cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared and analyzed on 12/13/2017.

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

ANIONS BY ION CHROMATOGRAPHY (28 DAY)
Sample LFM-93-07_Fall17 (680-146353-4) was analyzed for Anions by Ion Chromatography (28 Day) in accordance with SW 846 9056A. The samples were analyzed on 12/07/2017 and 12/08/2017.

Sample LFM-93-07_Fall17 (680-146353-4)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / DCL

TestAmerica Job ID: 680-146353-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-146353-4	LFM-93-07_Fall17	Water	12/04/17 12:25	12/06/17 09:20

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / DCL

TestAmerica Job ID: 680-146353-2

Method	Method Description	Protocol	Laboratory
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	TAL SAV
9056A	Anions, Ion Chromatography	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL DEN
410.4	COD	MCAWW	TAL DEN
9012B	Cyanide, Total and/or Amenable	EPA	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
MA EPH	MADEP EPH (Extractable Petroleum Hydroca	NONE	
MA VPH	MADEP VPH Volatile Petroleum Hydrocarbon	NONE	

Protocol References:

EPA = US Environmental Protection Agency
MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
NONE = NONE
SM = "Standard Methods For The Examination Of Water And Wastewater",
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

HPLC/IC

Qualifier	Qualifier Description
M	Manual integrated compound.
D	The reported value is from a dilution.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
Q	One or more quality control criteria failed.

General Chemistry

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
B	Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.
U	Undetected at the Limit of Detection.

Glossary

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

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / DCL

TestAmerica Job ID: 680-146353-2

Client Sample ID: LFM-93-07_Fall17
Date Collected: 12/04/17 12:25
Date Received: 12/06/17 09:20

Lab Sample ID: 680-146353-4
Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.017	U	0.048	0.017	0.0069	ug/L		12/11/17 20:03	1
alpha-BHC	0.0096	U	0.048	0.0096	0.0032	ug/L		12/11/17 20:03	1
beta-BHC	0.017	U	0.048	0.017	0.0087	ug/L		12/11/17 20:03	1
Chlordane (technical)	0.29	U	0.48	0.29	0.091	ug/L		12/11/17 20:03	1
4,4'-DDD	0.0096	U	0.048	0.0096	0.0060	ug/L		12/11/17 20:03	1
4,4'-DDE	0.0096	U	0.048	0.0096	0.0049	ug/L		12/11/17 20:03	1
4,4'-DDT	0.017	U	0.048	0.017	0.0067	ug/L		12/11/17 20:03	1
delta-BHC	0.017	U	0.048	0.017	0.0072	ug/L		12/11/17 20:03	1
Dieldrin	0.0096	U	0.048	0.0096	0.0036	ug/L		12/11/17 20:03	1
Endosulfan I	0.0096	U	0.048	0.0096	0.0033	ug/L		12/11/17 20:03	1
Endosulfan II	0.0096	U	0.048	0.0096	0.0040	ug/L		12/11/17 20:03	1
Endosulfan sulfate	0.0096	U	0.048	0.0096	0.0049	ug/L		12/11/17 20:03	1
Endrin	0.0096	U	0.048	0.0096	0.0051	ug/L		12/11/17 20:03	1
Endrin aldehyde	0.0096	U	0.048	0.0096	0.0058	ug/L		12/11/17 20:03	1
Endrin ketone	0.0096	U	0.048	0.0096	0.0044	ug/L		12/11/17 20:03	1
gamma-BHC (Lindane)	0.0096	U	0.048	0.0096	0.0034	ug/L		12/11/17 20:03	1
Heptachlor	0.017	U	0.048	0.017	0.0068	ug/L		12/11/17 20:03	1
Heptachlor epoxide	0.0096	U	0.048	0.0096	0.0035	ug/L		12/11/17 20:03	1
Methoxychlor	0.017	U	0.048	0.017	0.0094	ug/L		12/11/17 20:03	1
Toxaphene	0.76	U	4.8	0.76	0.38	ug/L		12/11/17 20:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*45*		*14 - 130*	*12/08/17 17:17*	*12/11/17 20:03*	*1*
Tetrachloro-m-xylene	*66*		*44 - 124*	*12/08/17 17:17*	*12/11/17 20:03*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**250**	**D**	5.0	5.0	2.0	mg/L		12/08/17 03:28	10
Sulfate	**36**	**M**	1.0	1.0	0.40	mg/L		12/07/17 14:52	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		12/13/17 16:13	1
Barium	**18**		5.0	1.5	0.61	ug/L		12/13/17 16:13	1
Cadmium	0.40	U	0.50	0.40	0.15	ug/L		12/13/17 16:13	1
Chromium	**1.7**	**J Q**	5.0	4.0	1.6	ug/L		12/13/17 16:13	1
Copper	4.0	U	5.0	4.0	1.7	ug/L		12/13/17 16:13	1
Iron	75	U	100	75	25	ug/L		12/13/17 16:13	1
Lead	2.5	U	2.5	2.5	0.98	ug/L		12/13/17 16:13	1
Manganese	**2.3**	**J**	5.0	5.0	1.8	ug/L		12/13/17 16:13	1
Selenium	2.5	U	2.5	2.5	1.0	ug/L		12/13/17 16:13	1
Silver	0.30	U	1.0	0.30	0.10	ug/L		12/13/17 16:13	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		12/08/17 16:57	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	**2.7**		0.10	0.050	0.019	mg/L		12/11/17 20:27	1

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / DCL

TestAmerica Job ID: 680-146353-2

Client Sample ID: LFM-93-07_Fall17
Date Collected: 12/04/17 12:25
Date Received: 12/06/17 09:20

Lab Sample ID: 680-146353-4
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chemical Oxygen Demand	**6.2**	**J**	20	10	4.1	mg/L		12/12/17 10:09	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		12/13/17 10:47	1
Alkalinity	**130**	**B**	5.0	3.2	1.1	mg/L		12/18/17 13:15	1
Total Dissolved Solids (TDS)	**600**		10	10	4.7	mg/L		12/07/17 11:24	1

Surrogate Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / DCL

TestAmerica Job ID: 680-146353-2

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	DCBP1 (14-130)	TCX1 (44-124)								
680-146353-4	LFM-93-07_Fall17	45	66								
LCS 680-505685/14-A	Lab Control Sample	66	70								
LCSD 680-505685/15-A	Lab Control Sample Dup	49	62								
MB 680-505685/13-A	Method Blank	55	71								

Surrogate Legend

DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-505685/13-A
Matrix: Water
Analysis Batch: 505878

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 505685

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.018	U	0.050	0.018	0.0072	ug/L		12/11/17 17:12	1
alpha-BHC	0.010	U	0.050	0.010	0.0034	ug/L		12/11/17 17:12	1
beta-BHC	0.018	U	0.050	0.018	0.0091	ug/L		12/11/17 17:12	1
Chlordane (technical)	0.30	U	0.50	0.30	0.095	ug/L		12/11/17 17:12	1
4,4'-DDD	0.010	U	0.050	0.010	0.0063	ug/L		12/11/17 17:12	1
4,4'-DDE	0.010	U	0.050	0.010	0.0051	ug/L		12/11/17 17:12	1
4,4'-DDT	0.018	U	0.050	0.018	0.0070	ug/L		12/11/17 17:12	1
delta-BHC	0.018	U	0.050	0.018	0.0075	ug/L		12/11/17 17:12	1
Dieldrin	0.010	U	0.050	0.010	0.0038	ug/L		12/11/17 17:12	1
Endosulfan I	0.010	U	0.050	0.010	0.0035	ug/L		12/11/17 17:12	1
Endosulfan II	0.010	U	0.050	0.010	0.0042	ug/L		12/11/17 17:12	1
Endosulfan sulfate	0.010	U	0.050	0.010	0.0051	ug/L		12/11/17 17:12	1
Endrin	0.010	U	0.050	0.010	0.0053	ug/L		12/11/17 17:12	1
Endrin aldehyde	0.010	U	0.050	0.010	0.0061	ug/L		12/11/17 17:12	1
Endrin ketone	0.010	U	0.050	0.010	0.0046	ug/L		12/11/17 17:12	1
gamma-BHC (Lindane)	0.010	U	0.050	0.010	0.0036	ug/L		12/11/17 17:12	1
Heptachlor	0.018	U	0.050	0.018	0.0071	ug/L		12/11/17 17:12	1
Heptachlor epoxide	0.010	U	0.050	0.010	0.0037	ug/L		12/11/17 17:12	1
Methoxychlor	0.018	U	0.050	0.018	0.0098	ug/L		12/11/17 17:12	1
Toxaphene	0.80	U	5.0	0.80	0.40	ug/L		12/11/17 17:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*55*		*14 - 130*	*12/08/17 17:17*	*12/11/17 17:12*	*1*
Tetrachloro-m-xylene	*71*		*44 - 124*	*12/08/17 17:17*	*12/11/17 17:12*	*1*

Lab Sample ID: LCS 680-505685/14-A
Matrix: Water
Analysis Batch: 505878

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 505685

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.100	0.0695		ug/L		69	45 - 134
alpha-BHC	0.100	0.0712		ug/L		71	54 - 138
beta-BHC	0.100	0.0694		ug/L		69	56 - 136
4,4'-DDD	0.100	0.0763		ug/L		76	56 - 143
4,4'-DDE	0.100	0.0793		ug/L		79	57 - 135
4,4'-DDT	0.100	0.0807		ug/L		81	51 - 143
delta-BHC	0.100	0.0764		ug/L		76	52 - 142
Dieldrin	0.100	0.0782		ug/L		78	60 - 136
Endosulfan I	0.100	0.0703		ug/L		70	62 - 126
Endosulfan II	0.100	0.0764		ug/L		76	52 - 135
Endosulfan sulfate	0.100	0.0773		ug/L		77	62 - 133
Endrin	0.100	0.0799		ug/L		80	60 - 138
Endrin aldehyde	0.100	0.0820		ug/L		82	51 - 132
Endrin ketone	0.100	0.0830		ug/L		83	58 - 134
gamma-BHC (Lindane)	0.100	0.0705		ug/L		70	59 - 134
Heptachlor	0.100	0.0659		ug/L		66	54 - 130
Heptachlor epoxide	0.100	0.0764		ug/L		76	61 - 133
Methoxychlor	0.100	0.0855		ug/L		85	54 - 145

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	66		14 - 130
Tetrachloro-m-xylene	70		44 - 124

Lab Sample ID: LCSD 680-505685/15-A
Matrix: Water
Analysis Batch: 505878

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 505685

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin			0.100	0.0582		ug/L		58	45 - 134	18	30
alpha-BHC			0.100	0.0655		ug/L		66	54 - 138	8	30
beta-BHC			0.100	0.0654		ug/L		65	56 - 136	6	30
4,4'-DDD			0.100	0.0690		ug/L		69	56 - 143	10	30
4,4'-DDE			0.100	0.0657		ug/L		66	57 - 135	19	30
4,4'-DDT			0.100	0.0712		ug/L		71	51 - 143	12	30
delta-BHC			0.100	0.0693		ug/L		69	52 - 142	10	30
Dieldrin			0.100	0.0697		ug/L		70	60 - 136	12	30
Endosulfan I			0.100	0.0640		ug/L		64	62 - 126	9	30
Endosulfan II			0.100	0.0673		ug/L		67	52 - 135	13	30
Endosulfan sulfate			0.100	0.0680		ug/L		68	62 - 133	13	30
Endrin			0.100	0.0682		ug/L		68	60 - 138	16	30
Endrin aldehyde			0.100	0.0698		ug/L		70	51 - 132	16	30
Endrin ketone			0.100	0.0742		ug/L		74	58 - 134	11	30
gamma-BHC (Lindane)			0.100	0.0644		ug/L		64	59 - 134	9	30
Heptachlor			0.100	0.0566		ug/L		57	54 - 130	15	30
Heptachlor epoxide			0.100	0.0682		ug/L		68	61 - 133	11	30
Methoxychlor			0.100	0.0753		ug/L		75	54 - 145	13	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
DCB Decachlorobiphenyl	49		14 - 130
Tetrachloro-m-xylene	62		44 - 124

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 680-505389/2
Matrix: Water
Analysis Batch: 505389

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	0.50	U	0.50	0.50	0.20	mg/L		12/07/17 08:34	1
Sulfate	1.0	U	1.0	1.0	0.40	mg/L		12/07/17 08:34	1

Lab Sample ID: LCS 680-505389/3
Matrix: Water
Analysis Batch: 505389

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride			10.0	9.46		mg/L		95	87 - 111
Sulfate			10.0	9.47		mg/L		95	87 - 112

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 680-505389/4
Matrix: Water
Analysis Batch: 505389

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			10.0	10.2		mg/L		102	87 - 111	7	15
Sulfate			10.0	10.1		mg/L		101	87 - 112	7	15

Lab Sample ID: MB 680-505464/35
Matrix: Water
Analysis Batch: 505464

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	0.50	U	0.50	0.50	0.20	mg/L		12/07/17 18:28	1
Sulfate	1.0	U	1.0	1.0	0.40	mg/L		12/07/17 18:28	1

Lab Sample ID: LCS 680-505464/36
Matrix: Water
Analysis Batch: 505464

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride			10.0	9.48		mg/L		95	87 - 111
Sulfate			10.0	9.41		mg/L		94	87 - 112

Lab Sample ID: LCSD 680-505464/37
Matrix: Water
Analysis Batch: 505464

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			10.0	10.2		mg/L		102	87 - 111	7	15
Sulfate			10.0	10.1		mg/L		101	87 - 112	7	15

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-506037/1-A
Matrix: Water
Analysis Batch: 506397

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 506037

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		12/13/17 15:44	1
Barium	1.5	U	5.0	1.5	0.61	ug/L		12/13/17 15:44	1
Cadmium	0.40	U	0.50	0.40	0.15	ug/L		12/13/17 15:44	1
Chromium	1.82	J Q	5.0	4.0	1.6	ug/L		12/13/17 15:44	1
Copper	4.0	U	5.0	4.0	1.7	ug/L		12/13/17 15:44	1
Iron	75	U	100	75	25	ug/L		12/13/17 15:44	1
Lead	2.5	U	2.5	2.5	0.98	ug/L		12/13/17 15:44	1
Manganese	5.0	U	5.0	5.0	1.8	ug/L		12/13/17 15:44	1
Selenium	2.5	U	2.5	2.5	1.0	ug/L		12/13/17 15:44	1
Silver	0.30	U	1.0	0.30	0.10	ug/L		12/13/17 15:44	1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 680-506037/2-A
Matrix: Water
Analysis Batch: 506397

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 506037

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	104		ug/L		104	84 - 116
Barium	100	107		ug/L		107	86 - 114
Cadmium	50.0	55.0		ug/L		110	87 - 115
Chromium	100	112	Q	ug/L		112	85 - 116
Copper	100	111		ug/L		111	85 - 118
Iron	5000	5410		ug/L		108	87 - 118
Lead	500	527		ug/L		105	88 - 115
Manganese	500	532		ug/L		106	87 - 115
Selenium	100	100		ug/L		100	80 - 120
Silver	50.0	53.3		ug/L		107	85 - 116

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-505620/1-A
Matrix: Water
Analysis Batch: 505859

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 505620

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		12/08/17 16:50	1

Lab Sample ID: LCS 680-505620/2-A
Matrix: Water
Analysis Batch: 505859

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 505620

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	2.50	2.54		ug/L		102	80 - 124

Lab Sample ID: 680-146353-4 MS
Matrix: Water
Analysis Batch: 505859

Client Sample ID: LFM-93-07_Fall17
Prep Type: Total/NA
Prep Batch: 505620

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.20	U	1.00	1.04		ug/L		104	80 - 124

Lab Sample ID: 680-146353-4 MSD
Matrix: Water
Analysis Batch: 505859

Client Sample ID: LFM-93-07_Fall17
Prep Type: Total/NA
Prep Batch: 505620

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.20	U	1.00	1.05		ug/L		105	80 - 124	1	20

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 280-398340/66
Matrix: Water
Analysis Batch: 398340

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	0.050	U	0.10	0.050	0.019	mg/L		12/11/17 20:13	1

Lab Sample ID: LCS 280-398340/65
Matrix: Water
Analysis Batch: 398340

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate/Nitrite-N	5.00	4.88		mg/L		98	90 - 110

Method: 410.4 - COD

Lab Sample ID: MB 280-398397/5
Matrix: Water
Analysis Batch: 398397

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chemical Oxygen Demand	10	U	20	10	4.1	mg/L		12/12/17 10:09	1

Lab Sample ID: LCS 280-398397/3
Matrix: Water
Analysis Batch: 398397

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	100	97.1		mg/L		97	90 - 110

Lab Sample ID: LCSD 280-398397/4
Matrix: Water
Analysis Batch: 398397

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	100	97.1		mg/L		97	90 - 110	0	11

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-506155/1-A
Matrix: Water
Analysis Batch: 506228

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 506155

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		12/13/17 10:29	1

Lab Sample ID: LCS 680-506155/2-A
Matrix: Water
Analysis Batch: 506228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 506155

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0500	0.0461		mg/L		92	83 - 116

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-399189/5
Matrix: Water
Analysis Batch: 399189

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	3.36	J	5.0	3.2	1.1	mg/L		12/18/17 13:09	1

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: LCS 280-399189/4
Matrix: Water
Analysis Batch: 399189

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Alkalinity			200	190		mg/L		95	90 - 110		

Lab Sample ID: 680-146353-4 DU
Matrix: Water
Analysis Batch: 399189

Client Sample ID: LFM-93-07_Fall17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Alkalinity	130	B		132		mg/L				2	10

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-397913/1
Matrix: Water
Analysis Batch: 397913

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	10	U	10	10	4.7	mg/L		12/07/17 11:24	1

Lab Sample ID: LCS 280-397913/2
Matrix: Water
Analysis Batch: 397913

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			500	486		mg/L		97	86 - 110		

GC Semi VOA

Prep Batch: 505685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	3520C	
MB 680-505685/13-A	Method Blank	Total/NA	Water	3520C	
LCS 680-505685/14-A	Lab Control Sample	Total/NA	Water	3520C	
LCSD 680-505685/15-A	Lab Control Sample Dup	Total/NA	Water	3520C	

Analysis Batch: 505878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	8081B 8082A	505685
MB 680-505685/13-A	Method Blank	Total/NA	Water	8081B 8082A	505685
LCS 680-505685/14-A	Lab Control Sample	Total/NA	Water	8081B 8082A	505685
LCSD 680-505685/15-A	Lab Control Sample Dup	Total/NA	Water	8081B 8082A	505685

HPLC/IC

Analysis Batch: 505389

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	9056A	
MB 680-505389/2	Method Blank	Total/NA	Water	9056A	
LCS 680-505389/3	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-505389/4	Lab Control Sample Dup	Total/NA	Water	9056A	

Analysis Batch: 505464

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	9056A	
MB 680-505464/35	Method Blank	Total/NA	Water	9056A	
LCS 680-505464/36	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-505464/37	Lab Control Sample Dup	Total/NA	Water	9056A	

Metals

Prep Batch: 505620

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	7470A	
MB 680-505620/1-A	Method Blank	Total/NA	Water	7470A	
LCS 680-505620/2-A	Lab Control Sample	Total/NA	Water	7470A	
680-146353-4 MS	LFM-93-07_Fall17	Total/NA	Water	7470A	
680-146353-4 MSD	LFM-93-07_Fall17	Total/NA	Water	7470A	

Analysis Batch: 505859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	7470A	505620
MB 680-505620/1-A	Method Blank	Total/NA	Water	7470A	505620
LCS 680-505620/2-A	Lab Control Sample	Total/NA	Water	7470A	505620
680-146353-4 MS	LFM-93-07_Fall17	Total/NA	Water	7470A	505620
680-146353-4 MSD	LFM-93-07_Fall17	Total/NA	Water	7470A	505620

Prep Batch: 506037

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	3010A	
MB 680-506037/1-A	Method Blank	Total/NA	Water	3010A	

Metals (Continued)

Prep Batch: 506037 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-506037/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 506397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	6020A	506037
MB 680-506037/1-A	Method Blank	Total/NA	Water	6020A	506037
LCS 680-506037/2-A	Lab Control Sample	Total/NA	Water	6020A	506037

General Chemistry

Analysis Batch: 397913

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	SM 2540C	
MB 280-397913/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-397913/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 398340

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	353.2	
MB 280-398340/66	Method Blank	Total/NA	Water	353.2	
LCS 280-398340/65	Lab Control Sample	Total/NA	Water	353.2	

Analysis Batch: 398397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	410.4	
MB 280-398397/5	Method Blank	Total/NA	Water	410.4	
LCS 280-398397/3	Lab Control Sample	Total/NA	Water	410.4	
LCSD 280-398397/4	Lab Control Sample Dup	Total/NA	Water	410.4	

Analysis Batch: 399189

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	SM 2320B	
MB 280-399189/5	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-399189/4	Lab Control Sample	Total/NA	Water	SM 2320B	
680-146353-4 DU	LFM-93-07_Fall17	Total/NA	Water	SM 2320B	

Prep Batch: 506155

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	9012B	
MB 680-506155/1-A	Method Blank	Total/NA	Water	9012B	
LCS 680-506155/2-A	Lab Control Sample	Total/NA	Water	9012B	

Analysis Batch: 506228

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-146353-4	LFM-93-07_Fall17	Total/NA	Water	9012B	506155
MB 680-506155/1-A	Method Blank	Total/NA	Water	9012B	506155
LCS 680-506155/2-A	Lab Control Sample	Total/NA	Water	9012B	506155

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / DCL

TestAmerica Job ID: 680-146353-2

Client Sample ID: LFM-93-07_Fall17

Date Collected: 12/04/17 12:25
Date Received: 12/06/17 09:20

Lab Sample ID: 680-146353-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1047 mL	10 mL	505685	12/08/17 17:17	CEW	TAL SAV
Total/NA	Analysis	8081B 8082A		1			505878	12/11/17 20:03	GEM	TAL SAV
	Instrument ID: CSGAA									
Total/NA	Analysis	9056A		1	5 mL	5 mL	505389	12/07/17 14:52	UI	TAL SAV
	Instrument ID: CICL									
Total/NA	Analysis	9056A		10	5 mL	5 mL	505464	12/08/17 03:28	UI	TAL SAV
	Instrument ID: CICL									
Total/NA	Prep	3010A			50 mL	250 mL	506037	12/12/17 10:06	AJR	TAL SAV
Total/NA	Analysis	6020A		1			506397	12/13/17 16:13	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	505620	12/08/17 10:23	NVF	TAL SAV
Total/NA	Analysis	7470A		1			505859	12/08/17 16:57	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	398340	12/11/17 20:27	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	398397	12/12/17 10:09	CCJ	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	506155	12/13/17 05:35	DAM	TAL SAV
Total/NA	Analysis	9012B		1			506228	12/13/17 10:47	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	SM 2320B		1			399189	12/18/17 13:15	A1D	TAL DEN
	Instrument ID: WC_AT2									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	397913	12/07/17 11:24	JAP	TAL DEN
	Instrument ID: NOEQUIP									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
SK1450-1

Matrices: (Groundwater/Surface Water) Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B ✓	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note**: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1] *All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 12/18/2017

TEST AMERICA SAVANNAH
DEVENS FALL 2017 LTM
680-146353-2
TK1450

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
DEVENS FALL 2017 LTM, 680-146353-2
TK1450

Sample Receipt

The following sample was received on December 06, 2017 and was logged in under Katahdin Analytical Services work order number TK1450 for a hardcopy due date of December 18, 2017.

KATAHDIN	TEST AMERICA
Sample No.	Sample Identification
TK1450-1	LFM-03-07-FALL17

The sample was 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. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The sample of Work Order TK1450 was analyzed in accordance with the Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MADEP, May 2004, Revision 1.1, and/or the Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

MA-EPH Analysis

The C11-C22 aromatic range was detected in the method blank, WG219798-1, above the LOQ. Since this range was not detected in the associated sample, no further action was taken.

MA-VPH Analysis

The closing calibration standard (CV) (file 2KL10087) had a low response for the surrogate 2,5-dibromotoluene that resulted in a %D that was greater than the method acceptance limit of 25%.

There were no other protocol deviations or observations noted by the organics laboratory staff.

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 the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond 12.18.17

Leslie Dimond
Quality Assurance Officer

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.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: TASAV	KAS PM: HMM	Sampled By: Client
Project:	KIMS Entry By: SO	Delivered By: Fedex
KAS Work Order#: TK1450	KIMS Review By: HMM	Received By: SO
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 12-6-17 9154

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): 3.0
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
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 (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
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.

360325 Boston T1450 360325 Boston

PO # 17-636 | Devens - DCL 1024-003

Chain of Custody Record

Page: 1 of: 1

Company: KOMAN GS, LLC

Address: 293 Boston Post Road, Suite 100
Marlborough, MA 01752

Phone: 508-366-7442 Fax: 508-366-7445

Sampled by [Print Name(s)]/Affiliation: Mark L. Nelson

Sampler(s) Signature(s):

Laboratory: Test America - Savannah
Address: 510 LaRoche Ave
Savannah, GA 31404
Contact: Jerry Lanier
Regulatory Facility No.
Project Name: Devens Fall 2017 LTM
Sampling QAP No.:
Approval Date:
TAT: Routine
Other:

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40-ml VOA vials (HCl)	MA EPH 2-1liter amber glass(HCl)	Pesticides/SW8081 2-1liter amber glass	Total Metals* (SW6010/6020/7470) 1-250 ml poly (HNO3)	Total Cyanide/SW9012 1-250ml poly (NaOH)	Chloride/Sulfate (SW9056) 1-125ml poly	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4)	Alkalinity/SM2320B 1-250-ml poly	TDS/SM2540D 1-1liter poly	COD/SW9060 1-500-ml amber glass (H2SO4)	Remarks	Lab. No.
							H	H	I	N	O	I	S	I	I	S		
							Analyses Requested											
LFM-03-07-F11117		12/4	1225	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
				P	GW													
				P	GW													
				P	GW													
				P	GW													
	Trip Blank#1			O	O		X											

Shipping Details: courier pick up

← Total Number of Containers

Date Out: Via:
Returned: Via:

Additional Comments:
* = Total Metals include: Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)

Item No.	Relinquished by/Affiliation	Date	Time		Date	Time
		12/4/17	1330			
		12/5/17	1340		12-5-17	1240
		12-5-17	1 day		12-6-17	0915

email logins and results to:
lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐
On ICE ☐
Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater SE = Sediment SP = Soil SW = Surface Water O = Other
PRESERVATIVE CODES H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other
COLLECTION METHOD C = Composite G=Grab P= Pumping O = Other

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Dec. 06, 2017
04:27 PM

Login Number: TK1450

Account: TASAV001
Test America Savannah

Project: TASAV-DEVENS

NoWeb

Quote/Incoming:

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	DOD QSM 4.2 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	680-146353-2
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	W912WJ-10-D-0003
COOLER TEMPERATURE	:	3.0
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS033QC-XLS
LOGIN INITIALS	:	SO
PM	:	HHM
PROJECT NAME	:	Devens Fall 2017 LTM, 680-146353-2
QC LEVEL	:	II
REPORT INSTRUCTIONS	:	Email PDF, EDD files and invoice to Jerry and Amy.Ragnaldsen@testamericainc.com. No HC. Include Level 4 narrative and MCP forms.
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TK1450-1	LFM-03-07-FALL17	04-DEC-17 12:25	06-DEC-17			18-DEC-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	18-DEC-17	1L N-Amber Glass		
Aqueous	S	MA-VPH	18-DEC-17	40mL Vial+HCl		

Total Samples: *1* ***Total Analyses:*** *2*

HHM
12-6-17

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U — Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* — Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D — Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E — Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J — Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J — Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B — Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C — Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L — Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M — Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N — Presumptive evidence of a compound based on a mass spectral library search.

A — Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P — Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Report of Analytical Results

Client: Test America Savannah
Lab ID: TK1450-1
Client ID: LFM-03-07-FALL17
Project: Devens Fall 2017 LTM, 680-146353-2
SDG: TK1450
Lab File ID: CKL2169.D

Sample Date: 04-DEC-17
Received Date: 06-DEC-17
Extract Date: 11-DEC-17
Extracted By: KF
Extraction Method: SW846 3510C
Lab Prep Batch: WG219798

Analysis Date: 15-DEC-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 18-DEC-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	95	ug/L	1	100	95.	48.	71.
C19-C36 Aliphatics	U	95	ug/L	1	100	95.	48.	71.
C11-C22 Aromatics	U	95	ug/L	1	100	95.	48.	71.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.86	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.95	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		48.2	%					
o-Terphenyl		58.8	%					
2-Fluorobiphenyl		71.3	%					
2-Bromonaphthalene		71.1	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

Report of Analytical Results

Client: Test America Savannah
Lab ID: TK1450-1
Client ID: LFM-03-07-FALL17
Project: Devens Fall 2017 LTM, 680-146353-2
SDG: TK1450
Lab File ID: 2KL10079.D

Sample Date: 04-DEC-17
Received Date: 06-DEC-17
Extract Date: 07-DEC-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG219547

Analysis Date: 07-DEC-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 11-DEC-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		95.3	%				
2,5-Dibromotoluene (PID)		80.0	%				

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

360325-Boston

360325-Boston

PO #	17-636	Devens - DCL 1024-003	**Chain of Custody Record**	Page: 1 of: 1

Company	KOMAN GS, LLC
Address:	293 Boston Post Road, Suite 100 Marlborough, MA 01752
Phone:	508-366-7442 Fax: 508-366-7445
Sampled by [Print Name(s)]/Affilliation	Kevin L. Anderson
Sampler(s) Signature(s)	[signature]

KGS

Laboratory:	Test America - Savannah
Address:	510 LaRoche Ave Savannah, GA 31404
Contact:	Jerry Lanier
Regulatory Facility No.	
Project Name:	Devens Fall 2017 LTM
Sampling QAP No.:	
Approval Date:	
TAT	Routine
Other:	

Preservatives (see codes) / Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40-ml VOA vials (HCl) (H)	MA EPH 2-1liter amber glass(HCl) (H)	Pesticides/SW8081 2-1liter amber glass (I)	**Total Metals*** (SW6010/6020/7470) 1-250 ml poly (HNO3) (N)	Total Cyanide/SW9012 1-250ml poly (NaOH) (O)	Chloride/Sulfate (SW9056) 1-125ml poly (I)	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4) (S)	Alkalinity/SM2320B 1-250-ml poly (I)	TDS/SM2540D 1-1liter poly (I)	COD/SW9060 1-500-ml amber glass (H2SO4) (S)	Remarks	Lab. No.
LFM-03-07-F91117		12/4	1225	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
				P	GW													
				P	GW													
				P	GW													
				P	GW													
	~~Trip Blank~~			O	O		X											

680-146353 Chain of Custody

Shipping Details	courier pick up	← Total Number of Containers

		Item No.	Relinquished by/Affiliation	Date	Time		Date	Time
Date Out:	Via:		[signature]	12/4/17	1530			
Returned:	Via:		[signature]	12/5/17	1340	[signature]	12-5-17	1240
Additional Comments:			[signature]	12-5-17 - 1 [illegible]		[signature]	12/6/17	0920
* = Total Metals include: Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)								
email logins and results to:					3.2(C)-(0.5)2.7			
lekes@komangs.com								

Lab Comments

Preserve Where Applicable ☐

On ICE ☐

Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater	SE = Sediment	SP = Soil	SW = Surface Water		O = Other
PRESERVATIVE CODES H = HCL + Ice	I = Ice Only	N = Nitric Acid + Ice	S = Sulfuric Acid + Ice	M = Methanol	O = Other
COLLECTION METHOD C = Composite	G=Grab	P= Pumping			O = Other

360325-Boston

PO # 17-636 | Devens - DCL 1024-003

Chain of Custody Record

Page: 1 of: 1

Company	KOMAN GS, LLC
Address:	293 Boston Post Road, Suite 100, Marlborough, MA 01752
Phone:	508-366-7442 Fax: 508-366-7445
Sampled by [Print Name(s)]/Affiliation	Kevin L. Arthur
Sampler(s) Signature(s)	

Laboratory:	Test America - Savannah
Address:	510 LaRoche Ave, Savannah, GA 31404
Contact:	Jerry Lanier
Regulatory Facility No.	
Project Name:	Devens Fall 2017 LTM
Sampling QAP No.:	
Approval Date:	
TAT	Routine
Other:	

Preservatives (see codes): H H I N O I S I I S

Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40-ml VOA vials (HCl)	MA EPH 2-1liter amber glass(HCl)	Pesticides/SW8081 2-1liter amber glass	Total Metals* (SW6010/6020/7470) 1-250 ml poly (HNO3)	Total Cyanide/SW9012 1-250ml poly (NaOH)	Chloride/Sulfate (SW9056) 1-125ml poly	Nitrate/Nitrite-E353.2 1-500 ml amber glass (H2SO4)	Alkalinity/SM2320B 1-250-ml poly	TDS/SM2540D 1-1liter poly	COD/SW9060 1-500-ml amber glass (H2SO4)	Remarks	Lab. No.
	LFM-03-07-F91117	12/4	1225	P	GW	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
				P	GW													
				P	GW													
				P	GW													
				P	GW													
	Trip Blank(s)			O	O		X											

680-146353 Chain of Custody

Shipping Details: courier pick up ← Total Number of Containers

Date Out:	Via:	Item No.	Relinquished by/Affiliation	Date	Time		Date	Time
Returned:	Via:			12/4/17	1537			
Additional Comments:				12/5/17	1340	Received 12-5-17 1240		
* = Total Metals include: Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, Ag (6010); As (6020); Hg (7470)				12-5-17 - 1 del		Received 12-6-17 0830		

email logins and results to:

lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐

On ICE ☐

Temperature 0.4 C

ID # 8 +0.1

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: A = Ai GW = Groundwater | SE = Sediment | SP = Soil | SW = Surface Water | O = Other

PRESERVATIVE CODES H = HCL + Ice | I = Ice Only | N = Nitric Acid + Ice | S = Sulfuric Acid + Ice | M = Methanol | O = Other

COLLECTION METHOD C = Composite | G=Grab | P= Pumping | O = Other

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-146353-2

Login Number: 146353
List Number: 1
Creator: Ragnaldsen, Amy E

List Source: TestAmerica Savannah

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / DCL

TestAmerica Job ID: 680-146353-2

Laboratory: TestAmerica Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-18
Alaska	State Program	10		06-30-18
Alaska (UST)	State Program	10	UST-104	11-05-17 *
Arizona	State Program	9	AZ808	12-14-18
Arkansas DEQ	State Program	6	88-0692	02-01-18
California	State Program	9	2939	06-30-18
Colorado	State Program	8	N/A	12-31-17
Connecticut	State Program	1	PH-0161	03-31-19
Florida	NELAP	4	E87052	06-30-18
GA Dept. of Agriculture	State Program	4	N/A	06-12-18
Georgia	State Program	4	803	06-30-18
Guam	State Program	9	15-005r	04-16-18
Hawaii	State Program	9	N/A	06-30-18
Illinois	NELAP	5	200022	11-30-18
Indiana	State Program	5	N/A	06-30-18
Iowa	State Program	7	353	06-30-19
Kentucky (DW)	State Program	4	90084	12-31-18
Kentucky (UST)	State Program	4	18	06-30-18
Kentucky (WW)	State Program	4	90084	12-31-18 *
L-A-B	DoD ELAP		L2463	09-22-19
L-A-B	ISO/IEC 17025		L2463.01	09-22-19
Louisiana	NELAP	6	30690	06-30-18
Louisiana (DW)	NELAP	6	LA160019	12-31-18
Maine	State Program	1	GA00006	09-24-18
Maryland	State Program	3	250	12-31-17
Massachusetts	State Program	1	M-GA006	06-30-18
Michigan	State Program	5	9925	06-30-18
Mississippi	State Program	4	N/A	06-30-18
Nebraska	State Program	7	TestAmerica-Savannah	06-30-18
New Jersey	NELAP	2	GA769	06-30-18
New Mexico	State Program	6	N/A	06-30-18
New York	NELAP	2	10842	03-31-18
North Carolina (DW)	State Program	4	13701	07-31-18
North Carolina (WW/SW)	State Program	4	269	12-31-18
Oklahoma	State Program	6	9984	08-31-18
Pennsylvania	NELAP	3	68-00474	06-30-18
Puerto Rico	State Program	2	GA00006	12-31-17
South Carolina	State Program	4	98001	06-30-18
Tennessee	State Program	4	TN02961	06-30-18
Texas	NELAP	6	T104704185-16-9	11-30-18
Texas	State Program	6	T104704185	06-30-18
US Fish & Wildlife	Federal		LE058448-0	07-31-18
USDA	Federal		SAV 3-04	06-14-20 *
Virginia	NELAP	3	460161	06-14-18
Washington	State Program	10	C805	06-10-18
West Virginia (DW)	State Program	3	9950C	12-31-17
West Virginia DEP	State Program	3	094	06-30-18
Wisconsin	State Program	5	999819810	08-31-18
Wyoming	State Program	8	8TMS-L	06-30-16 *

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / DCL

TestAmerica Job ID: 680-146353-2

Laboratory: TestAmerica Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19 *

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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

TestAmerica Job ID: 680-144883-1
Client Project/Site: Devens / Landfill (DCL) Leachate
Revision: 1

For:
KOMAN Government Solutions, LLC
293 Boston Post Road
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Authorized for release by:
12/6/2017 6:01:41 PM

Jerry Lanier, Project Manager I
(912)354-7858 e.3410
jerry.lanier@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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

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

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

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Job ID: 680-144883-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE
Client: KOMAN Government Solutions, LLC
Project: Devens / Landfill (DCL) Leachate

Report Number: 680-144883-1

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

RECEIPT

The samples were received on 10/28/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 0.9º C.

The final report was revised to include arsenic results.

DIESEL RANGE ORGANICS (DRO)

Sample DCL Leachate-FALL17 (680-144883-1) was analyzed for Diesel Range Organics (DRO) in accordance with EPA SW-846 8015C. The samples were prepared on 11/01/2017 and analyzed on 11/03/2017.

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

PESTICIDES AND PCBS

Sample DCL Leachate-FALL17 (680-144883-1) was analyzed for Pesticides and PCBs in accordance with EPA SW-846 Method 8081B_8082A. The samples were prepared on 11/01/2017 and analyzed on 11/03/2017.

PCB-1260 failed the recovery criteria low for the MSD of sample DCL Leachate-FALL17MSD (680-144883-1) in batch 680-501243. PCB-1016 and PCB-1260 exceeded the RPD limit.

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

METALS

Sample DCL Leachate-FALL17 (680-144883-1) was analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 11/01/2017 and analyzed on 11/02/2017.

Aluminum was detected in method blank MB 680-500874/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

The interference check standard solution (ICSA) associated with batch 680-501182 had results for one or more elements at a level greater than 2 times the limit of detection (LOD).

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

MERCURY

Sample DCL Leachate-FALL17 (680-144883-1) was analyzed for mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared and analyzed on 10/30/2017.

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

TOTAL SUSPENDED SOLIDS

Job ID: 680-144883-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

Sample DCL Leachate-FALL17 (680-144883-1) was analyzed for total suspended solids in accordance with SM 2540D. The samples were analyzed on 11/01/2017.

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

CYANIDE

Sample DCL Leachate-FALL17 (680-144883-1) was analyzed for cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared and analyzed on 11/14/2017.

The following sample was analyzed outside of analytical holding time due to analyst error: DCL Leachate-FALL17 (680-144883-1).

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

PH

Sample DCL Leachate-FALL17 (680-144883-1) was analyzed for pH in accordance with EPA SW-846 Method 9040C. The samples were analyzed on 11/01/2017.

This analysis is considered a field test and is to be performed within 15 minutes of collection. This analysis was performed in the laboratory outside the 15 minute timeframe.

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

PHENOLICS, TOTAL RECOVERABLE

Sample DCL Leachate-FALL17 (680-144883-1) was analyzed for phenolics, total recoverable in accordance with EPA SW-846 Method 9065. The samples were prepared and analyzed on 11/08/2017.

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

Subcontract Work

Methods Semivolatiles, Volatiles: These methods were subcontracted to Katahdin Analytical Services Inc. The subcontract laboratory certifications are different from that of the facility issuing the final report.

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / Landfill (DCL) Leachate

TestAmerica Job ID: 680-144883-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-144883-1	DCL Leachate-FALL17	Water	10/27/17 13:00	10/28/17 10:40
680-144883-2	Trip Blank	Water	10/27/17 00:00	10/28/17 10:40

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / Landfill (DCL) Leachate

TestAmerica Job ID: 680-144883-1

Method	Method Description	Protocol	Laboratory
8015C DRO	Diesel Range Organics (DRO) (GC)	SW846	TAL SAV
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
9012B	Cyanide, Total and/or Amenable	EPA	TAL SAV
9040C	pH	SW846	TAL SAV
9065	Phenolics, Total Recoverable	SW846	TAL SAV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
Semivolatiles	EPA 625 Base/Neutral and Acid Organics i	NONE	
Volatiles	EPA 624 Purgeable Organic Compounds	NONE	

Protocol References:

EPA = US Environmental Protection Agency

NONE = NONE

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

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

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
M	Manual integrated compound.
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

Metals

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
Q	One or more quality control criteria failed.
J	Estimated: The analyte was positively identified; the quantitation is an estimation

General Chemistry

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

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

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / Landfill (DCL) Leachate

TestAmerica Job ID: 680-144883-1

Client Sample ID: DCL Leachate-FALL17
Date Collected: 10/27/17 13:00
Date Received: 10/28/17 10:40

Lab Sample ID: 680-144883-1
Matrix: Water

Method: 8015C DRO - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	2.8		0.10	0.085	0.050	mg/L		11/03/17 16:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*78*		*56 - 125*	*11/01/17 16:06*	*11/03/17 16:49*	*1*

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.019	U	0.054	0.019	0.0077	ug/L		11/03/17 17:07	1
alpha-BHC	0.011	U	0.054	0.011	0.0037	ug/L		11/03/17 17:07	1
beta-BHC	0.019	U	0.054	0.019	0.0098	ug/L		11/03/17 17:07	1
Chlordane (technical)	0.32	U	0.54	0.32	0.10	ug/L		11/03/17 17:07	1
4,4'-DDD	0.011	U	0.054	0.011	0.0068	ug/L		11/03/17 17:07	1
4,4'-DDE	0.011	U	0.054	0.011	0.0055	ug/L		11/03/17 17:07	1
4,4'-DDT	0.019	U	0.054	0.019	0.0075	ug/L		11/03/17 17:07	1
delta-BHC	0.019	U	0.054	0.019	0.0081	ug/L		11/03/17 17:07	1
Dieldrin	0.011	U	0.054	0.011	0.0041	ug/L		11/03/17 17:07	1
Endosulfan I	0.011	U	0.054	0.011	0.0038	ug/L		11/03/17 17:07	1
Endosulfan II	0.011	U	0.054	0.011	0.0045	ug/L		11/03/17 17:07	1
Endosulfan sulfate	0.011	U	0.054	0.011	0.0055	ug/L		11/03/17 17:07	1
Endrin	0.011	U	0.054	0.011	0.0057	ug/L		11/03/17 17:07	1
Endrin aldehyde	0.011	U	0.054	0.011	0.0066	ug/L		11/03/17 17:07	1
Endrin ketone	0.011	U	0.054	0.011	0.0049	ug/L		11/03/17 17:07	1
gamma-BHC (Lindane)	0.011	U	0.054	0.011	0.0039	ug/L		11/03/17 17:07	1
Heptachlor	0.019	U	0.054	0.019	0.0076	ug/L		11/03/17 17:07	1
Heptachlor epoxide	0.011	U	0.054	0.011	0.0040	ug/L		11/03/17 17:07	1
Methoxychlor	0.019	U	0.054	0.019	0.011	ug/L		11/03/17 17:07	1
PCB-1016	0.39	U	1.1	0.39	0.19	ug/L		11/03/17 17:07	1
PCB-1221	0.35	U	1.1	0.35	0.20	ug/L		11/03/17 17:07	1
PCB-1232	0.48	U	1.1	0.48	0.27	ug/L		11/03/17 17:07	1
PCB-1242	0.48	U	1.1	0.48	0.20	ug/L		11/03/17 17:07	1
PCB-1248	0.48	U	1.1	0.48	0.23	ug/L		11/03/17 17:07	1
PCB-1254	0.35	U	1.1	0.35	0.12	ug/L		11/03/17 17:07	1
PCB-1260	0.39	U	1.1	0.39	0.13	ug/L		11/03/17 17:07	1
Toxaphene	0.86	U	5.4	0.86	0.43	ug/L		11/03/17 17:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*18*		*14 - 130*	*11/01/17 16:06*	*11/03/17 17:07*	*1*
Tetrachloro-m-xylene	*54*		*44 - 124*	*11/01/17 16:06*	*11/03/17 17:07*	*1*

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	50	U	100	50	18	ug/L		11/02/17 17:11	1
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		11/02/17 17:11	1
Cadmium	0.40	U	0.50	0.40	0.15	ug/L		11/02/17 17:11	1
Chromium	4.0	U Q	5.0	4.0	1.6	ug/L		11/02/17 17:11	1
Copper	2.1	J	5.0	4.0	1.7	ug/L		11/02/17 17:11	1
Lead	2.5	U	2.5	2.5	0.98	ug/L		11/02/17 17:11	1
Nickel	2.8	J	5.0	5.0	1.9	ug/L		11/02/17 17:11	1
Silver	0.30	U	1.0	0.30	0.10	ug/L		11/02/17 17:11	1
Zinc	20	U	20	20	9.6	ug/L		11/02/17 17:11	1

Client Sample Results

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / Landfill (DCL) Leachate

TestAmerica Job ID: 680-144883-1

Client Sample ID: DCL Leachate-FALL17
Date Collected: 10/27/17 13:00
Date Received: 10/28/17 10:40

Lab Sample ID: 680-144883-1
Matrix: Water

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/30/17 16:57	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U H	0.010	0.0050	0.0025	mg/L		11/15/17 05:48	1
pH	**7.7**					SU		11/01/17 11:38	1
Phenolics, Total Recoverable	0.050	U	0.050	0.050	0.025	mg/L		11/08/17 14:02	1
Total Suspended Solids	**5.2**		4.0	2.8	1.1	mg/L		11/01/17 18:11	1

Surrogate Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / Landfill (DCL) Leachate

TestAmerica Job ID: 680-144883-1

Method: 8015C DRO - Diesel Range Organics (DRO) (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	OTPH1 (56-125)							
680-144883-1	DCL Leachate-FALL17	78							
LCS 680-500928/4-A	Lab Control Sample	84							
LCSD 680-500928/5-A	Lab Control Sample Dup	81							
MB 680-500928/3-A	Method Blank	78							

Surrogate Legend

OTPH = o-Terphenyl (Surr)

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	DCB1 (14-130)	TCX1 (44-124)						
680-144883-1	DCL Leachate-FALL17	18	54						
680-144883-1 MS	DCL Leachate-FALL17	21 M	54						
680-144883-1 MSD	DCL Leachate-FALL17	27	51						
LCS 680-500854/17-A	Lab Control Sample	43	61						
LCS 680-500854/20-A	Lab Control Sample	39	60						
MB 680-500854/16-A	Method Blank	37	54						

Surrogate Legend

DCB = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8015C DRO - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 680-500928/3-A
Matrix: Water
Analysis Batch: 501208

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500928

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	0.085	U	0.10	0.085	0.050	mg/L		11/03/17 16:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*78*		*56 - 125*	*11/01/17 16:06*	*11/03/17 16:05*	*1*

Lab Sample ID: LCS 680-500928/4-A
Matrix: Water
Analysis Batch: 501208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 500928

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics [C10-C28]	1.00	0.750		mg/L		75	36 - 132

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl (Surr)	*84*		*56 - 125*

Lab Sample ID: LCSD 680-500928/5-A
Matrix: Water
Analysis Batch: 501208

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 500928

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	1.00	0.702		mg/L		70	36 - 132	7	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl (Surr)	*81*		*56 - 125*

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-500854/16-A
Matrix: Water
Analysis Batch: 501243

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500854

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.018	U	0.050	0.018	0.0072	ug/L		11/03/17 14:21	1
alpha-BHC	0.010	U	0.050	0.010	0.0034	ug/L		11/03/17 14:21	1
beta-BHC	0.018	U	0.050	0.018	0.0091	ug/L		11/03/17 14:21	1
Chlordane (technical)	0.30	U	0.50	0.30	0.095	ug/L		11/03/17 14:21	1
4,4'-DDD	0.010	U	0.050	0.010	0.0063	ug/L		11/03/17 14:21	1
4,4'-DDE	0.010	U	0.050	0.010	0.0051	ug/L		11/03/17 14:21	1
4,4'-DDT	0.018	U	0.050	0.018	0.0070	ug/L		11/03/17 14:21	1
delta-BHC	0.018	U	0.050	0.018	0.0075	ug/L		11/03/17 14:21	1
Dieldrin	0.010	U	0.050	0.010	0.0038	ug/L		11/03/17 14:21	1
Endosulfan I	0.010	U	0.050	0.010	0.0035	ug/L		11/03/17 14:21	1
Endosulfan II	0.010	U	0.050	0.010	0.0042	ug/L		11/03/17 14:21	1
Endosulfan sulfate	0.010	U	0.050	0.010	0.0051	ug/L		11/03/17 14:21	1
Endrin	0.010	U	0.050	0.010	0.0053	ug/L		11/03/17 14:21	1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: MB 680-500854/16-A
Matrix: Water
Analysis Batch: 501243

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500854

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Endrin aldehyde	0.010	U	0.050	0.010	0.0061	ug/L		11/03/17 14:21	1
Endrin ketone	0.010	U	0.050	0.010	0.0046	ug/L		11/03/17 14:21	1
gamma-BHC (Lindane)	0.010	U	0.050	0.010	0.0036	ug/L		11/03/17 14:21	1
Heptachlor	0.018	U	0.050	0.018	0.0071	ug/L		11/03/17 14:21	1
Heptachlor epoxide	0.010	U	0.050	0.010	0.0037	ug/L		11/03/17 14:21	1
Methoxychlor	0.018	U	0.050	0.018	0.0098	ug/L		11/03/17 14:21	1
PCB-1016	0.36	U	1.0	0.36	0.18	ug/L		11/03/17 14:21	1
PCB-1221	0.33	U	1.0	0.33	0.19	ug/L		11/03/17 14:21	1
PCB-1232	0.45	U	1.0	0.45	0.25	ug/L		11/03/17 14:21	1
PCB-1242	0.45	U	1.0	0.45	0.19	ug/L		11/03/17 14:21	1
PCB-1248	0.45	U	1.0	0.45	0.21	ug/L		11/03/17 14:21	1
PCB-1254	0.33	U	1.0	0.33	0.11	ug/L		11/03/17 14:21	1
PCB-1260	0.36	U	1.0	0.36	0.12	ug/L		11/03/17 14:21	1
Toxaphene	0.80	U	5.0	0.80	0.40	ug/L		11/03/17 14:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*37*		*14 - 130*	*11/01/17 16:06*	*11/03/17 14:21*	*1*
Tetrachloro-m-xylene	*54*		*44 - 124*	*11/01/17 16:06*	*11/03/17 14:21*	*1*

Lab Sample ID: LCS 680-500854/17-A
Matrix: Water
Analysis Batch: 501243

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 500854

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.100	0.0807		ug/L		81	45 - 134
alpha-BHC	0.100	0.0865		ug/L		86	54 - 138
beta-BHC	0.100	0.0791		ug/L		79	56 - 136
4,4'-DDD	0.100	0.0896		ug/L		90	56 - 143
4,4'-DDE	0.100	0.0840		ug/L		84	57 - 135
4,4'-DDT	0.100	0.0973		ug/L		97	51 - 143
delta-BHC	0.100	0.0871		ug/L		87	52 - 142
Dieldrin	0.100	0.0949		ug/L		95	60 - 136
Endosulfan I	0.100	0.0722		ug/L		72	62 - 126
Endosulfan II	0.100	0.0873		ug/L		87	52 - 135
Endosulfan sulfate	0.100	0.0931		ug/L		93	62 - 133
Endrin	0.100	0.0928		ug/L		93	60 - 138
Endrin aldehyde	0.100	0.106		ug/L		106	51 - 132
Endrin ketone	0.100	0.0885		ug/L		88	58 - 134
gamma-BHC (Lindane)	0.100	0.0888		ug/L		89	59 - 134
Heptachlor	0.100	0.0696		ug/L		70	54 - 130
Heptachlor epoxide	0.100	0.0929		ug/L		93	61 - 133
Methoxychlor	0.100	0.0900		ug/L		90	54 - 145

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*43*		*14 - 130*
Tetrachloro-m-xylene	*61*		*44 - 124*

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCS 680-500854/20-A
Matrix: Water
Analysis Batch: 501243

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 500854

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-1016			6.00	3.77		ug/L		63	46 - 129		
PCB-1260			6.00	3.25		ug/L		54	45 - 134		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*39*		*14 - 130*
Tetrachloro-m-xylene	*60*		*44 - 124*

Lab Sample ID: 680-144883-1 MS
Matrix: Water
Analysis Batch: 501243

Client Sample ID: DCL Leachate-FALL17
Prep Type: Total/NA
Prep Batch: 500854

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-1016	0.39	U	5.98	5.06		ug/L		85	46 - 129		
PCB-1260	0.39	U	5.98	3.29		ug/L		55	45 - 134		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*21*	*M*	*14 - 130*
Tetrachloro-m-xylene	*54*		*44 - 124*

Lab Sample ID: 680-144883-1 MSD
Matrix: Water
Analysis Batch: 501243

Client Sample ID: DCL Leachate-FALL17
Prep Type: Total/NA
Prep Batch: 500854

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016	0.39	U	5.42	3.33	J	ug/L		61	46 - 129	41	30
PCB-1260	0.39	U	5.42	2.31	J	ug/L		43	45 - 134	35	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*27*		*14 - 130*
Tetrachloro-m-xylene	*51*		*44 - 124*

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-500874/1-A
Matrix: Water
Analysis Batch: 501182

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500874

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	22.3	J	100	50	18	ug/L		11/02/17 16:42	1
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		11/02/17 16:42	1
Cadmium	0.40	U	0.50	0.40	0.15	ug/L		11/02/17 16:42	1
Chromium	4.0	U Q	5.0	4.0	1.6	ug/L		11/02/17 16:42	1
Copper	4.0	U	5.0	4.0	1.7	ug/L		11/02/17 16:42	1
Lead	2.5	U	2.5	2.5	0.98	ug/L		11/02/17 16:42	1
Nickel	5.0	U	5.0	5.0	1.9	ug/L		11/02/17 16:42	1
Silver	0.30	U	1.0	0.30	0.10	ug/L		11/02/17 16:42	1
Zinc	20	U	20	20	9.6	ug/L		11/02/17 16:42	1

Lab Sample ID: LCS 680-500874/2-A
Matrix: Water
Analysis Batch: 501182

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 500874

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	5000	4860		ug/L		97	84 - 117
Arsenic	100	104		ug/L		104	84 - 116
Cadmium	50.0	51.5		ug/L		103	87 - 115
Chromium	100	108	Q	ug/L		108	85 - 116
Copper	100	109		ug/L		109	85 - 118
Lead	500	516		ug/L		103	88 - 115
Nickel	100	108		ug/L		108	85 - 117
Silver	50.0	53.0		ug/L		106	85 - 116
Zinc	100	107		ug/L		107	83 - 119

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-500496/13-A
Matrix: Water
Analysis Batch: 500688

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500496

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/30/17 16:30	1

Lab Sample ID: LCS 680-500496/14-A
Matrix: Water
Analysis Batch: 500688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 500496

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	2.50	2.58		ug/L		103	80 - 124

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-502447/1-A
Matrix: Water
Analysis Batch: 502640

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 502447

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		11/15/17 05:44	1

Lab Sample ID: LCS 680-502447/2-A
Matrix: Water
Analysis Batch: 502640

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 502447

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0500	0.0501		mg/L		100	83 - 116

Method: 9040C - pH

Lab Sample ID: LCS 680-500955/2
Matrix: Water
Analysis Batch: 500955

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.0		SU		100	63 - 158

Method: 9065 - Phenolics, Total Recoverable

Lab Sample ID: MB 680-501800/1-A
Matrix: Water
Analysis Batch: 501833

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 501800

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Phenolics, Total Recoverable	0.050	U	0.050	0.050	0.025	mg/L		11/08/17 12:59	1

Lab Sample ID: LCS 680-501800/2-A
Matrix: Water
Analysis Batch: 501833

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 501800

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Phenolics, Total Recoverable	0.100	0.100		mg/L		100	75 - 125

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

Lab Sample ID: MB 280-393616/2
Matrix: Water
Analysis Batch: 393616

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Total Suspended Solids	2.8	U	4.0	2.8	1.1	mg/L		11/01/17 18:11	1

Lab Sample ID: LCS 280-393616/1
Matrix: Water
Analysis Batch: 393616

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	98.8		mg/L		99	86 - 114

GC Semi VOA

Prep Batch: 500854

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	3520C	
MB 680-500854/16-A	Method Blank	Total/NA	Water	3520C	
LCS 680-500854/17-A	Lab Control Sample	Total/NA	Water	3520C	
LCS 680-500854/20-A	Lab Control Sample	Total/NA	Water	3520C	
680-144883-1 MS	DCL Leachate-FALL17	Total/NA	Water	3520C	
680-144883-1 MSD	DCL Leachate-FALL17	Total/NA	Water	3520C	

Prep Batch: 500928

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	3520C	
MB 680-500928/3-A	Method Blank	Total/NA	Water	3520C	
LCS 680-500928/4-A	Lab Control Sample	Total/NA	Water	3520C	
LCSD 680-500928/5-A	Lab Control Sample Dup	Total/NA	Water	3520C	

Analysis Batch: 501208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	8015C DRO	500928
MB 680-500928/3-A	Method Blank	Total/NA	Water	8015C DRO	500928
LCS 680-500928/4-A	Lab Control Sample	Total/NA	Water	8015C DRO	500928
LCSD 680-500928/5-A	Lab Control Sample Dup	Total/NA	Water	8015C DRO	500928

Analysis Batch: 501243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	8081B 8082A	500854
MB 680-500854/16-A	Method Blank	Total/NA	Water	8081B 8082A	500854
LCS 680-500854/17-A	Lab Control Sample	Total/NA	Water	8081B 8082A	500854
LCS 680-500854/20-A	Lab Control Sample	Total/NA	Water	8081B 8082A	500854
680-144883-1 MS	DCL Leachate-FALL17	Total/NA	Water	8081B 8082A	500854
680-144883-1 MSD	DCL Leachate-FALL17	Total/NA	Water	8081B 8082A	500854

Metals

Prep Batch: 500496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	7470A	
MB 680-500496/13-A	Method Blank	Total/NA	Water	7470A	
LCS 680-500496/14-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 500688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	7470A	500496
MB 680-500496/13-A	Method Blank	Total/NA	Water	7470A	500496
LCS 680-500496/14-A	Lab Control Sample	Total/NA	Water	7470A	500496

Prep Batch: 500874

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	3010A	
MB 680-500874/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-500874/2-A	Lab Control Sample	Total/NA	Water	3010A	

Metals (Continued)

Analysis Batch: 501182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	6020A	500874
MB 680-500874/1-A	Method Blank	Total/NA	Water	6020A	500874
LCS 680-500874/2-A	Lab Control Sample	Total/NA	Water	6020A	500874

General Chemistry

Analysis Batch: 393616

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	SM 2540D	
MB 280-393616/2	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-393616/1	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 500955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	9040C	
LCS 680-500955/2	Lab Control Sample	Total/NA	Water	9040C	

Prep Batch: 501800

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	Distill/Phenol	
MB 680-501800/1-A	Method Blank	Total/NA	Water	Distill/Phenol	
LCS 680-501800/2-A	Lab Control Sample	Total/NA	Water	Distill/Phenol	

Analysis Batch: 501833

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	9065	501800
MB 680-501800/1-A	Method Blank	Total/NA	Water	9065	501800
LCS 680-501800/2-A	Lab Control Sample	Total/NA	Water	9065	501800

Prep Batch: 502447

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	9012B	
MB 680-502447/1-A	Method Blank	Total/NA	Water	9012B	
LCS 680-502447/2-A	Lab Control Sample	Total/NA	Water	9012B	

Analysis Batch: 502640

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144883-1	DCL Leachate-FALL17	Total/NA	Water	9012B	502447
MB 680-502447/1-A	Method Blank	Total/NA	Water	9012B	502447
LCS 680-502447/2-A	Lab Control Sample	Total/NA	Water	9012B	502447

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / Landfill (DCL) Leachate

TestAmerica Job ID: 680-144883-1

Client Sample ID: DCL Leachate-FALL17
Date Collected: 10/27/17 13:00
Date Received: 10/28/17 10:40

Lab Sample ID: 680-144883-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			994.6 mL	1 mL	500928	11/01/17 16:06	CEW	TAL SAV
Total/NA	Analysis	8015C DRO		1			501208	11/03/17 16:49	LBH	TAL SAV
	Instrument ID: CSGAB1									
Total/NA	Prep	3520C			929.8 mL	10 mL	500854	11/01/17 16:06	CEW	TAL SAV
Total/NA	Analysis	8081B 8082A		1			501243	11/03/17 17:07	JCK	TAL SAV
	Instrument ID: CSGK									
Total/NA	Prep	3010A			50 mL	250 mL	500874	11/01/17 10:24	AJR	TAL SAV
Total/NA	Analysis	6020A		1			501182	11/02/17 17:11	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	500496	10/30/17 08:47	NVF	TAL SAV
Total/NA	Analysis	7470A		1			500688	10/30/17 16:57	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Prep	9012B			50 mL	50 mL	502447	11/14/17 04:30	DAM	TAL SAV
Total/NA	Analysis	9012B		1			502640	11/15/17 05:48	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	9040C		1			500955	11/01/17 11:38	JEC	TAL SAV
	Instrument ID: MANTECH									
Total/NA	Prep	Distill/Phenol			6 mL	6 mL	501800	11/08/17 12:03	CFJ	TAL SAV
Total/NA	Analysis	9065		1	6 mL	6 mL	501833	11/08/17 14:02	CFJ	TAL SAV
	Instrument ID: KONELAB3									
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	393616	11/01/17 18:11	SVC	TAL DEN
	Instrument ID: NOEQUIP									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

TEST AMERICA SAVANNAH
FORT DEVENS/DCL LEACHATE 68016363
TK0161

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
FORT DEVENS/DCL LEACHATE 68016363
TK0161

Sample Receipt

The following samples were received on October 31, 2017 and were logged in under Katahdin Analytical Services work order number TK0161 for a hardcopy due date of November 12, 2017.

KATAHDIN	TEST AMERICA
Sample No.	Sample Identification
TK0161-1	DCL LEACHATE-FALL17
TK0161-2	TRIP BLANK

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. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order TK0161 were analyzed in accordance with "Methods for Chemical Analysis of Water and Wastes", EPA 600/4-79-020, 1979 Revised 1983, U.S. EPA, and/or for the specific methods listed below or on the Report of Analysis.

EPA 625 Analysis

The independent check standard (file G1428) associated with the initial calibration on the G instrument on 11/07/2017 had a low concentration for the target analytes bis(2-chloroisopropyl)ether and 3,3'-dichlorobenzidine , benzidine, and a high concentration for 4,6-dinitro-2-methylphenol, 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.

EPA 624 Analysis

The independent check standard (file P2940B) associated with the initial calibration on the P instrument on 10/19/2017 had a low concentration for the target analyte dichlorodifluoromethane

and a high concentration for acetone, which exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL. The independent check standard (file W1780A) associated with the initial calibration on the W instrument on 11/06/2017 had a low concentration for the target analytes dichlorodifluoromethane, vinyl chloride, methyl tert-butyl ether and high concentrations for acetone, tetrachloroethene, 2-hexanone and 2-butanone, 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 target analyte bromomethane was detected above ½ of the LOQ in the method blank WG90727-2. 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 and is greater than 1/10 the amount measured in any sample or 1/10 the regulatory limit (whichever is greater). The analyte that was detected in the associated samples was flagged with a "B" qualifier indicating that the analyte was detected in the method blank analyzed concurrently with the samples.

The reported percent recovery acceptance limits for the Laboratory Control Samples (LCSs) are method limits for the full list of spiked compounds and nominal limits for all additional compounds. 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 not to take corrective action until the number of spiked analytes in the LCS that are outside of the QC limits is not 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 initial calibration was calibrated at the following concentrations: 1, 5, 20, 50, 100, and 200ug/l. The calibration verification standard (CV) was analyzed at a concentration 20 ug/l as specified in the method. The acceptance criterion for the CV is that the concentration of each target analyte must be within a specific concentration range. The data system does not have a Form 7 for an EPA method 624 CV that lists the %D for each analyte. Instead, a Recovery Report sheet was used that lists the spiked Concentration added for each analyte, the Concentration Recovered, the % Recovered, and Limits. The Limits column lists the method acceptable concentration range. The % Recovered column is the concentration recovered divided by the Concentration Added. This column is disregarded. The Concentration Recovered is manually compared to the method acceptable concentration range.

The CV (file P3173) had a low concentration for the target analyte bromomethane that was outside of the method acceptance limits.

There were no other protocol deviations or observations noted by the organics laboratory staff.

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 the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond
11.16.17

Leslie Dimond
Quality Assurance Officer

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.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: TA	KAS PM:	Sampled By: Client
Project:	KIMS Entry By:	Delivered By: Fedex
KAS Work Order#: TK0161	KIMS Review By: AMH	Received By: JOB
SDG #:	Cooler: _____ of _____	Date/Time Rec.: 10.31.17 845

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): 2.1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
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 (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
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.

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone (912) 354-7858 Fax (912) 352-0165

TK0161

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lanier, Jerry A	Carrier Tracking No(s):	COC No: 680-496127.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jerry.lanier@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Katahdin Analytical Services		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 680-144883-1
Address: PO BOX 540, 600 Technology Way,	Due Date Requested: 11/9/2017			
City: Scarborough	TAT Requested (days):			
State, Zip: ME, 04074				
Phone:	PO #:			
Email:	WO #:			
Project Name: Fort Devens Army Installation	Project #: 68016363			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Volatiles)/ Volatiles	SUB (Semivolatiles)/ Semivolatiles	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
DCL Leachate-FALL17 (680-144883-1)	10/27/17	13:00 Eastern		Water			X	X	5	Per Rick Carr, our cost is $70, Per Rick Carr, our cost is $125
Trip Blank (680-144883-2)	10/27/17	Eastern		Water			X		2	Per Rick Carr, our cost is $70

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

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

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

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	10/30/17 1800			10.31.17 845	KAS
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 09/20/2016

12/6/2017 (Rev. 1)

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Oct. 31, 2017
04:56 PM

Login Number: TK0161

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Quote/Incoming:

Login Information:

ANALYSIS INSTRUCTIONS	:	DOD QSM 4.2 reporting with lab limits. ND to PQL. "J" flag between MDL and PQL. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	680-144883-1
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	W912WJ-10-D-0003
COOLER TEMPERATURE	:	2.1
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS033QC-XLS
LOGIN INITIALS	:	SO
PM	:	HHM
PROJECT NAME	:	Fort Devens/DCL Leachate 68016363
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	Email PDF, EDD files and invoice to Jerry. No HC. Include Level 4 narrative and MCP forms.
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TK0161-1	DCL LEACHATE-FALL17	27-OCT-17 13:00	31-OCT-17			12-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	E624-S	10-NOV-17	40mL Vial+HCl		
Aqueous	S	E625	03-NOV-17	1L N-Amber Glass		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TK0161-2	TRIP BLANK	27-OCT-17 00:00	31-OCT-17			12-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	E624-S	10-NOV-17	40mL Vial+HCl		

Total Samples: *2* ***Total Analyses:*** *3*

AMH 10/31/17

SAMPLE DATA SUMMARY PACKAGE

Page 29 of 84 Katahdin Analytical Services A000001 12/6/2017 (Rev 1)

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U — Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* — Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D — Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E — Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J — Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J — Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B — Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C — Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L — Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M — Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N — Presumptive evidence of a compound based on a mass spectral library search.

A — Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P — Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0161-1RA
Client ID: DCL LEACHATE-FALL17
Project: Fort Devens/DCL Leachate 68016363
SDG: TK0161
Lab File ID: W1828.D

Sample Date: 27-OCT-17
Received Date: 31-OCT-17
Extract Date: 08-NOV-17
Extracted By: JSS
Extraction Method: EPA 624
Lab Prep Batch: WG217360

Analysis Date: 08-NOV-17
Analyst: JSS
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 15-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	5.0	ug/L	1	5	5.0	0.24	1.0
Chloromethane	U	5.0	ug/L	1	5	5.0	0.36	1.0
Vinyl Chloride	U	5.0	ug/L	1	5	5.0	0.25	1.0
Bromomethane	JB	3.6	ug/L	1	5	5.0	0.49	1.0
Chloroethane	U	5.0	ug/L	1	5	5.0	0.55	1.0
Trichlorofluoromethane	U	5.0	ug/L	1	5	5.0	0.24	1.0
1,1-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.35	0.50
Methylene Chloride	U	10	ug/L	1	10	10.	1.1	2.5
trans-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.25	0.50
1,1-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.21	0.50
Chloroform	U	5.0	ug/L	1	5	5.0	0.32	0.50
1,1,1-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Carbon Tetrachloride	U	5.0	ug/L	1	5	5.0	0.22	0.50
Benzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,2-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Trichloroethene	U	5.0	ug/L	1	5	5.0	0.28	0.50
1,2-Dichloropropane	U	5.0	ug/L	1	5	5.0	0.25	0.50
Bromodichloromethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
cis-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.19	0.50
Toluene	U	5.0	ug/L	1	5	5.0	0.27	0.50
trans-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.20	0.50
1,1,2-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
Tetrachloroethene	U	5.0	ug/L	1	5	5.0	0.40	0.50
Dibromochloromethane	U	5.0	ug/L	1	5	5.0	0.30	0.50
Chlorobenzene	U	5.0	ug/L	1	5	5.0	0.22	0.50
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Bromoform	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	5.0	ug/L	1	5	5.0	0.38	0.50
1,3-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,4-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.24	0.50
1,2-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.15	0.50
cis-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Freon-113	U	5.0	ug/L	1	5	5.0	0.31	0.50
Acetone	U	10	ug/L	1	10	10.	2.2	2.5
Carbon Disulfide	U	5.0	ug/L	1	5	5.0	0.25	0.50

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0161-1RA
Client ID: DCL LEACHATE-FALL17
Project: Fort Devens/DCL Leachate 68016363
SDG: TK0161
Lab File ID: W1828.D

Sample Date: 27-OCT-17
Received Date: 31-OCT-17
Extract Date: 08-NOV-17
Extracted By: JSS
Extraction Method: EPA 624
Lab Prep Batch: WG217360

Analysis Date: 08-NOV-17
Analyst: JSS
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 15-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether	U	5.0	ug/L	1	5	5.0	0.36	0.50
1,2-Dichloroethylene (Total)	U	10	ug/L	1	10	10.	0.21	1.0
2-Butanone	U	10	ug/L	1	10	10.	1.3	2.5
Cyclohexane	U	5.0	ug/L	1	5	5.0	0.31	0.50
4-Methyl-2-Pentanone	U	5.0	ug/L	1	5	5.0	1.3	2.5
2-Hexanone	U	5.0	ug/L	1	5	5.0	1.7	2.5
1,2-Dibromoethane	U	5.0	ug/L	1	5	5.0	0.22	0.50
Xylenes (Total)	U	15	ug/L	1	15	15.	0.25	1.5
M+P-Xylenes	U	10	ug/L	1	10	10.	0.59	1.0
o-Xylene	U	5.0	ug/L	1	5	5.0	0.25	0.50
Styrene	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,2-Dibromo-3-Chloropropane	U	5.0	ug/L	1	5	5.0	0.50	0.50
1,2,4-Trichlorobenzene	U	5.0	ug/L	1	5	5.0	0.37	0.50
Isopropylbenzene	U	5.0	ug/L	1	5	5.0	0.23	0.50
Methyl Acetate	U	5.0	ug/L	1	5	5.0	0.53	0.75
Methylcyclohexane	U	5.0	ug/L	1	5	5.0	0.30	0.50
1,2-Dichloroethane-D4		114.	%					
Toluene-D8		102.	%					
P-Bromofluorobenzene		109.	%					
Dibromofluoromethane		95.6	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0161-2
Client ID: TRIP BLANK
Project: Fort Devens/DCL Leachate 68016363
SDG: TK0161
Lab File ID: P3183.D

Sample Date: 27-OCT-17
Received Date: 31-OCT-17
Extract Date: 04-NOV-17
Extracted By: HG/TT
Extraction Method: EPA 624
Lab Prep Batch: WG217010

Analysis Date: 04-NOV-17
Analyst: HG/TTC
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 16-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	UL	5.0	ug/L	1	5	5.0	0.24	1.0
Chloromethane	U	5.0	ug/L	1	5	5.0	0.36	1.0
Vinyl Chloride	U	5.0	ug/L	1	5	5.0	0.25	1.0
Bromomethane	U	5.0	ug/L	1	5	5.0	0.49	1.0
Chloroethane	U	5.0	ug/L	1	5	5.0	0.55	1.0
Trichlorofluoromethane	U	5.0	ug/L	1	5	5.0	0.24	1.0
1,1-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.35	0.50
Methylene Chloride	U	10	ug/L	1	10	10.	1.1	2.5
trans-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.25	0.50
1,1-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.21	0.50
Chloroform	U	5.0	ug/L	1	5	5.0	0.32	0.50
1,1,1-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Carbon Tetrachloride	U	5.0	ug/L	1	5	5.0	0.22	0.50
Benzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,2-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Trichloroethene	U	5.0	ug/L	1	5	5.0	0.28	0.50
1,2-Dichloropropane	U	5.0	ug/L	1	5	5.0	0.25	0.50
Bromodichloromethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
cis-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.19	0.50
Toluene	U	5.0	ug/L	1	5	5.0	0.27	0.50
trans-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.20	0.50
1,1,2-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
Tetrachloroethene	U	5.0	ug/L	1	5	5.0	0.40	0.50
Dibromochloromethane	U	5.0	ug/L	1	5	5.0	0.30	0.50
Chlorobenzene	U	5.0	ug/L	1	5	5.0	0.22	0.50
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Bromoform	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	5.0	ug/L	1	5	5.0	0.38	0.50
1,3-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,4-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.24	0.50
1,2-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.15	0.50
cis-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Freon-113	U	5.0	ug/L	1	5	5.0	0.31	0.50
Acetone	U	10	ug/L	1	10	10.	2.2	2.5
Carbon Disulfide	U	5.0	ug/L	1	5	5.0	0.25	0.50

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0161-2
Client ID: TRIP BLANK
Project: Fort Devens/DCL Leachate 68016363
SDG: TK0161
Lab File ID: P3183.D

Sample Date: 27-OCT-17
Received Date: 31-OCT-17
Extract Date: 04-NOV-17
Extracted By: HG/TT
Extraction Method: EPA 624
Lab Prep Batch: WG217010

Analysis Date: 04-NOV-17
Analyst: HG/TTC
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 16-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether	U	5.0	ug/L	1	5	5.0	0.36	0.50
1,2-Dichloroethylene (Total)	U	10	ug/L	1	10	10.	0.21	1.0
2-Butanone	U	10	ug/L	1	10	10.	1.3	2.5
Cyclohexane	U	5.0	ug/L	1	5	5.0	0.31	0.50
4-Methyl-2-Pentanone	U	5.0	ug/L	1	5	5.0	1.3	2.5
2-Hexanone	U	5.0	ug/L	1	5	5.0	1.7	2.5
1,2-Dibromoethane	U	5.0	ug/L	1	5	5.0	0.22	0.50
Xylenes (Total)	U	15	ug/L	1	15	15.	0.25	1.5
M+P-Xylenes	U	10	ug/L	1	10	10.	0.59	1.0
o-Xylene	U	5.0	ug/L	1	5	5.0	0.25	0.50
Styrene	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,2-Dibromo-3-Chloropropane	U	5.0	ug/L	1	5	5.0	0.50	0.50
1,2,4-Trichlorobenzene	U	5.0	ug/L	1	5	5.0	0.37	0.50
Isopropylbenzene	U	5.0	ug/L	1	5	5.0	0.23	0.50
Methyl Acetate	U	5.0	ug/L	1	5	5.0	0.53	0.75
Methylcyclohexane	U	5.0	ug/L	1	5	5.0	0.30	0.50
1,2-Dichloroethane-D4		119.	%					
Toluene-D8		102.	%					
P-Bromofluorobenzene		108.	%					
Dibromofluoromethane		113.	%					

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Report of Analytical Results

Client:
Lab ID: WG217010-2
Client ID: Method Blank Sample
Project:
SDG: TK0161
Lab File ID: P3176.D

Sample Date:
Received Date:
Extract Date: 03-NOV-17
Extracted By: HG/TT
Extraction Method: EPA 624
Lab Prep Batch: WG217010

Analysis Date: 03-NOV-17
Analyst: HG/TT
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 15-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	5.0	ug/L	1	5	5.0	0.24	1.0
Chloromethane	U	5.0	ug/L	1	5	5.0	0.36	1.0
Vinyl Chloride	U	5.0	ug/L	1	5	5.0	0.25	1.0
Bromomethane	U	5.0	ug/L	1	5	5.0	0.49	1.0
Chloroethane	U	5.0	ug/L	1	5	5.0	0.55	1.0
Trichlorofluoromethane	U	5.0	ug/L	1	5	5.0	0.24	1.0
1,1-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.35	0.50
Methylene Chloride	U	10	ug/L	1	10	10.	1.1	2.5
trans-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.25	0.50
1,1-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.21	0.50
Chloroform	U	5.0	ug/L	1	5	5.0	0.32	0.50
1,1,1-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Carbon Tetrachloride	U	5.0	ug/L	1	5	5.0	0.22	0.50
Benzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,2-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Trichloroethene	U	5.0	ug/L	1	5	5.0	0.28	0.50
1,2-Dichloropropane	U	5.0	ug/L	1	5	5.0	0.25	0.50
Bromodichloromethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
cis-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.19	0.50
Toluene	U	5.0	ug/L	1	5	5.0	0.27	0.50
trans-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.20	0.50
1,1,2-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
Tetrachloroethene	U	5.0	ug/L	1	5	5.0	0.40	0.50
Dibromochloromethane	U	5.0	ug/L	1	5	5.0	0.30	0.50
Chlorobenzene	U	5.0	ug/L	1	5	5.0	0.22	0.50
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Bromoform	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	5.0	ug/L	1	5	5.0	0.38	0.50
1,3-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,4-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.24	0.50
1,2-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.15	0.50
cis-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Freon-113	U	5.0	ug/L	1	5	5.0	0.31	0.50
Acetone	U	10	ug/L	1	10	10.	2.2	2.5

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Report of Analytical Results

Client:
Lab ID: WG217010-2
Client ID: Method Blank Sample
Project:
SDG: TK0161
Lab File ID: P3176.D

Sample Date:
Received Date:
Extract Date: 03-NOV-17
Extracted By: HG/TT
Extraction Method: EPA 624
Lab Prep Batch: WG217010

Analysis Date: 03-NOV-17
Analyst: HG/TT
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 15-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Carbon Disulfide	U	5.0	ug/L	1	5	5.0	0.25	0.50
Methyl tert-butyl Ether	U	5.0	ug/L	1	5	5.0	0.36	0.50
1,2-Dichloroethylene (Total)	U	10	ug/L	1	10	10.	0.21	1.0
2-Butanone	U	10	ug/L	1	10	10.	1.3	2.5
Cyclohexane	U	5.0	ug/L	1	5	5.0	0.31	0.50
4-Methyl-2-Pentanone	U	5.0	ug/L	1	5	5.0	1.3	2.5
2-Hexanone	U	5.0	ug/L	1	5	5.0	1.7	2.5
1,2-Dibromoethane	U	5.0	ug/L	1	5	5.0	0.22	0.50
Xylenes (Total)	U	15	ug/L	1	15	15.	0.25	1.5
M+P-Xylenes	U	10	ug/L	1	10	10.	0.59	1.0
o-Xylene	U	5.0	ug/L	1	5	5.0	0.25	0.50
Styrene	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,2-Dibromo-3-Chloropropane	U	5.0	ug/L	1	5	5.0	0.50	0.50
1,2,4-Trichlorobenzene	U	5.0	ug/L	1	5	5.0	0.37	0.50
Isopropylbenzene	U	5.0	ug/L	1	5	5.0	0.23	0.50
Methyl Acetate	U	5.0	ug/L	1	5	5.0	0.53	0.75
Methylcyclohexane	U	5.0	ug/L	1	5	5.0	0.30	0.50
1,2-Dichloroethane-D4		110.	%					
Toluene-D8		102.	%					
P-Bromofluorobenzene		106.	%					
Dibromofluoromethane		110.	%					

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Report of Analytical Results

Client:
Lab ID: WG217360-2
Client ID: Method Blank Sample
Project:
SDG: TK0161
Lab File ID: W1823.D

Sample Date:
Received Date:
Extract Date: 08-NOV-17
Extracted By: JSS
Extraction Method: EPA 624
Lab Prep Batch: WG217360

Analysis Date: 08-NOV-17
Analyst: JSS
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 15-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	5.0	ug/L	1	5	5.0	0.24	1.0
Chloromethane	U	5.0	ug/L	1	5	5.0	0.36	1.0
Vinyl Chloride	U	5.0	ug/L	1	5	5.0	0.25	1.0
Bromomethane	J	2.5	ug/L	1	5	5.0	0.49	1.0
Chloroethane	U	5.0	ug/L	1	5	5.0	0.55	1.0
Trichlorofluoromethane	U	5.0	ug/L	1	5	5.0	0.24	1.0
1,1-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.35	0.50
Methylene Chloride	U	10	ug/L	1	10	10.	1.1	2.5
trans-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.25	0.50
1,1-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.21	0.50
Chloroform	U	5.0	ug/L	1	5	5.0	0.32	0.50
1,1,1-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Carbon Tetrachloride	U	5.0	ug/L	1	5	5.0	0.22	0.50
Benzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,2-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Trichloroethene	U	5.0	ug/L	1	5	5.0	0.28	0.50
1,2-Dichloropropane	U	5.0	ug/L	1	5	5.0	0.25	0.50
Bromodichloromethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
cis-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.19	0.50
Toluene	U	5.0	ug/L	1	5	5.0	0.27	0.50
trans-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.20	0.50
1,1,2-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
Tetrachloroethene	U	5.0	ug/L	1	5	5.0	0.40	0.50
Dibromochloromethane	U	5.0	ug/L	1	5	5.0	0.30	0.50
Chlorobenzene	U	5.0	ug/L	1	5	5.0	0.22	0.50
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Bromoform	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	5.0	ug/L	1	5	5.0	0.38	0.50
1,3-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,4-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.24	0.50
1,2-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.15	0.50
cis-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Freon-113	U	5.0	ug/L	1	5	5.0	0.31	0.50
Acetone	U	10	ug/L	1	10	10.	2.2	2.5

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Report of Analytical Results

Client:
Lab ID: WG217360-2
Client ID: Method Blank Sample
Project:
SDG: TK0161
Lab File ID: W1823.D

Sample Date:
Received Date:
Extract Date: 08-NOV-17
Extracted By: JSS
Extraction Method: EPA 624
Lab Prep Batch: WG217360

Analysis Date: 08-NOV-17
Analyst: JSS
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 15-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Carbon Disulfide	U	5.0	ug/L	1	5	5.0	0.25	0.50
Methyl tert-butyl Ether	U	5.0	ug/L	1	5	5.0	0.36	0.50
1,2-Dichloroethylene (Total)	U	10	ug/L	1	10	10.	0.21	1.0
2-Butanone	U	10	ug/L	1	10	10.	1.3	2.5
Cyclohexane	U	5.0	ug/L	1	5	5.0	0.31	0.50
4-Methyl-2-Pentanone	U	5.0	ug/L	1	5	5.0	1.3	2.5
2-Hexanone	U	5.0	ug/L	1	5	5.0	1.7	2.5
1,2-Dibromoethane	U	5.0	ug/L	1	5	5.0	0.22	0.50
Xylenes (Total)	U	15	ug/L	1	15	15.	0.25	1.5
M+P-Xylenes	U	10	ug/L	1	10	10.	0.59	1.0
o-Xylene	U	5.0	ug/L	1	5	5.0	0.25	0.50
Styrene	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,2-Dibromo-3-Chloropropane	U	5.0	ug/L	1	5	5.0	0.50	0.50
1,2,4-Trichlorobenzene	U	5.0	ug/L	1	5	5.0	0.37	0.50
Isopropylbenzene	U	5.0	ug/L	1	5	5.0	0.23	0.50
Methyl Acetate	U	5.0	ug/L	1	5	5.0	0.53	0.75
Methylcyclohexane	U	5.0	ug/L	1	5	5.0	0.30	0.50
1,2-Dichloroethane-D4		105.	%					
Toluene-D8		103.	%					
P-Bromofluorobenzene		107.	%					
Dibromofluoromethane		92.5	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Fort Devens/DCL Leachate 68016363 **Matrix:** AQ
Lab Code: KAS **SDG:** TK0161

Client Sample ID	Lab Sample ID	Col. ID	BFB	#	DBF	#	DCA	#	TOL	#
DCL LEACHATE-FALL17	TK0161-1RA		109.		95.6		114.		102.	
TRIP BLANK	TK0161-2		108.		113.		119.		102.	
Laboratory Control S	WG217010-1		111.		103.		101.		102.	
Method Blank Sample	WG217010-2		106.		110.		110.		102.	
Laboratory Control S	WG217360-1		107.		88.3		99.5		102.	
Method Blank Sample	WG217360-2		107.		92.5		105.		103.	

		QC Limits
DBF	DIBROMOFLUOROMETHANE	68-128
BFB	P-BROMOFLUOROBENZENE	56-133
TOL	TOLUENE-D8	65-128
DCA	1,2-DICHLOROETHANE-D4	67-135

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

LCS Recovery Report

Client:
Lab ID: WG217010-1
Client ID: LCS
Project:
SDG: TK0161
LCS File ID: P3174.D

Sample Date:
Received Date:
Extract Date: 03-NOV-17
Extracted By: HG/TT
Extraction Method: EPA 624
Lab Prep Batch: WG217010

Analysis Date: 03-NOV-17
Analyst: HG/TT
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 16-NOV-17

Compound	Recovery (%)	Conc Added	Conc Recovered	Conc Units	Limits
Dichlorodifluoromethane	* 54.0	20.0	10.8	ug/L	60-140
Chloromethane	83.0	20.0	16.6	ug/L	0-273
Vinyl Chloride	79.0	20.0	15.8	ug/L	0-251
Bromomethane	21.0	20.0	4.20	ug/L	0-242
Chloroethane	92.5	20.0	18.5	ug/L	14-230
Trichlorofluoromethane	86.5	20.0	17.3	ug/L	17-181
1,1-Dichloroethene	80.0	20.0	16.0	ug/L	0-234
Methylene Chloride	89.0	20.0	17.8	ug/L	0-221
trans-1,2-Dichloroethene	88.5	20.0	17.7	ug/L	54-156
1,1-Dichloroethane	100.	20.0	20.0	ug/L	59-155
Chloroform	102.	20.0	20.3	ug/L	51-138
1,1,1-Trichloroethane	92.5	20.0	18.5	ug/L	52-162
Carbon Tetrachloride	85.0	20.0	17.0	ug/L	70-140
Benzene	93.5	20.0	18.7	ug/L	37-151
1,2-Dichloroethane	102.	20.0	20.4	ug/L	49-155
Trichloroethene	92.5	20.0	18.5	ug/L	71-157
1,2-Dichloropropane	97.5	20.0	19.5	ug/L	0-210
Bromodichloromethane	102.	20.0	20.5	ug/L	35-155
cis-1,3-Dichloropropene	94.0	20.0	18.8	ug/L	0-227
Toluene	93.0	20.0	18.6	ug/L	47-150
trans-1,3-Dichloropropene	97.5	20.0	19.5	ug/L	17-183
1,1,2-Trichloroethane	102.	20.0	20.5	ug/L	52-150
Tetrachloroethene	88.5	20.0	17.7	ug/L	64-148
Dibromochloromethane	97.5	20.0	19.5	ug/L	53-149
Chlorobenzene	89.0	20.0	17.8	ug/L	37-160
Ethylbenzene	87.5	20.0	17.5	ug/L	37-162
Bromoform	101.	20.0	20.2	ug/L	45-169
1,1,2,2-Tetrachloroethane	94.5	20.0	18.9	ug/L	46-157
1,3-Dichlorobenzene	88.0	20.0	17.6	ug/L	59-156
1,4-Dichlorobenzene	89.0	20.0	17.8	ug/L	18-190
1,2-Dichlorobenzene	89.0	20.0	17.8	ug/L	18-190
cis-1,2-Dichloroethene	96.5	20.0	19.3	ug/L	60-140
Freon-113	73.5	20.0	14.7	ug/L	60-140
Acetone	111.	20.0	22.2	ug/L	60-140
Carbon Disulfide	85.0	20.0	17.0	ug/L	60-140

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LCS Recovery Report

Client:
Lab ID: WG217010-1
Client ID: LCS
Project:
SDG: TK0161
LCS File ID: P3174.D

Sample Date:
Received Date:
Extract Date: 03-NOV-17
Extracted By: HG/TT
Extraction Method: EPA 624
Lab Prep Batch: WG217010

Analysis Date: 03-NOV-17
Analyst: HG/TT
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 16-NOV-17

Compound	Recovery (%)	Conc Added	Conc Recovered	Conc Units	Limits
Methyl tert-butyl Ether	112.	20.0	22.4	ug/L	60-140
1,2-Dichloroethylene (Total)	92.5	40.0	37.0	ug/L	60-140
2-Butanone	108.	20.0	21.7	ug/L	60-140
Cyclohexane	80.0	20.0	16.0	ug/L	60-140
4-Methyl-2-Pentanone	108.	20.0	21.5	ug/L	60-140
2-Hexanone	95.5	20.0	19.1	ug/L	60-140
1,2-Dibromoethane	104.	20.0	20.7	ug/L	60-140
Xylenes (Total)	90.3	60.0	54.2	ug/L	60-140
M+P-Xylenes	90.0	40.0	36.0	ug/L	60-140
o-Xylene	91.0	20.0	18.2	ug/L	60-140
Styrene	96.5	20.0	19.3	ug/L	60-140
1,2-Dibromo-3-Chloropropane	92.5	20.0	18.5	ug/L	60-140
1,2,4-Trichlorobenzene	76.5	20.0	15.3	ug/L	60-140
Isopropylbenzene	86.5	20.0	17.3	ug/L	60-140
Methyl Acetate	99.5	20.0	19.9	ug/L	60-140
Methylcyclohexane	67.0	20.0	13.4	ug/L	60-140
1,2-Dichloroethane-D4	101.				67-135
Toluene-D8	102.				65-128
P-Bromofluorobenzene	111.				56-133
Dibromofluoromethane	103.				68-128

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LCS Recovery Report

Client:
Lab ID: WG217360-1
Client ID: LCS
Project:
SDG: TK0161
LCS File ID: W1821.D

Sample Date:
Received Date:
Extract Date: 08-NOV-17
Extracted By: JSS
Extraction Method: EPA 624
Lab Prep Batch: WG217360

Analysis Date: 08-NOV-17
Analyst: JSS
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 16-NOV-17

Compound	Recovery (%)	Conc Added	Conc Recovered	Conc Units	Limits
Dichlorodifluoromethane	79.0	20.0	15.8	ug/L	60-140
Chloromethane	81.5	20.0	16.3	ug/L	0-273
Vinyl Chloride	79.0	20.0	15.8	ug/L	0-251
Bromomethane	106.	20.0	21.1	ug/L	0-242
Chloroethane	86.5	20.0	17.3	ug/L	14-230
Trichlorofluoromethane	86.5	20.0	17.3	ug/L	17-181
1,1-Dichloroethene	77.0	20.0	15.4	ug/L	0-234
Methylene Chloride	75.0	20.0	15.0	ug/L	0-221
trans-1,2-Dichloroethene	77.0	20.0	15.4	ug/L	54-156
1,1-Dichloroethane	83.5	20.0	16.7	ug/L	59-155
Chloroform	84.5	20.0	16.9	ug/L	51-138
1,1,1-Trichloroethane	83.5	20.0	16.7	ug/L	52-162
Carbon Tetrachloride	97.5	20.0	19.5	ug/L	70-140
Benzene	89.0	20.0	17.8	ug/L	37-151
1,2-Dichloroethane	100.	20.0	20.1	ug/L	49-155
Trichloroethene	88.5	20.0	17.7	ug/L	71-157
1,2-Dichloropropane	90.5	20.0	18.1	ug/L	0-210
Bromodichloromethane	97.5	20.0	19.5	ug/L	35-155
cis-1,3-Dichloropropene	80.0	20.0	16.0	ug/L	0-227
Toluene	89.0	20.0	17.8	ug/L	47-150
trans-1,3-Dichloropropene	80.5	20.0	16.1	ug/L	17-183
1,1,2-Trichloroethane	93.5	20.0	18.7	ug/L	52-150
Tetrachloroethene	84.0	20.0	16.8	ug/L	64-148
Dibromochloromethane	95.0	20.0	19.0	ug/L	53-149
Chlorobenzene	87.5	20.0	17.5	ug/L	37-160
Ethylbenzene	86.0	20.0	17.2	ug/L	37-162
Bromoform	90.0	20.0	18.0	ug/L	45-169
1,1,2,2-Tetrachloroethane	90.5	20.0	18.1	ug/L	46-157
1,3-Dichlorobenzene	86.0	20.0	17.2	ug/L	59-156
1,4-Dichlorobenzene	86.0	20.0	17.2	ug/L	18-190
1,2-Dichlorobenzene	84.0	20.0	16.8	ug/L	18-190
cis-1,2-Dichloroethene	79.0	20.0	15.8	ug/L	60-140
Freon-113	70.0	20.0	14.0	ug/L	60-140
Acetone	94.0	20.0	18.8	ug/L	60-140
Carbon Disulfide	66.5	20.0	13.3	ug/L	60-140

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LCS Recovery Report

Client:
Lab ID: WG217360-1
Client ID: LCS
Project:
SDG: TK0161
LCS File ID: W1821.D

Sample Date:
Received Date:
Extract Date: 08-NOV-17
Extracted By: JSS
Extraction Method: EPA 624
Lab Prep Batch: WG217360

Analysis Date: 08-NOV-17
Analyst: JSS
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 16-NOV-17

Compound	Recovery (%)	Conc Added	Conc Recovered	Conc Units	Limits
Methyl tert-butyl Ether	68.0	20.0	13.6	ug/L	60-140
1,2-Dichloroethylene (Total)	78.0	40.0	31.2	ug/L	60-140
2-Butanone	82.0	20.0	16.4	ug/L	60-140
Cyclohexane	67.5	20.0	13.5	ug/L	60-140
4-Methyl-2-Pentanone	89.0	20.0	17.8	ug/L	60-140
2-Hexanone	86.5	20.0	17.3	ug/L	60-140
1,2-Dibromoethane	91.5	20.0	18.3	ug/L	60-140
Xylenes (Total)	88.0	60.0	52.8	ug/L	60-140
M+P-Xylenes	88.8	40.0	35.5	ug/L	60-140
o-Xylene	86.5	20.0	17.3	ug/L	60-140
Styrene	94.0	20.0	18.8	ug/L	60-140
1,2-Dibromo-3-Chloropropane	90.5	20.0	18.1	ug/L	60-140
1,2,4-Trichlorobenzene	86.0	20.0	17.2	ug/L	60-140
Isopropylbenzene	94.5	20.0	18.9	ug/L	60-140
Methyl Acetate	78.0	20.0	15.6	ug/L	60-140
Methylcyclohexane	71.5	20.0	14.3	ug/L	60-140
1,2-Dichloroethane-D4	99.5				67-135
Toluene-D8	102.				65-128
P-Bromofluorobenzene	107.				56-133
Dibromofluoromethane	88.3				68-128

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Form 4
Method Blank Summary - VOA

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 68016363
Lab File ID : P3176.D
Instrument ID : GCMS-P
Heated Purge : No

SDG : TK0161
Lab Sample ID : WG217010-2
Date Analyzed : 03-NOV-17
Time Analyzed : 23:37

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	WG217010-1	P3174.D	11/03/17	22:30
TRIP BLANK	TK0161-2	P3183.D	11/04/17	03:33

Form 4
Method Blank Summary - VOA

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 68016363
Lab File ID : W1823.D
Instrument ID : GCMS-W
Heated Purge : No

SDG : TK0161
Lab Sample ID : WG217360-2
Date Analyzed : 08-NOV-17
Time Analyzed : 21:13

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	WG217360-1	W1821.D	11/08/17	20:11
DCL LEACHATE-FALL17	TK0161-1RA	W1828.D	11/08/17	23:46

Form 5
Volatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 68016363
Lab File ID : PB872.D
Instrument ID : GCMS-P

SDG : TK0161
Date Analyzed : 19-OCT-17
Time Analyzed : 08:49
Heated Purge : No

m/e	Ion Abundance Criteria	% Relative Abundance		
50	15.0 - 40.0% of mass 95	18.7		
75	30.0 - 60.0% of mass 95	50.0		
95	Base Peak, 100% relative abundance	100		
96	5.0 - 9.0% of mass 95	7.7		
173	Less than 2.0% of mass 174	0.0	0.0	1
174	Greater than 50.0% of mass 95	79.4		
175	5.0 - 9.0% of mass 174	5.4	6.86	1
176	95.0 - 101.0% of mass 174	76.5	96.35	1
177	5.0 - 9.0% of mass 176	5.7	7.46	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	WG217924-4	P2934A.D	10/19/17	09:19
Initial Calibration	WG217924-3	P2935A.D	10/19/17	10:00
Initial Calibration	WG217924-2	P2936A.D	10/19/17	10:34
Initial Calibration	WG217924-1	P2937A.D	10/19/17	11:08
Initial Calibration	WG217924-6	P2938A.D	10/19/17	11:42
Initial Calibration	WG217924-5	P2939A.D	10/19/17	12:15
Independent Source	WG217924-7	P2940B.D	10/19/17	13:07

Form 5
Volatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 68016363
Lab File ID : PB884.D
Instrument ID : GCMS-P

SDG : TK0161
Date Analyzed : 03-NOV-17
Time Analyzed : 09:18
Heated Purge : No

m/e	Ion Abundance Criteria	% Relative Abundance		
50	15.0 - 40.0% of mass 95	17.5		
75	30.0 - 60.0% of mass 95	51.3		
95	Base Peak, 100% relative abundance	100		
96	5.0 - 9.0% of mass 95	8.1		
173	Less than 2.0% of mass 174	0.7	0.85	1
174	Greater than 50.0% of mass 95	85.3		
175	5.0 - 9.0% of mass 174	7.6	8.96	1
176	95.0 - 101.0% of mass 174	85.0	99.69	1
177	5.0 - 9.0% of mass 176	5.7	6.74	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	WG217010-3	P3173.D	11/03/17	21:56
Laboratory Control S	WG217010-1	P3174.D	11/03/17	22:30
Method Blank Sample	WG217010-2	P3176.D	11/03/17	23:37
TRIP BLANK	TK0161-2	P3183.D	11/04/17	03:33

Form 5
Volatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 68016363
Lab File ID : WB704.D
Instrument ID : GCMS-W

SDG : TK0161
Date Analyzed : 06-NOV-17
Time Analyzed : 10:48
Heated Purge : No

m/e	Ion Abundance Criteria	% Relative Abundance		
50	15.0 - 40.0% of mass 95	17.1		
75	30.0 - 60.0% of mass 95	50.4		
95	Base Peak, 100% relative abundance	100		
96	5.0 - 9.0% of mass 95	7.0		
173	Less than 2.0% of mass 174	0.8	0.98	1
174	Greater than 50.0% of mass 95	76.8		
175	5.0 - 9.0% of mass 174	5.7	7.42	1
176	95.0 - 101.0% of mass 174	75.3	98.05	1
177	5.0 - 9.0% of mass 176	5.2	6.97	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	WG217925-4	W1774A.D	11/06/17	11:46
Initial Calibration	WG217925-3	W1775A.D	11/06/17	12:17
Initial Calibration	WG217925-2	W1776A.D	11/06/17	12:47
Initial Calibration	WG217925-1	W1777A.D	11/06/17	13:18
Initial Calibration	WG217925-6	W1778A.D	11/06/17	13:49
Initial Calibration	WG217925-5	W1779A.D	11/06/17	14:19
Independent Source	WG217925-7	W1780A.D	11/06/17	14:50

Form 5
Volatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 68016363
Lab File ID : WB706.D
Instrument ID : GCMS-W

SDG : TK0161
Date Analyzed : 08-NOV-17
Time Analyzed : 08:19
Heated Purge : No

m/e	Ion Abundance Criteria	% Relative Abundance		
50	15.0 - 40.0% of mass 95	19.0		
75	30.0 - 60.0% of mass 95	50.6		
95	Base Peak, 100% relative abundance	100		
96	5.0 - 9.0% of mass 95	6.3		
173	Less than 2.0% of mass 174	0.5	0.63	1
174	Greater than 50.0% of mass 95	73.6		
175	5.0 - 9.0% of mass 174	5.9	7.98	1
176	95.0 - 101.0% of mass 174	71.6	97.29	1
177	5.0 - 9.0% of mass 176	5.0	6.96	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
Calibration Verifica	WG217360-4	W1820.D	11/08/17	19:41
Laboratory Control S	WG217360-1	W1821.D	11/08/17	20:11
Method Blank Sample	WG217360-2	W1823.D	11/08/17	21:13
DCL LEACHATE-FALL17	TK0161-1RA	W1828.D	11/08/17	23:46

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TK0161

Project : Fort Devens/DCL Leachate 68016363 **Instrument ID:** GCMS-P

Lab File IDs : P2937A.D P2936A.D P2935A.D P2934A.D P2939A.D P2938A.D **Column ID:**

Calibration Date(s): 19-OCT-17 09:19 19-OCT-17 12:15

	1.0000 Level 1	5.0000 Level 2	20.0000 Level 3	50.0000 Level 4	100.0000 Level 5	150.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
Dichlorodifluoromethane	0.47539	0.42492	0.43847	0.42384	0.42657	0.40025	AVG		0.43157		5.74837	35.00000	O
Chloromethane	0.32723	0.33739	0.30698	0.26596	0.29406	0.27321	AVG		0.30080		9.51480	35.00000	O
Vinyl chloride	0.36962	0.43209	0.36514	0.33574	0.35944	0.34111	AVG		0.36719		9.39574	35.00000	O
Bromomethane	0.24277	0.25126	0.19079	0.17496	0.19725	0.19606	AVG		0.20885		14.7145	35.00000	O
Chloroethane	0.30592	0.25948	0.22325	0.20430	0.19788	0.18621	AVG		0.22951		19.7637	35.00000	O
Trichlorofluoromethane	0.81840	0.69271	0.71736	0.69632	0.64034	0.65016	AVG		0.70255		9.08969	35.00000	O
1,1-Dichloroethene	0.39579	0.41668	0.35933	0.32357	0.35554	0.33262	AVG		0.36392		9.90607	35.00000	O
Carbon Disulfide	1.25183	1.41523	1.13086	1.06365	1.16195	1.10342	AVG		1.18782		10.7988	35.00000	O
Freon-113	0.35637	0.31064	0.31472	0.30073	0.30513	0.28999	AVG		0.31293		7.33168	35.00000	O
Methylene Chloride	0.59031	0.49922	0.40143	0.39701	0.42681	0.40549	AVG		0.45338		17.0071	35.00000	O
Acetone	0.12787	0.10760	0.10286	0.10451	0.09979	0.09991	AVG		0.10709		9.89314	35.00000	O
trans-1,2-Dichloroethene	0.42924	0.51567	0.40408	0.37266	0.41329	0.39205	AVG		0.42116		11.8964	35.00000	O
Methyl tert-butyl ether	0.98334	1.01738	1.04290	1.03188	1.17963	1.16207	AVG		1.06953		7.59141	35.00000	O
1,1-Dichloroethane	0.70469	0.79527	0.66679	0.63867	0.69278	0.66496	AVG		0.69386		7.89788	35.00000	O
cis-1,2-Dichloroethene	0.43343	0.46698	0.41014	0.40659	0.44849	0.43822	AVG		0.43398		5.29091	35.00000	O
1,2-Dichloroethylene (total	+++++	+++++	+++++	+++++	+++++	+++++	AVG		0.000e+00		0.000e+0	35.00000	M
Chloroform	0.74686	0.78774	0.72229	0.70410	0.75078	0.74415	AVG		0.74265		3.81776	35.00000	O
Carbon Tetrachloride	0.35454	0.45120	0.39092	0.38314	0.38578	0.38389	AVG		0.39158		8.14895	35.00000	O
1,1,1-Trichloroethane	0.64739	0.80457	0.67222	0.66043	0.70214	0.69777	AVG		0.69742		8.11369	35.00000	O
2-Butanone	0.14822	0.13407	0.14511	0.13694	0.15576	0.15693	AVG		0.14617		6.45089	35.00000	O
Benzene	0.93321	1.09268	0.98713	0.96739	1.02307	0.98966	AVG		0.99886		5.46733	35.00000	O
Cyclohexane	0.47406	0.51046	0.56270	0.54794	0.59283	0.57037	AVG		0.54306		8.00809	35.00000	O
1,2-Dichloroethane	0.42437	0.38725	0.37947	0.37702	0.37150	0.38173	AVG		0.38689		4.93224	35.00000	O
Trichloroethene	0.27054	0.30435	0.27222	0.27051	0.27050	0.26573	AVG		0.27564		5.16383	35.00000	O
1,2-Dichloropropane	0.21475	0.23683	0.22653	0.23255	0.24572	0.23975	AVG		0.23269		4.69338	35.00000	O
Bromodichloromethane	0.34797	0.37811	0.37206	0.38190	0.38371	0.38628	AVG		0.37501		3.77077	35.00000	O
cis-1,3-dichloropropene	0.32736	0.37705	0.41721	0.43315	0.46316	0.47147	AVG		0.41490		13.1848	35.00000	O
Toluene	0.67964	0.74749	0.62995	0.64483	0.66429	0.65787	AVG		0.67068		6.15197	35.00000	O
4-methyl-2-pentanone	0.14158	0.17437	0.18925	0.18877	0.20684	0.20689	AVG		0.18462		13.2355	35.00000	O
Tetrachloroethene	0.21936	0.25924	0.22374	0.20611	0.21905	0.21473	AVG		0.22371		8.22621	35.00000	O
trans-1,3-Dichloropropene	0.32503	0.38627	0.39332	0.41579	0.42579	0.43263	AVG		0.39647		9.93470	35.00000	O
1,1,2-Trichloroethane	0.20120	0.19381	0.19724	0.19217	0.19703	0.20029	AVG		0.19696		1.78707	35.00000	O
Dibromochloromethane	0.25843	0.26215	0.28727	0.28458	0.29952	0.29679	AVG		0.28146		6.17044	35.00000	O
1,2-Dibromoethane	0.21557	0.24870	0.24613	0.25078	0.26309	0.26852	AVG		0.24880		7.42915	35.00000	O
2-Hexanone	0.09736	0.11434	0.12607	0.12800	0.14489	0.14302	AVG		0.12561		14.2657	35.00000	O
Chlorobenzene	0.84335	0.82925	0.74535	0.71973	0.75225	0.73682	AVG		0.77112		6.72171	35.00000	O
Ethylbenzene	0.37341	0.44891	0.39353	0.40333	0.41426	0.40799	AVG		0.40691		6.15160	35.00000	O

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services
SDG: TK0161
Project : Fort Devens/DCL Leachate 68016363
Instrument ID: GCMS-P
Lab File IDs : P2937A.D P2936A.D P2935A.D P2934A.D P2939A.D P2938A.D
Column ID:
Calibration Date(s): 19-OCT-17 09:19
19-OCT-17 12:15

Xylenes (total)	+++++	+++++	+++++	+++++	+++++	+++++	AVG		0.000e+00		0.000e+(	35.00000	M (
m+p-Xylenes	0.39360	0.53584	0.50683	0.49635	0.50754	0.49439	AVG		0.48909		10.03307	35.00000	O
o-Xylene	0.34572	0.42555	0.45732	0.48033	0.50126	0.48793	AVG		0.44968		12.7792(	35.00000	O
Styrene	0.53532	0.74707	0.79789	0.82016	0.85764	0.84291	AVG		0.76683		15.6306:	35.00000	O
Bromoform	0.14151	0.17301	0.19403	0.19058	0.20112	0.20584	AVG		0.18435		12.9269[	35.00000	O
Isopropylbenzene	1.33041	1.99776	2.02170	2.03172	2.14850	2.05535	AVG		1.93091		15.4727[	35.00000	O
1,1,2,2-Tetrachloroethane	0.56536	0.54839	0.53282	0.49270	0.53782	0.53347	AVG		0.53509		4.50533	35.00000	O
1,3-Dichlorobenzene	1.05521	1.09784	1.10630	1.02700	1.08465	1.04361	AVG		1.06910		2.97736	35.00000	O
1,4-Dichlorobenzene	1.15653	1.19072	1.13591	1.06607	1.11018	1.08123	AVG		1.12344		4.17990	35.00000	O
1,2-Dichlorobenzene	0.98264	1.02165	1.04465	0.97561	1.05031	1.01663	AVG		1.01525		3.04263	35.00000	O
1,2-Dibromo-3-Chloropropane	0.09436	0.10962	0.10283	0.09574	0.11074	0.11142	AVG		0.10412		7.36922	35.00000	O
1,2,4-Trichlorobenzene	0.64488	0.62947	0.65215	0.61424	0.69079	0.64567	AVG		0.64620		3.99206	35.00000	O
Methyl Acetate	0.34467	0.27573	0.27030	0.24362	0.28223	0.28038	AVG		0.28282		11.8067[	35.00000	O
Methylcyclohexane	0.51568	0.52310	0.63031	0.62374	0.65991	0.65453	AVG		0.60121		10.7947[	35.00000	O
Dibromofluoromethane	0.49832	0.49311	0.47500	0.47431	0.47323	0.49047	AVG		0.48408		2.30182	35.00000	
1,2-Dichloroethane-D4	0.66320	0.62964	0.62476	0.62454	0.60924	0.63288	AVG		0.63071		2.83249	35.00000	
Toluene-D8	1.20719	1.22188	1.19116	1.23191	1.22070	1.22499	AVG		1.21630		1.21079	35.00000	
P-Bromofluorobenzene	0.51319	0.51894	0.52925	0.55473	0.53676	0.56217	AVG		0.53584		3.63135	35.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services
SDG: TK0161
Project : Fort Devens/DCL Leachate 68016363
Instrument ID: GCMS-W
Lab File IDs : W1777A.D W1776A.D W1775A.D W1774A.D W1779A.D W1778A.D
Column ID:
Calibration Date(s): 06-NOV-17 11:46 06-NOV-17 14:19

	Level 1 1.0000	Level 2 5.0000	Level 3 20.0000	Level 4 50.0000	Level 5 100.0000	Level 6 200.0000	Crv New	b	m1	m2	%RSD	Max %RSD	
Dichlorodifluoromethane	0.64743	0.59366	0.67658	0.66750	0.67653	0.65496	AVG		0.65278		4.78373	35.00000	O
Chloromethane	23462	48314	184712	412942	890383	1249291	LNR	-0.01916	0.73591		0.99941	0.99000	O
Vinyl chloride	0.76796	0.54053	0.57410	0.56285	0.59127	0.57914	AVG		0.60264		13.7373	35.00000	O
Bromomethane	3500	7084	21672	51225	132822	166483	QUA	0.01434	9.09992	2.38904	0.99050	0.99000	O
Chloroethane	0.42731	0.31107	0.34889	0.32479	0.32648	0.29896	AVG		0.33958		13.5822	35.00000	O
Trichlorofluoromethane	0.97561	0.78760	0.86162	0.88583	0.93708	0.94237	AVG		0.89835		7.57915	35.00000	O
1,1-Dichloroethene	0.65097	0.46823	0.51280	0.50086	0.53722	0.52262	AVG		0.53212		11.7881	35.00000	O
Carbon Disulfide	2.14976	1.47593	1.69107	1.63759	1.65841	1.65097	AVG		1.71062		13.3284	35.00000	O
Freon-113	0.45653	0.41780	0.42478	0.40902	0.42650	0.41479	AVG		0.42490		3.94982	35.00000	O
Methylene Chloride	0.82418	0.55185	0.61627	0.61417	0.63410	0.65746	AVG		0.64967		14.2249	35.00000	O
Acetone	0.15685	0.15451	0.15072	0.14998	0.15262	0.17911	AVG		0.15730		6.97864	35.00000	O
trans-1,2-Dichloroethene	0.74544	0.51468	0.55031	0.53791	0.55991	0.54423	AVG		0.57541		14.7148	35.00000	O
Methyl tert-butyl ether	1.15329	1.22208	1.28252	1.32490	1.43087	1.44961	AVG		1.31055		8.85670	35.00000	O
1,1-Dichloroethane	1.22189	0.92738	0.94636	0.91636	0.95143	0.94284	AVG		0.98438		11.8943	35.00000	O
cis-1,2-Dichloroethene	0.82744	0.54859	0.59023	0.57823	0.61250	0.60433	AVG		0.62689		16.0755	35.00000	O
1,2-Dichloroethylene (total	+++++	+++++	+++++	+++++	+++++	+++++	AVG		0.000e+00		0.000e+0	35.00000	M (
Chloroform	1.30687	0.94888	0.98592	0.97808	1.00622	0.99043	AVG		1.03607		12.9340	35.00000	O
Carbon Tetrachloride	0.38819	0.31515	0.36771	0.38290	0.36972	0.38318	AVG		0.36781		7.35240	35.00000	O
1,1,1-Trichloroethane	1.09950	0.87033	0.90678	0.91270	0.92302	0.94515	AVG		0.94291		8.53809	35.00000	O
2-Butanone	0.20398	0.19793	0.21221	0.21247	0.22779	0.24652	AVG		0.21682		8.15686	35.00000	O
Benzene	1.51788	1.14932	1.19039	1.17470	1.13481	1.11516	AVG		1.21371		12.4772	35.00000	O
Cyclohexane	0.73716	0.72816	0.82887	0.83563	0.87391	0.85348	AVG		0.80953		7.61294	35.00000	O
1,2-Dichloroethane	0.53834	0.43380	0.41098	0.40812	0.39066	0.39214	AVG		0.42901		13.0062	35.00000	O
Trichloroethene	0.44880	0.30629	0.33501	0.32617	0.31492	0.31081	AVG		0.34033		15.9163	35.00000	O
1,2-Dichloropropane	0.34861	0.27108	0.28321	0.27880	0.27644	0.27396	AVG		0.28868		10.2705	35.00000	O
Bromodichloromethane	0.42625	0.37670	0.39584	0.40292	0.39542	0.40211	AVG		0.39987		4.00613	35.00000	O
cis-1,3-dichloropropene	0.41894	0.41100	0.45462	0.48268	0.46821	0.48037	AVG		0.45264		6.83629	35.00000	O
Toluene	0.99686	0.74044	0.78680	0.75885	0.75120	0.74094	AVG		0.79585		12.5571	35.00000	O
4-methyl-2-pentanone	0.21069	0.23696	0.24924	0.25008	0.24338	0.24960	AVG		0.23999		6.34465	35.00000	O
Tetrachloroethene	0.31842	0.23576	0.26158	0.26563	0.24933	0.32463	AVG		0.27589		13.3770	35.00000	O
trans-1,3-Dichloropropene	0.36366	0.34023	0.38739	0.40739	0.39371	0.41642	AVG		0.38480		7.37698	35.00000	O
1,1,2-Trichloroethane	0.21653	0.21818	0.21670	0.21654	0.21734	0.21650	AVG		0.21697		0.31082	35.00000	O
Dibromochloromethane	0.29756	0.25794	0.29434	0.30635	0.29727	0.31208	AVG		0.29426		6.45305	35.00000	O
1,2-Dibromoethane	0.28410	0.25302	0.26646	0.26752	0.26819	0.27514	AVG		0.26907		3.82694	35.00000	O
2-Hexanone	0.12564	0.15607	0.17942	0.18823	0.17710	0.18999	AVG		0.16941		14.5319	35.00000	O
Chlorobenzene	1.11000	0.85708	0.88748	0.88529	0.82958	0.84393	AVG		0.90223		11.5600	35.00000	O
Ethylbenzene	0.61165	0.44523	0.48400	0.50068	0.47176	0.48580	AVG		0.49985		11.5691	35.00000	O

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services
SDG: TK0161
Project : Fort Devens/DCL Leachate 68016363
Instrument ID: GCMS-W
Lab File IDs : W1777A.D W1776A.D W1775A.D W1774A.D W1779A.D W1778A.D
Column ID:
Calibration Date(s): 06-NOV-17 11:46
06-NOV-17 14:19

Xylenes (total)	+++++	+++++	+++++	+++++	+++++	+++++	AVG		0.000e+00		0.000e+(	35.00000	M (
m+p-Xylenes	0.66172	0.54136	0.60413	0.60000	0.56577	0.57246	AVG		0.59091		7.05887	35.00000	O
o-Xylene	0.55531	0.48038	0.56120	0.58213	0.55525	0.57594	AVG		0.55170		6.64294	35.00000	O
Styrene	0.83783	0.79169	0.92923	0.96705	0.92466	0.95295	AVG		0.90057		7.74995	35.00000	O
Bromoform	0.18534	0.17301	0.19472	0.21181	0.20606	0.22575	AVG		0.19945		9.53651	35.00000	O
Isopropylbenzene	2.67614	2.25480	2.65280	2.55890	2.36072	2.29591	AVG		2.46655		7.52616	35.00000	O
1,1,2,2-Tetrachloroethane	0.62727	0.62651	0.64364	0.63622	0.60366	0.61175	AVG		0.62484		2.38578	35.00000	O
1,3-Dichlorobenzene	1.70815	1.33060	1.40483	1.35877	1.28980	1.27621	AVG		1.39473		11.5075[illegible]	35.00000	O
1,4-Dichlorobenzene	1.68846	1.41756	1.43731	1.38101	1.31010	1.30265	AVG		1.42285		9.92407	35.00000	O
1,2-Dichlorobenzene	1.48495	1.27511	1.34968	1.31856	1.25009	1.22847	AVG		1.31781		7.06509	35.00000	O
1,2-Dibromo-3-Chloropropane	0.12954	0.13251	0.14148	0.16887	0.14767	0.14717	AVG		0.14454		9.72249	35.00000	O
1,2,4-Trichlorobenzene	0.83706	0.82131	0.97510	0.94916	0.87968	0.83485	AVG		0.88286		7.35867	35.00000	O
Methyl Acetate	0.49674	0.36421	0.39586	0.37757	0.42242	0.42185	AVG		0.41311		11.4097[illegible]	35.00000	O
Methylcyclohexane	0.92433	0.89048	0.96183	0.98140	1.00968	0.99595	AVG		0.96061		4.73033	35.00000	O
Dibromofluoromethane	0.59097	0.58425	0.56899	0.57640	0.60800	0.59396	AVG		0.58709		2.34698	35.00000	
1,2-Dichloroethane-D4	0.79169	0.74314	0.72452	0.73173	0.76029	0.75275	AVG		0.75069		3.19632	35.00000	
Toluene-D8	1.18560	1.17620	1.19950	1.19141	1.21253	1.18818	AVG		1.19224		1.04958	35.00000	
P-Bromofluorobenzene	0.50871	0.50712	0.51454	0.51751	0.53495	0.55001	AVG		0.52214		3.23403	35.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://katahdinlab.com
sales@katahdinlab.com

Data File: \\target_server\gg\chem\gcms-p.i\P110317.b\P3173.D
Report Date: 15-Nov-2017 13:58

Katahdin Analytical Services

RECOVERY REPORT

Client Name: Client SDG: SDGa02236
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: WG217010-3
Level: LOW Operator: HG/TTC
Data Type: MS DATA SampleType: LCS
SpikeList File: E624cc.spk Quant Type: ISTD
Sublist File: all.sub
Method File: \\target_server\gg\chem\gcms-p.i\P110317.b\P6A05(17).m
Misc Info: WG217010,WG217924-3,TK0161-2

SPIKE COMPOUND	CONC ADDED ug/l	CONC RECOVERED ug/l	% RECOVERED	LIMITS
2 Chloromethane	20.0	18.8	94.00*	0-41
3 Vinyl chloride	20.0	19.5	97.58*	1-39
4 Bromomethane	20.0	2.4	12.25	3-37
5 Chloroethane	20.0	22.0	109.75*	8-32
6 Trichlorofluoromet	20.0	20.5	102.44*	10-30
9 1,1-Dichloroethene	20.0	17.9	89.61*	10-30
14 Methylene Chloride	20.0	18.5	92.71*	12-28
17 trans-1,2-Dichloro	20.0	18.6	93.00*	14-26
25 1,1-Dichloroethane	20.0	20.1	100.51*	15-26
29 cis-1,2-Dichloroet	20.0	20.2	101.28*	0-100
34 Chloroform	20.0	21.5	107.73*	14-27
38 1,1,1-Trichloroeth	20.0	20.0	100.11*	15-25
35 Carbon Tetrachlori	20.0	17.8	88.76*	15-25
41 Benzene	20.0	19.9	99.45*	13-27
47 1,2-Dichloroethane	20.0	21.0	104.82*	14-26
48 Trichloroethene	20.0	19.1	95.61*	13-27
51 1,2-Dichloropropan	20.0	20.5	102.69*	7-33
52 Bromodichlorometha	20.0	20.3	101.36*	13-27
56 2-Chloroethylviny	20.0	0.00	*	0-45
53 cis-1,3-dichloropr	20.0	20.6	103.10*	5-35
57 Toluene	20.0	19.4	96.94*	15-25
60 trans-1,3-Dichloro	20.0	21.1	105.33*	10-30
61 1,1,2-Trichloroeth	20.0	21.5	107.34*	14-26
59 Tetrachloroethene	20.0	16.2	81.10*	15-25
62 Dibromochlorometha	20.0	19.2	96.07*	14-27
67 Chlorobenzene	20.0	18.0	89.86*	13-27
68 Ethylbenzene	20.0	17.8	88.92*	12-28
74 Bromoform	20.0	19.8	99.29*	14-26
81 1,1,2,2-Tetrachlor	20.0	19.5	97.53*	12-28
90 1,3-Dichlorobenzen	20.0	17.8	89.24*	15-25
92 1,4-Dichlorobenzen	20.0	17.8	88.78*	13-27
95 1,2-Dichlorobenzen	20.0	18.3	91.48*	13-27

SURROGATE COMPOUND	AMOUNT ADDED ug/l	AMOUNT RECOVERED ug/l	% RECOVERED	LIMITS
$ 37 Dibromofluorometha	50.0	51.2	102.51	68-128

Katahdin Analytical Services A000026

Data File: \\target_server\gg\chem\gcms-p.i\P110317.b\P3173.D
Report Date: 15-Nov-2017 13:58

SURROGATE COMPOUND	AMOUNT ADDED ug/l	AMOUNT RECOVERED ug/l	% RECOVERED	LIMITS
$ 45 1,2-Dichloroethane	50.0	52.0	104.04	67-135
$ 55 Toluene-D8	50.0	51.2	102.48	65-128
$ 76 P-Bromofluorobenze	50.0	56.3	112.70	56-133

Katahdin Analytical Services A000027

Data File: \\target_server\gg\chem\gcms-w.i\W110817.b\W1820.D
Report Date: 15-Nov-2017 14:01

Katahdin Analytical Services

RECOVERY REPORT

Client Name:
Sample Matrix: LIQUID
Lab Smp Id: WG217360-4
Level: LOW
Data Type: MS DATA
SpikeList File: E624cc.spk
Sublist File: E624.sub
Method File: \\target_server\gg\chem\gcms-w.i\W110817.b\W6A05(02).m
Misc Info: WG217360,WG217925-3,TK0161-1

Client SDG: WG217360
Fraction: VOA
Client Smp ID: alibration Verifica
Operator: JSS
SampleType: LCS
Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ug/l	CONC RECOVERED ug/l	% RECOVERED	LIMITS
2 Chloromethane	20.0	14.2	70.78*	0-41
3 Vinyl chloride	20.0	14.4	71.99*	1-39
4 Bromomethane	20.0	22.1	110.72*	3-37
5 Chloroethane	20.0	15.9	79.55*	8-32
6 Trichlorofluoromet	20.0	15.5	77.72*	10-30
9 1,1-Dichloroethene	20.0	15.2	75.76*	10-30
14 Methylene Chloride	20.0	15.7	78.55*	12-28
17 trans-1,2-Dichloro	20.0	16.4	82.27*	14-26
25 1,1-Dichloroethane	20.0	17.3	86.46*	15-26
29 cis-1,2-Dichloroe	20.0	0.00	*	0-100
34 Chloroform	20.0	17.9	89.35*	14-27
38 1,1,1-Trichloroeth	20.0	17.5	87.61*	15-25
35 Carbon Tetrachlori	20.0	19.4	96.80*	15-25
41 Benzene	20.0	18.0	89.78*	13-27
47 1,2-Dichloroethane	20.0	20.8	104.15*	14-26
48 Trichloroethene	20.0	18.6	92.93*	13-27
51 1,2-Dichloropropan	20.0	18.8	93.94*	7-33
52 Bromodichlorometha	20.0	20.2	100.88*	13-27
56 2-Chloroethylvinyl	20.0	9.5	47.34*	0-45
53 cis-1,3-dichloropr	20.0	18.1	90.54*	5-35
57 Toluene	20.0	18.0	89.99*	15-25
60 trans-1,3-Dichloro	20.0	17.7	88.55*	10-30
61 1,1,2-Trichloroeth	20.0	20.1	100.51*	14-26
59 Tetrachloroethene	20.0	16.6	83.11*	15-25
62 Dibromochlorometha	20.0	19.9	99.69*	14-27
67 Chlorobenzene	20.0	18.5	92.54*	13-27
68 Ethylbenzene	20.0	18.1	90.34*	12-28
74 Bromoform	20.0	20.1	100.69*	14-26
81 1,1,2,2-Tetrachlor	20.0	19.2	96.27*	12-28
90 1,3-Dichlorobenzen	20.0	17.4	87.24*	15-25
92 1,4-Dichlorobenzen	20.0	17.5	87.62*	13-27
95 1,2-Dichlorobenzen	20.0	18.2	91.20*	13-27

SURROGATE COMPOUND	AMOUNT ADDED ug/l	AMOUNT RECOVERED ug/l	% RECOVERED	LIMITS
$ 37 Dibromofluorometha	50.0	44.4	88.76	68-128

Katahdin Analytical Services A000028

Data File: \\target_server\gg\chem\gcms-w.i\W110817.b\W1820.D
Report Date: 15-Nov-2017 14:01

SURROGATE COMPOUND	AMOUNT ADDED ug/l	AMOUNT RECOVERED ug/l	% RECOVERED	LIMITS
$ 45 1,2-Dichloroethane	50.0	50.3	100.56	67-135
$ 55 Toluene-D8	50.0	50.5	100.98	65-128
$ 76 P-Bromofluorobenze	50.0	52.6	105.20	56-133

Katahdin Analytical Services A000029

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 6801
Lab ID : WG217924-3
Lab File ID : P2935A.D

SDG: TK0161
Analytical Date: 10/19/17 10:00
Instrument ID: GCMS-P

		PENTAFLUOROBENZENE			1,4-DIFLUOROBENZENE			CHLOROBENZENE-D5		
		Area	#	RT	#	Area	#	RT	#	Area	#	RT	#
	Std .	504381		6.69		778523		7.64		787306		12.28	
	Upper Limit	1008762		7.19		1557046		8.14		1574612		12.78	
	Lower Limit	252190.5		6.19		389261.5		7.14		393653		11.78	
Client Sample ID	Lab Sample ID												
Continuing Calibrati	WG217010-3	389226		6.69		620696		7.63		693912		12.28	
Laboratory Control S	WG217010-1	407043		6.69		649410		7.64		705184		12.28	
Method Blank Sample	WG217010-2	349848		6.70		578525		7.64		638171		12.28	
TRIP BLANK	TK0161-2	283399		6.71		477019		7.64		525194		12.28	

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.

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 6801
Lab ID : WG217924-3
Lab File ID : P2935A.D

SDG: TK0161
Analytical Date: 10/19/17 10:00
Instrument ID: GCMS-P

		1,4-DICHLOROBENZENE-D4			
		Area	#	RT	#
	Std .	462299		15.48	
	Upper Limit	924598		15.98	
	Lower Limit	231149.5		14.98	
Client Sample ID	Lab Sample ID				
Continuing Calibrati	WG217010-3	424975		15.48	
Laboratory Control S	WG217010-1	437150		15.48	
Method Blank Sample	WG217010-2	365462		15.48	
TRIP BLANK	TK0161-2	308957		15.49	

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.

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 6801
Lab ID : WG217925-3
Lab File ID : W1775A.D

SDG: TK0161
Analytical Date: 11/06/17 12:17
Instrument ID: GCMS-W

		PENTAFLUOROBENZENE		1,4-DIFLUOROBENZENE		CHLOROBENZENE-D5	
		Area #	RT #	Area #	RT #	Area #	RT #
	Std .	572870	8.04	1038434	8.88	1005214	13.22
	Upper Limit	1145740	8.54	2076868	9.38	2010428	13.72
	Lower Limit	286435	7.54	519217	8.38	502607	12.72
Client Sample ID	Lab Sample ID						
Calibration Verifica	WG217360-4	507489	8.01	869386	8.85	847319	13.18
Laboratory Control S	WG217360-1	537283	8.01	897247	8.84	880520	13.18
Method Blank Sample	WG217360-2	472007	8.02	808024	8.85	807856	13.18
DCL LEACHATE-FAI	TK0161-1RA	420673	8.01	735760	8.85	729431	13.18

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.

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 6801
Lab ID : WG217925-3
Lab File ID : W1775A.D

SDG: TK0161
Analytical Date: 11/06/17 12:17
Instrument ID: GCMS-W

		1,4-DICHLOROBENZENE-D4			
		Area	#	RT	#
	Std .	557648		16.92	
	Upper Limit	1115296		17.42	
	Lower Limit	278824		16.42	
Client Sample ID	Lab Sample ID				
Calibration Verifica	WG217360-4	506548		16.89	
Laboratory Control S	WG217360-1	517631		16.89	
Method Blank Sample	WG217360-2	446603		16.89	
DCL LEACHATE-FAI	TK0161-1RA	395716		16.90	

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.

Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0161-1
Client ID: DCL LEACHATE-FALL17
Project: Fort Devens/DCL Leachate 68016363
SDG: TK0161
Lab File ID: G1431.D

Sample Date: 27-OCT-17
Received Date: 31-OCT-17
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: EPA 625
Lab Prep Batch: WG216991

Analysis Date: 07-NOV-17
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
N-Nitrosodimethylamine	U	4.8	ug/L	1	5	4.8	1.0	2.4
Phenol	U	4.8	ug/L	1	5	4.8	1.2	2.4
Bis(2-Chloroethyl)Ether	U	4.8	ug/L	1	5	4.8	0.94	2.4
2-Chlorophenol	U	4.8	ug/L	1	5	4.8	2.2	2.4
1,3-Dichlorobenzene	U	4.8	ug/L	1	5	4.8	1.6	2.4
1,4-Dichlorobenzene	U	4.8	ug/L	1	5	4.8	1.9	2.4
1,2-Dichlorobenzene	U	4.8	ug/L	1	5	4.8	1.7	2.4
Bis(2-Chloroisopropyl) Ether	U	4.8	ug/L	1	5	4.8	1.1	2.4
N-Nitroso-Di-N-Propylamine	U	4.8	ug/L	1	5	4.8	0.73	2.4
Hexachloroethane	U	4.8	ug/L	1	5	4.8	1.6	2.4
Nitrobenzene	U	4.8	ug/L	1	5	4.8	0.99	2.4
Isophorone	U	4.8	ug/L	1	5	4.8	0.79	2.4
2-Nitrophenol	U	4.8	ug/L	1	5	4.8	2.6	2.4
2,4-Dimethylphenol	U	4.8	ug/L	1	5	4.8	2.5	2.4
Bis(2-Chloroethoxy)Methane	U	4.8	ug/L	1	5	4.8	0.84	2.4
2,4-Dichlorophenol	U	4.8	ug/L	1	5	4.8	3.0	2.4
1,2,4-Trichlorobenzene	U	4.8	ug/L	1	5	4.8	1.7	2.4
Naphthalene	U	4.8	ug/L	1	5	4.8	1.7	2.4
Hexachlorobutadiene	U	4.8	ug/L	1	5	4.8	1.5	2.4
4-Chloro-3-Methylphenol	U	4.8	ug/L	1	5	4.8	2.1	2.4
Hexachlorocyclopentadiene	U	4.8	ug/L	1	5	4.8	0.70	2.4
2,4,6-Trichlorophenol	U	4.8	ug/L	1	5	4.8	2.4	2.4
2-Chloronaphthalene	U	4.8	ug/L	1	5	4.8	1.6	2.4
Dimethyl Phthalate	U	4.8	ug/L	1	5	4.8	0.86	2.4
2,6-Dinitrotoluene	U	4.8	ug/L	1	5	4.8	0.58	2.4
Acenaphthylene	U	4.8	ug/L	1	5	4.8	1.0	2.4
Acenaphthene	U	4.8	ug/L	1	5	4.8	1.3	2.4
2,4-Dinitrophenol	U	24	ug/L	1	25	24.	17.	12.
4-Nitrophenol	U	19	ug/L	1	20	19.	4.4	12.
2,4-Dinitrotoluene	U	4.8	ug/L	1	5	4.8	0.44	2.4
Diethylphthalate	U	4.8	ug/L	1	5	4.8	0.71	2.4
4-Chlorophenyl-Phenylether	U	4.8	ug/L	1	5	4.8	1.1	2.4
Fluorene	U	4.8	ug/L	1	5	4.8	0.92	2.4
4,6-Dinitro-2-Methylphenol	U	24	ug/L	1	25	24.	1.2	12.
N-Nitrosodiphenylamine	U	4.8	ug/L	1	5	4.8	0.51	2.4

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0161-1
Client ID: DCL LEACHATE-FALL17
Project: Fort Devens/DCL Leachate 68016363
SDG: TK0161
Lab File ID: G1431.D

Sample Date: 27-OCT-17
Received Date: 31-OCT-17
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: EPA 625
Lab Prep Batch: WG216991

Analysis Date: 07-NOV-17
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
4-Bromophenyl-Phenylether	U	4.8	ug/L	1	5	4.8	1.0	2.4
Hexachlorobenzene	U	4.8	ug/L	1	5	4.8	0.87	2.4
Pentachlorophenol	U	19	ug/L	1	20	19.	1.7	12.
Phenanthrene	U	4.8	ug/L	1	5	4.8	2.6	2.4
Anthracene	U	4.8	ug/L	1	5	4.8	0.71	2.4
Di-N-Butylphthalate	U	4.8	ug/L	1	5	4.8	0.72	2.4
Fluoranthene	U	4.8	ug/L	1	5	4.8	0.67	2.4
Benzidine	U	24	ug/L	1	25	24.	11.	12.
Pyrene	U	4.8	ug/L	1	5	4.8	0.59	2.4
Butylbenzylphthalate	U	4.8	ug/L	1	5	4.8	0.51	2.4
3,3'-Dichlorobenzidine	U	4.8	ug/L	1	5	4.8	1.8	2.4
Benzo(a)anthracene	U	4.8	ug/L	1	5	4.8	0.64	2.4
Chrysene	U	4.8	ug/L	1	5	4.8	0.86	2.4
Bis(2-Ethylhexyl)Phthalate	U	4.8	ug/L	1	5	4.8	0.53	2.4
Di-N-Octylphthalate	U	4.8	ug/L	1	5	4.8	0.64	2.4
Benzo(b)fluoranthene	U	4.8	ug/L	1	5	4.8	2.1	2.4
Benzo(k)fluoranthene	U	4.8	ug/L	1	5	4.8	2.3	2.4
Benzo(a)pyrene	U	4.8	ug/L	1	5	4.8	2.0	2.4
Indeno(1,2,3-cd)pyrene	U	4.8	ug/L	1	5	4.8	1.2	2.4
Dibenzo(a,h)anthracene	U	4.8	ug/L	1	5	4.8	1.2	2.4
Benzo(g,h,i)perylene	U	4.8	ug/L	1	5	4.8	1.3	2.4
2-Fluorophenol		31.2	%					
Phenol-d6		11.1	%					
Nitrobenzene-d5		59.8	%					
2-Fluorobiphenyl		60.7	%					
2,4,6-Tribromophenol		72.6	%					
Terphenyl-d14		72.6	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0161-1
Client ID: DCL LEACHATE-FALL17
Project: Fort Devens/DCL Leachate 68016363
SDG: TK0161
Lab File ID: G1431.D

Sample Date: 27-OCT-17
Received Date: 31-OCT-17
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: EPA 625
Lab Prep Batch: WG216991

Analysis Date: 07-NOV-17
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
N-Nitrosodimethylamine	U	4.8	ug/L	1	5	4.8	1.0	2.4
Phenol	U	4.8	ug/L	1	5	4.8	1.2	2.4
Bis(2-Chloroethyl)Ether	U	4.8	ug/L	1	5	4.8	0.94	2.4
2-Chlorophenol	U	4.8	ug/L	1	5	4.8	2.2	2.4
1,3-Dichlorobenzene	U	4.8	ug/L	1	5	4.8	1.6	2.4
1,4-Dichlorobenzene	U	4.8	ug/L	1	5	4.8	1.9	2.4
1,2-Dichlorobenzene	U	4.8	ug/L	1	5	4.8	1.7	2.4
Bis(2-Chloroisopropyl) Ether	U	4.8	ug/L	1	5	4.8	1.1	2.4
N-Nitroso-Di-N-Propylamine	U	4.8	ug/L	1	5	4.8	0.73	2.4
Hexachloroethane	U	4.8	ug/L	1	5	4.8	1.6	2.4
Nitrobenzene	U	4.8	ug/L	1	5	4.8	0.99	2.4
Isophorone	U	4.8	ug/L	1	5	4.8	0.79	2.4
2-Nitrophenol	U	4.8	ug/L	1	5	4.8	2.6	2.4
2,4-Dimethylphenol	U	4.8	ug/L	1	5	4.8	2.5	2.4
Bis(2-Chloroethoxy)Methane	U	4.8	ug/L	1	5	4.8	0.84	2.4
2,4-Dichlorophenol	U	4.8	ug/L	1	5	4.8	3.0	2.4
1,2,4-Trichlorobenzene	U	4.8	ug/L	1	5	4.8	1.7	2.4
Naphthalene	U	4.8	ug/L	1	5	4.8	1.7	2.4
Hexachlorobutadiene	U	4.8	ug/L	1	5	4.8	1.5	2.4
4-Chloro-3-Methylphenol	U	4.8	ug/L	1	5	4.8	2.1	2.4
Hexachlorocyclopentadiene	U	4.8	ug/L	1	5	4.8	0.70	2.4
2,4,6-Trichlorophenol	U	4.8	ug/L	1	5	4.8	2.4	2.4
2-Chloronaphthalene	U	4.8	ug/L	1	5	4.8	1.6	2.4
Dimethyl Phthalate	U	4.8	ug/L	1	5	4.8	0.86	2.4
2,6-Dinitrotoluene	U	4.8	ug/L	1	5	4.8	0.58	2.4
Acenaphthylene	U	4.8	ug/L	1	5	4.8	1.0	2.4
Acenaphthene	U	4.8	ug/L	1	5	4.8	1.3	2.4
2,4-Dinitrophenol	U	24	ug/L	1	25	24.	17.	12.
4-Nitrophenol	U	19	ug/L	1	20	19.	4.4	12.
2,4-Dinitrotoluene	U	4.8	ug/L	1	5	4.8	0.44	2.4
Diethylphthalate	U	4.8	ug/L	1	5	4.8	0.71	2.4
4-Chlorophenyl-Phenylether	U	4.8	ug/L	1	5	4.8	1.1	2.4
Fluorene	U	4.8	ug/L	1	5	4.8	0.92	2.4
4,6-Dinitro-2-Methylphenol	U	24	ug/L	1	25	24.	1.2	12.
N-Nitrosodiphenylamine	U	4.8	ug/L	1	5	4.8	0.51	2.4

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0161-1
Client ID: DCL LEACHATE-FALL17
Project: Fort Devens/DCL Leachate 68016363
SDG: TK0161
Lab File ID: G1431.D

Sample Date: 27-OCT-17
Received Date: 31-OCT-17
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: EPA 625
Lab Prep Batch: WG216991

Analysis Date: 07-NOV-17
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
4-Bromophenyl-Phenylether	U	4.8	ug/L	1	5	4.8	1.0	2.4
Hexachlorobenzene	U	4.8	ug/L	1	5	4.8	0.87	2.4
Pentachlorophenol	U	19	ug/L	1	20	19.	1.7	12.
Phenanthrene	U	4.8	ug/L	1	5	4.8	2.6	2.4
Anthracene	U	4.8	ug/L	1	5	4.8	0.71	2.4
Di-N-Butylphthalate	U	4.8	ug/L	1	5	4.8	0.72	2.4
Fluoranthene	U	4.8	ug/L	1	5	4.8	0.67	2.4
Benzidine	U	24	ug/L	1	25	24.	11.	12.
Pyrene	U	4.8	ug/L	1	5	4.8	0.59	2.4
Butylbenzylphthalate	U	4.8	ug/L	1	5	4.8	0.51	2.4
3,3'-Dichlorobenzidine	U	4.8	ug/L	1	5	4.8	1.8	2.4
Benzo(a)anthracene	U	4.8	ug/L	1	5	4.8	0.64	2.4
Chrysene	U	4.8	ug/L	1	5	4.8	0.86	2.4
Bis(2-Ethylhexyl)Phthalate	U	4.8	ug/L	1	5	4.8	0.53	2.4
Di-N-Octylphthalate	U	4.8	ug/L	1	5	4.8	0.64	2.4
Benzo(b)fluoranthene	U	4.8	ug/L	1	5	4.8	2.1	2.4
Benzo(k)fluoranthene	U	4.8	ug/L	1	5	4.8	2.3	2.4
Benzo(a)pyrene	U	4.8	ug/L	1	5	4.8	2.0	2.4
Indeno(1,2,3-cd)pyrene	U	4.8	ug/L	1	5	4.8	1.2	2.4
Dibenzo(a,h)anthracene	U	4.8	ug/L	1	5	4.8	1.2	2.4
Benzo(g,h,i)perylene	U	4.8	ug/L	1	5	4.8	1.3	2.4
2-Fluorophenol		31.2	%					
Phenol-d6		11.1	%					
Nitrobenzene-d5		59.8	%					
2-Fluorobiphenyl		60.7	%					
2,4,6-Tribromophenol		72.6	%					
Terphenyl-d14		72.6	%					

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Report of Analytical Results

Client:
Lab ID: WG216991-1
Client ID: Method Blank Sample
Project:
SDG: TK0161
Lab File ID: G1429.D

Sample Date:
Received Date:
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: EPA 625
Lab Prep Batch: WG216991

Analysis Date: 07-NOV-17
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
N-Nitrosodimethylamine	U	5.0	ug/L	1	5	5.0	1.0	2.5
Phenol	U	5.0	ug/L	1	5	5.0	1.3	2.5
Bis(2-Chloroethyl)Ether	U	5.0	ug/L	1	5	5.0	0.99	2.5
2-Chlorophenol	U	5.0	ug/L	1	5	5.0	2.3	2.5
1,3-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	1.7	2.5
1,4-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	2.0	2.5
1,2-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	1.8	2.5
Bis(2-Chloroisopropyl) Ether	U	5.0	ug/L	1	5	5.0	1.2	2.5
N-Nitroso-Di-N-Propylamine	U	5.0	ug/L	1	5	5.0	0.77	2.5
Hexachloroethane	U	5.0	ug/L	1	5	5.0	1.7	2.5
Nitrobenzene	U	5.0	ug/L	1	5	5.0	1.0	2.5
Isophorone	U	5.0	ug/L	1	5	5.0	0.83	2.5
2-Nitrophenol	U	5.0	ug/L	1	5	5.0	2.7	2.5
2,4-Dimethylphenol	U	5.0	ug/L	1	5	5.0	2.6	2.5
Bis(2-Chloroethoxy)Methane	U	5.0	ug/L	1	5	5.0	0.88	2.5
2,4-Dichlorophenol	U	5.0	ug/L	1	5	5.0	3.1	2.5
1,2,4-Trichlorobenzene	U	5.0	ug/L	1	5	5.0	1.8	2.5
Naphthalene	U	5.0	ug/L	1	5	5.0	1.8	2.5
Hexachlorobutadiene	U	5.0	ug/L	1	5	5.0	1.6	2.5
4-Chloro-3-Methylphenol	U	5.0	ug/L	1	5	5.0	2.2	2.5
Hexachlorocyclopentadiene	U	5.0	ug/L	1	5	5.0	0.73	2.5
2,4,6-Trichlorophenol	U	5.0	ug/L	1	5	5.0	2.6	2.5
2-Chloronaphthalene	U	5.0	ug/L	1	5	5.0	1.7	2.5
Dimethyl Phthalate	U	5.0	ug/L	1	5	5.0	0.90	2.5
2,6-Dinitrotoluene	U	5.0	ug/L	1	5	5.0	0.61	2.5
Acenaphthylene	U	5.0	ug/L	1	5	5.0	1.1	2.5
Acenaphthene	U	5.0	ug/L	1	5	5.0	1.3	2.5
2,4-Dinitrophenol	U	25	ug/L	1	25	25.	18.	12.
4-Nitrophenol	U	20	ug/L	1	20	20.	4.6	12.
2,4-Dinitrotoluene	U	5.0	ug/L	1	5	5.0	0.46	2.5
Diethylphthalate	U	5.0	ug/L	1	5	5.0	0.75	2.5
4-Chlorophenyl-Phenylether	U	5.0	ug/L	1	5	5.0	1.1	2.5
Fluorene	U	5.0	ug/L	1	5	5.0	0.97	2.5
4,6-Dinitro-2-Methylphenol	U	25	ug/L	1	25	25.	1.2	12.

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Report of Analytical Results

Client:
Lab ID: WG216991-1
Client ID: Method Blank Sample
Project:
SDG: TK0161
Lab File ID: G1429.D

Sample Date:
Received Date:
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: EPA 625
Lab Prep Batch: WG216991

Analysis Date: 07-NOV-17
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
N-Nitrosodiphenylamine	U	5.0	ug/L	1	5	5.0	0.54	2.5
4-Bromophenyl-Phenylether	U	5.0	ug/L	1	5	5.0	1.1	2.5
Hexachlorobenzene	U	5.0	ug/L	1	5	5.0	0.91	2.5
Pentachlorophenol	U	20	ug/L	1	20	20.	1.8	12.
Phenanthrene	U	5.0	ug/L	1	5	5.0	2.8	2.5
Anthracene	U	5.0	ug/L	1	5	5.0	0.75	2.5
Di-N-Butylphthalate	U	5.0	ug/L	1	5	5.0	0.76	2.5
Fluoranthene	U	5.0	ug/L	1	5	5.0	0.70	2.5
Benzidine	U	25	ug/L	1	25	25.	12.	12.
Pyrene	U	5.0	ug/L	1	5	5.0	0.62	2.5
Butylbenzylphthalate	U	5.0	ug/L	1	5	5.0	0.54	2.5
3,3'-Dichlorobenzidine	U	5.0	ug/L	1	5	5.0	1.8	2.5
Benzo(a)anthracene	U	5.0	ug/L	1	5	5.0	0.67	2.5
Chrysene	U	5.0	ug/L	1	5	5.0	0.90	2.5
Bis(2-Ethylhexyl)Phthalate	U	5.0	ug/L	1	5	5.0	0.56	2.5
Di-N-Octylphthalate	U	5.0	ug/L	1	5	5.0	0.67	2.5
Benzo(b)fluoranthene	U	5.0	ug/L	1	5	5.0	2.2	2.5
Benzo(k)fluoranthene	U	5.0	ug/L	1	5	5.0	2.5	2.5
Benzo(a)pyrene	U	5.0	ug/L	1	5	5.0	2.1	2.5
Indeno(1,2,3-cd)pyrene	U	5.0	ug/L	1	5	5.0	1.2	2.5
Dibenzo(a,h)anthracene	U	5.0	ug/L	1	5	5.0	1.2	2.5
Benzo(g,h,i)perylene	U	5.0	ug/L	1	5	5.0	1.3	2.5
2-Fluorophenol		54.0	%					
Phenol-d6		33.0	%					
Nitrobenzene-d5		82.0	%					
2-Fluorobiphenyl		82.4	%					
2,4,6-Tribromophenol		85.6	%					
Terphenyl-d14		90.4	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Fort Devens/DCL Leachate 68016363 **Matrix:** AQ
Lab Code: KAS **SDG:** TK0161

Client Sample ID	Lab Sample ID	Col. ID	2FBP	#	2FP	#	NBZ	#	PHL	#	TBP	#	TPH	#
DCL LEACHATE-FALL17	TK0161-1		60.7		31.2		59.8		11.1		72.6		72.6	
Method Blank Sample	WG216991-1		82.4		54.0		82.0		33.0		85.6		90.4	
Laboratory Control S	WG216991-2		70.2		40.8		68.0		25.3		81.3		82.3	

		QC Limits
2FBP	2-FLUOROBIPHENYL	43-90
TPH	TERPHENYL-D14	36-156
2FP	2-FLUOROPHENOL	10-80
TBP	2,4,6-TRIBROMOPHENOL	37-112
NBZ	NITROBENZENE-D5	41-91
PHL	PHENOL-D6	10-90

= 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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LCS Recovery Report

Client:
Lab ID: WG216991-2
Client ID: LCS
Project:
SDG: TK0161
LCS File ID: G1430.D

Sample Date:
Received Date:
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: EPA 625
Lab Prep Batch: WG216991

Analysis Date: 07-NOV-17
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Recovery (%)	Conc Added	Conc Recovered	Conc Units	Limits
N-Nitrosodimethylamine	33.4	50.0	16.7	ug/L	0-100
Phenol	26.5	100.	26.5	ug/L	5-112
Bis(2-Chloroethyl)Ether	70.8	50.0	35.4	ug/L	12-158
2-Chlorophenol	66.8	100.	66.8	ug/L	23-134
1,3-Dichlorobenzene	69.0	50.0	34.5	ug/L	0-172
1,4-Dichlorobenzene	68.8	50.0	34.4	ug/L	20-124
1,2-Dichlorobenzene	70.6	50.0	35.3	ug/L	32-129
Bis(2-Chloroisopropyl) Ether	50.8	50.0	25.4	ug/L	36-166
N-Nitroso-Di-N-Propylamine	69.4	50.0	34.7	ug/L	0-230
Hexachloroethane	70.0	50.0	35.0	ug/L	40-113
Nitrobenzene	74.0	50.0	37.0	ug/L	35-180
Isophorone	73.2	50.0	36.6	ug/L	21-196
2-Nitrophenol	80.5	100.	80.5	ug/L	29-182
2,4-Dimethylphenol	68.1	100.	68.1	ug/L	32-119
Bis(2-Chloroethoxy)Methane	63.0	50.0	31.5	ug/L	33-184
2,4-Dichlorophenol	76.3	100.	76.3	ug/L	39-135
1,2,4-Trichlorobenzene	71.8	50.0	35.9	ug/L	44-142
Naphthalene	70.6	50.0	35.3	ug/L	21-133
Hexachlorobutadiene	73.8	50.0	36.9	ug/L	24-116
4-Chloro-3-Methylphenol	78.3	100.	78.3	ug/L	22-147
Hexachlorocyclopentadiene	60.0	50.0	30.0	ug/L	0-100
2,4,6-Trichlorophenol	83.5	100.	83.5	ug/L	37-144
2-Chloronaphthalene	61.8	50.0	30.9	ug/L	60-118
Dimethyl Phthalate	82.0	50.0	41.0	ug/L	0-112
2,6-Dinitrotoluene	83.8	50.0	41.9	ug/L	50-158
Acenaphthylene	81.0	50.0	40.5	ug/L	33-145
Acenaphthene	80.6	50.0	40.3	ug/L	47-145
2,4-Dinitrophenol	88.2	100.	88.2	ug/L	0-191
4-Nitrophenol	39.9	100.	39.9	ug/L	0-132
2,4-Dinitrotoluene	84.2	50.0	42.1	ug/L	39-139
Diethylphthalate	85.6	50.0	42.8	ug/L	0-114
4-Chlorophenyl-Phenylether	79.8	50.0	39.9	ug/L	25-158
Fluorene	82.8	50.0	41.4	ug/L	59-121
4,6-Dinitro-2-Methylphenol	119.	100.	119.	ug/L	0-181
N-Nitrosodiphenylamine	76.6	50.0	38.3	ug/L	0-100

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LCS Recovery Report

Client:
Lab ID: WG216991-2
Client ID: LCS
Project:
SDG: TK0161
LCS File ID: G1430.D

Sample Date:
Received Date:
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: EPA 625
Lab Prep Batch: WG216991

Analysis Date: 07-NOV-17
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Recovery (%)	Conc Added	Conc Recovered	Conc Units	Limits
4-Bromophenyl-Phenylether	90.4	50.0	45.2	ug/L	53-127
Hexachlorobenzene	90.0	50.0	45.0	ug/L	0-152
Pentachlorophenol	106.	100.	106.	ug/L	14-176
Phenanthrene	89.8	50.0	44.9	ug/L	54-120
Anthracene	92.6	50.0	46.3	ug/L	27-133
Di-N-Butylphthalate	90.0	50.0	45.0	ug/L	1-118
Fluoranthene	93.8	50.0	46.9	ug/L	26-137
Benzidine	47.7	100.	47.7	ug/L	0-100
Pyrene	87.0	50.0	43.5	ug/L	52-115
Butylbenzylphthalate	85.4	50.0	42.7	ug/L	0-152
3,3'-Dichlorobenzidine	96.6	100.	96.6	ug/L	0-262
Benzo(a)anthracene	90.6	50.0	45.3	ug/L	33-143
Chrysene	92.0	50.0	46.0	ug/L	17-168
Bis(2-Ethylhexyl)Phthalate	89.6	50.0	44.8	ug/L	8-158
Di-N-Octylphthalate	84.4	50.0	42.2	ug/L	4-146
Benzo(b)fluoranthene	85.0	50.0	42.5	ug/L	24-159
Benzo(k)fluoranthene	85.8	50.0	42.9	ug/L	11-162
Benzo(a)pyrene	88.0	50.0	44.0	ug/L	17-163
Indeno(1,2,3-cd)pyrene	87.4	50.0	43.7	ug/L	0-171
Dibenzo(a,h)anthracene	87.2	50.0	43.6	ug/L	0-227
Benzo(g,h,i)perylene	86.6	50.0	43.3	ug/L	0-219
2-Fluorophenol	40.8				10-80
Phenol-d6	25.3				10-90
Nitrobenzene-d5	68.0				41-91
2-Fluorobiphenyl	70.2				43-90
2,4,6-Tribromophenol	81.3				37-112
Terphenyl-d14	82.3				36-156

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Tel:(207) 874-2400 Fax:(207) 775-4029

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Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 68016363
Lab File ID : G1429.D
Instrument ID : GCMS-G
Matrix : AQ

SDG : TK0161
Lab Sample ID : WG216991-1
Date Extracted : 03-NOV-17
Date Analyzed : 07-NOV-17
Time Analyzed : 14:25

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	WG216991-2	G1430.D	11/07/17	14:58
DCL LEACHATE-FALL17	TK0161-1	G1431.D	11/07/17	15:31

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Tel:(207) 874-2400 Fax:(207) 775-4029
http://katahdinlab.com
sales@katahdinlab.com

Form 5
Semivolatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 68016363
Lab File ID : GD412.D
Instrument ID : GCMS-G

SDG : TK0161
Date Analyzed : 07-NOV-17
Time Analyzed : 11:46

m/e	Ion Abundance Criteria	% Relative Abundance		
51	30.0 - 60.0% of mass 198	46.6		
68	Less than 2.0% of mass 69	0.7	1.58	1
69	Less than 100.0% of mass 198	42.0		
70	Less than 2.0% of mass 69	0.2	0.40	1
127	40.0 - 60.0% of mass 198	57.7		
197	Less than 1.0% of mass 198	0.5		
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	21.0		
365	1.0 - 100.0% of mass 198	2.5		
441	0.0 - 100.0% of mass 443	9.1	72.09	2
442	40.0 - 100.0% of mass 198	64.5		
443	17.0 - 23.0% of mass 442	12.6	19.48	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	WG217219-3	G1425.D	11/07/17	12:03
Initial Calibration	WG217219-2	G1426.D	11/07/17	12:36
Initial Calibration	WG217219-4	G1427.D	11/07/17	13:09
Independent Source	WG217219-5	G1428.D	11/07/17	13:42
Method Blank Sample	WG216991-1	G1429.D	11/07/17	14:25
Laboratory Control S	WG216991-2	G1430.D	11/07/17	14:58
DCL LEACHATE-FALL17	TK0161-1	G1431.D	11/07/17	15:31

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TK0161
Project : Fort Devens/DCL Leachate 68016363 **Instrument ID:** GCMS-G
Lab File IDs : G1426.D G1425.D G1427.D **Column ID:**
Calibration Date(s): 07-NOV-17 12:03
07-NOV-17 13:09

	Level 1	Level 3	Level 5				Crv					Max	
	5.0000	60.0000	125.0000				New	b	m1	m2	%RSD	%RSD	
N-Nitrosodimethylamine	0.51669	0.53638	0.47331				AVG		0.50879		6.34155	35.00000	O
Phenol	1.49526	1.60953	1.44449				AVG		1.51643		5.57442	35.00000	O
Bis(2-Chloroethyl)ether	1.11088	1.21302	1.04187				AVG		1.12192		7.67541	35.00000	O
2-Chlorophenol	1.26330	1.31540	1.27618				AVG		1.28496		2.11186	35.00000	O
1,3-Dichlorobenzene	1.41645	1.36679	1.33974				AVG		1.37433		2.83089	35.00000	O
1,4-Dichlorobenzene	1.39105	1.39959	1.36089				AVG		1.38385		1.46904	35.00000	O
1,2-Dichlorobenzene	1.33005	1.37253	1.24746				AVG		1.31668		4.83004	35.00000	O
Bis(2-chloroisopropyl) Ethe	1.31059	1.35486	1.19594				AVG		1.28713		6.37199	35.00000	O
N-Nitroso-di-n-propylamine	0.68309	0.82817	0.69981				AVG		0.73702		10.7696(	35.00000	O
Hexachloroethane	0.52071	0.56588	0.51255				AVG		0.53305		5.38838	35.00000	O
Nitrobenzene	0.27767	0.27092	0.26069				AVG		0.26976		3.16865	35.00000	O
Isophorone	0.53798	0.52478	0.47109				AVG		0.51128		6.92882	35.00000	O
2-Nitrophenol	0.15458	0.16920	0.16236				AVG		0.16205		4.51385	35.00000	O
2,4-Dimethylphenol	0.27908	0.29010	0.27961				AVG		0.28293		2.19670	35.00000	O
Bis(2-Chloroethoxy)methane	0.36549	0.42083	0.41865				AVG		0.40166		7.80343	35.00000	O
2,4-Dichlorophenol	0.23316	0.24523	0.24695				AVG		0.24178		3.10794	35.00000	O
1,2,4-Trichlorobenzene	0.26780	0.26394	0.25627				AVG		0.26267		2.23480	35.00000	O
Naphthalene	0.95414	0.90098	0.82238				AVG		0.89250		7.42718	35.00000	O
Hexachlorobutadiene	0.13623	0.13262	0.13238				AVG		0.13375		1.61317	35.00000	O
4-Chloro-3-Methylphenol	0.22829	0.25448	0.23131				AVG		0.23803		6.02122	35.00000	O
Hexachlorocyclopentadiene	0.25245	0.30814	0.28041				AVG		0.28033		9.93309	35.00000	O
2,4,6-Trichlorophenol	0.31052	0.33838	0.32458				AVG		0.32449		4.29178	35.00000	O
2-Chloronaphthalene	1.17076	1.41703	1.38985				AVG		1.32588		10.1837[	35.00000	O
Dimethyl Phthalate	1.24462	1.30733	1.18234				AVG		1.24476		5.02086	35.00000	O
2,6-Dinitrotoluene	0.24868	0.30225	0.30345				AVG		0.28479		10.9829[	35.00000	O
Acenaphthylene	1.71278	1.71335	1.53004				AVG		1.65206		6.39633	35.00000	O
Acenaphthene	1.12324	1.13694	1.04937				AVG		1.10318		4.27017	35.00000	O
2,4-Dinitrophenol	0.08671	0.14732	0.15460				AVG		0.12954		28.7697(	35.00000	O
4-Nitrophenol	0.10415	0.15249	0.12853				AVG		0.12839		18.8286(	35.00000	O
2,4-Dinitrotoluene	0.34048	0.39416	0.37531				AVG		0.36999		7.36017	35.00000	O
Diethylphthalate	1.28600	1.30003	1.18826				AVG		1.25810		4.83944	35.00000	O
Fluorene	1.22326	1.22715	1.06185				AVG		1.17075		8.05758	35.00000	O
4-Chlorophenyl-phenylether	0.55676	0.61112	0.54047				AVG		0.56945		6.49651	35.00000	O
4,6-Dinitro-2-Methylphenol	0.06572	0.10443	0.11007				AVG		0.09341		25.8450[	35.00000	O
N-Nitrosodiphenylamine	0.58624	0.60468	0.60226				AVG		0.59773		1.67669	35.00000	O
4-Bromophenyl-phenylether	0.17201	0.18572	0.18395				AVG		0.18056		4.13081	35.00000	O
Hexachlorobenzene	0.17593	0.18994	0.18387				AVG		0.18325		3.83512	35.00000	O

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TK0161
Project : Fort Devens/DCL Leachate 68016363 **Instrument ID:** GCMS-G
Lab File IDs : G1426.D G1425.D G1427.D **Column ID:**
Calibration Date(s): 07-NOV-17 12:03
07-NOV-17 13:09

Pentachlorophenol	0.08504	0.11888	0.11132				AVG		0.10508		16.9036	35.00000	O
Phenanthrene	0.99054	0.95289	0.89268				AVG		0.94537		5.22113	35.00000	O
Anthracene	0.98407	0.99891	0.90840				AVG		0.96379		5.03702	35.00000	O
Di-n-butylphthalate	1.20465	1.20188	1.12031				AVG		1.17561		4.07578	35.00000	O
Fluoranthene	0.89109	0.87412	0.78259				AVG		0.84926		6.87211	35.00000	O
Benzidine	0.32711	0.30875	0.28128				AVG		0.30571		7.54499	35.00000	O
Pyrene	1.45620	1.40012	1.35280				AVG		1.40304		3.68938	35.00000	O
Butylbenzylphthalate	0.78609	0.75153	0.73928				AVG		0.75897		3.19810	35.00000	O
Benzo(a)anthracene	1.07622	1.10567	1.05684				AVG		1.07958		2.27752	35.00000	O
3,3'-Dichlorobenzidine	0.27234	0.32954	0.29763				AVG		0.29984		9.56049	35.00000	O
Chrysene	1.03454	0.99255	0.94752				AVG		0.99154		4.38949	35.00000	O
bis(2-Ethylhexyl)phthalate	1.12572	1.09276	1.06099				AVG		1.09316		2.96064	35.00000	O
Di-n-octylphthalate	2.17630	2.16384	2.32108				AVG		2.22041		3.93661	35.00000	O
Benzo(b)fluoranthene	1.05089	1.19819	1.18207				AVG		1.14372		7.06417	35.00000	O
Benzo(k)fluoranthene	1.11277	1.19637	1.21905				AVG		1.17606		4.75946	35.00000	O
Benzo(a)pyrene	0.79951	1.00271	0.97064				AVG		0.92429		11.8188	35.00000	O
Indeno(1,2,3-cd)pyrene	0.47298	0.62871	0.63959				AVG		0.58042		16.0593	35.00000	O
Dibenzo(a,h)anthracene	0.42630	0.64976	0.66028				AVG		0.57878		22.8333	35.00000	O
Benzo(g,h,i)perylene	0.57823	0.67109	0.67771				AVG		0.64235		8.65922	35.00000	O
2-Fluorophenol	1.29681	1.27059	1.18019				AVG		1.24920		4.89764	35.00000	
Phenol-D6	1.40873	1.43573	1.33413				AVG		1.39286		3.77852	35.00000	
Nitrobenzene-D5	0.31094	0.29758	0.28561				AVG		0.29805		4.25197	35.00000	
2-Fluorobiphenyl	1.42072	1.39848	1.32019				AVG		1.37980		3.82717	35.00000	
2,4,6-Tribromophenol	0.13676	0.17085	0.17286				AVG		0.16016		12.6671	35.00000	
Terphenyl-D14	1.01995	1.00829	0.97901				AVG		1.00242		2.10423	35.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 6801
Lab ID : WG217219-3
Lab File ID : G1425.D

SDG: TK0161
Analytical Date: 11/07/17 12:03
Instrument ID: GCMS-G

		1,4-DICHLOROBENZENE-D4				NAPHTHALENE-D8				ACENAPHTHENE-D10			
		Area	#	RT	#	Area	#	RT	#	Area	#	RT	#
	Std .	159246		7.49		671224		9.14		338431		11.49	
	Upper Limit	318492		7.99		1342448		9.64		676862		11.99	
	Lower Limit	79623		6.99		335612		8.64		169215.5		10.99	
Client Sample ID	Lab Sample ID												
Method Blank Sample	WG216991-1	146166		7.49		561742		9.13		280036		11.48	
Laboratory Control S	WG216991-2	150398		7.49		581015		9.13		278583		11.49	
DCL LEACHATE-FAI	TK0161-1	136113		7.48		518521		9.13		257139		11.49	

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.

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens/DCL Leachate 6801
Lab ID : WG217219-3
Lab File ID : G1425.D

SDG: TK0161
Analytical Date: 11/07/17 12:03
Instrument ID: GCMS-G

		PHENANTHRENE-D10			CHRYSENE-D12			PERYLENE-D12		
		Area	#	RT	#	Area	#	RT	#	Area	#	RT	#
	Std .	586513		13.50		375438		17.37		290105		20.40	
	Upper Limit	1173026		14.00		750876		17.87		580210		20.90	
	Lower Limit	293256.5		13.00		187719		16.87		145052.5		19.90	
Client Sample ID	Lab Sample ID												
Method Blank Sample	WG216991-1	464576		13.49		314550		17.35		233425		20.40	
Laboratory Control S	WG216991-2	425988		13.49		281909		17.36		224615		20.39	
DCL LEACHATE-FAI	TK0161-1	437383		13.49		236874		17.35		181957		20.39	

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.

COC / Workorder # **17-636**

Devens - Devens Consolidation Landfill (DCL) Leachate

Chain of Custody Record

Page: 1 of: 1

Company	KOMAN GS, LLC
Address:	293 Boston Post Road, Suite 100 Marlborough, MA 01752
Phone: 508-366-7442	Fax: 508-366-7445
Sampled by [Print Name(s)]/Affiliation	Mark Adam
Sampler(s) Signature(s)	

Preservatives (see codes): H I I I N O S I I

Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	VOC/624 3-40ml VOA vials (HCl)	SVOC/635 2-1 liter amber	Pesticides/PCBs SW8081 2-1-liter amber glass	TPH/SW8015B 2-1 liter amber	Total Metals*-SW6010/ 6020/ 7470 1-250 ml poly (HNO3)	Cyanide(total) SW9012 1-250ml poly (NaOH)	Phenols/SW9065 1-250ml amber glass (H2SO4)	TSS/160.2 1-1 liter poly	pH/SW9040C 1-125ml poly	Remarks	Lab. No.
DCL Leachate-FAL17	10/27	1320	G	W	14	X	X	X	X	X	X	X	X	X		
Trip Blank	10/27	800	O	O	2	X										

680-144883 Chain of Custody

Analyses Requested

Laboratory:	Test America - Savannah
Address:	510 LaRoche Ave Savannah, GA 31404
Contact:	Jerry Lanier
Regulatory Facility No.	
Project Name	Devens Fall 2017 LTM
Sampling QAP No.:	
Approval Date:	
TAT	
Other:	

Shipping Details: courier pick up ← Total Number of Containers

Date Out:	Via:	Item No.	Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time
Returned:	Via:			10/27/17			10-27-17	1440
							10-28-17	1040

Additional Comments:
* = Total Metals include: Al, Cd, Cr, Cu, Pb, Ni, Ag, Zn (6010); As, (6020) & Hg (7470)

email logins and results to:

lekes@komangs.com

Lab Comments

Seal # _____ Preserve Where Applicable ☐ On ICE ☐

Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

Commercial "A"
Commercial "B"
State Forms

MATRIX CODES: A = Air GW = Groundwat SE = Sediment SP = Soil SW = Surface Water W = Water (Blanks) O = Other

PRESERVATIVE CODES: H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other

COLLECTION METHOD CODES: C = Composite G=Grab P= Pumping O = Other

0.7°C (cf) 0.9°C

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lanier, Jerry A	Carrier Tracking No(s):	COC No: 280-417454.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jerry.lanier@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 680-144883-1
Address: 5102 LaRoche Avenue,	Due Date Requested: 11/9/2017			
City: Savannah	TAT Requested (days):			
State, Zip: GA, 31404				
Phone: 912-354-7858(Tel) 912-352-0165(Fax)	PO #:			
Email:	WO #:			
Project Name: Fort Devens Army Installation	Project #: 68016363			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9012B_DOD5/9012B_Prep Total Cyanide	9040C/ pH	8015C_DRO_DOD5/3520C DRO - Diesel Range Organics	8081B_8082A_D5/3520C Routine Pesticides & PCBs	9065/Distill_Phenol Phenolics, Total Recoverable	7470A_DOD5/7470A_Prep	6020A_DOD5/3010A (MOD) Metals	Total Number of containers	Special Instructions/Note:
			Preservation Code:												
DCL Leachate-FALL17 (680-144883-1)	10/27/17	13:00 Eastern		Water			X	X	X	X	X	X	X	1	

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

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

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 10/30/17 16:20	Company	Received by: [signature]	Date/Time: 10/31/17 900	Company: TA Alt
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: /	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 3.4°C (CF) 3.6°C		

Ver: 09/20/2016

TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Hayes, Shawn M	Carrier Tracking No(s):	COC No: 310-11114.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: shawn.hayes@testamericainc.com	State of Origin: South Dakota	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 310-117568-1
Address: 5102 LaRoche Avenue,	Due Date Requested: 11/8/2017			
City: Savannah	TAT Requested (days):			
State, Zip: GA, 31404				
Phone: 912-354-7858(Tel) 912-352-0165(Fax)	PO #:			
Email:	WO #:			
Project Name: Sioux Falls, SD Landfill	Project #: 31001962			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8151A/8151A_AP (MOD) TL Herbicides	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
Compost Leachate (310-117568-1)	10/26/17	12:20 Central		Water			X	1	

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

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

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	10/30/17 1455		MTJ	10/31/17 900	TAL SAV
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.0°C (IR) 3.2°C

Ver: 09/20/2016

COC / Workorder # 17-636

Devens - Devens Consolidation Landfill (DCL) Leachate

Chain of Custody Record

Page: 1 of: 1

Company: KOMAN GS, LLC

Address: 293 Boston Post Road, Suite 100
Marlborough, MA 01752

Phone: 508-366-7442 Fax: 508-366-7445

Sampled by [Print Name(s)]/Affilliation: Kam L Anderson

Sampler(s) Signature(s): [signature]

Laboratory: Test America - Savannah
Address: 510 LaRoche Ave
Savannah, GA 31404
Contact: Jerry Lanier
Regulatory Facility No.
Project Name Devens Fall 2017 LTM
Sampling QAP No.:
Approval Date:
TAT
Other:

Preservatives (see codes): H I I I N O S I I

Analyses Requested

Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	VOC/624 3-40ml VOA vials (HCl)	SVOC/635 2-1 liter amber	Pesticides/PCBs SW8081 2-1-liter amber glass	TPH/SW8015B 2-1 liter amber	Total Metals*-SW6010/6020/ 7470 1-250 ml poly (HNO3)	Cyanide(total) SW9012 1-250ml poly (NaOH)	Phenols/SW9065 1-250ml amber glass (H2SO4)	TSS/160.2 1-1 liter poly	pH/SW9040C 1-125ml poly	Remarks	Lab. No.
DCL Leachate-FAL17	10/27	1300	G	W	14	X	X	X	X	X	X	X	X	X		
Trip Blank	10/27	800	O	O	2	X										

680-144883 Chain of Custody

Shipping Details: courier pick up ← Total Number of Containers

Date Out:	Via:	Item No.	Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time
Returned:	Via:		[signature]	10/27/17		[signature]	10-27-17	1440
						[signature]	10-28-17	0855

Additional Comments:
* = Total Metals include: Al, Cd, Cr, Cu, Pb, Ni, Ag, Zn (6010); As, (6020) & Hg (7470)

email logins and results to:
lekes@komangs.com

Lab Comments

Seal # _____ Preserve Where Applicable ☐ On ICE ☐

Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

Commercial "A"
Commercial "B"
State Forms

MATRIX CODES: A = Air GW = Groundwat SE = Sediment SP = Soil SW = Surface Water W = Water (Blanks) O = Other
PRESERVATIVE CODES: H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other
COLLECTION METHOD CODES: C = Composite G=Grab P= Pumping O = Other

2.0+0.1 IR# ~~X~~ S transferred by JS 10-28-17

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-144883-1

Login Number: 144883

List Source: TestAmerica Savannah

List Number: 1

Creator: Anderson, Jordan K

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

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-144883-1

Login Number: 144883
List Number: 2
Creator: True, Joshua A

List Source: TestAmerica Denver
List Creation: 10/30/17 11:10 AM

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / Landfill (DCL) Leachate

TestAmerica Job ID: 680-144883-1

Laboratory: TestAmerica Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-18
Alaska	State Program	10		06-30-18
Alaska (UST)	State Program	10	UST-104	11-05-17 *
Arizona	State Program	9	AZ808	12-14-17 *
Arkansas DEQ	State Program	6	88-0692	02-01-18
California	State Program	9	2939	06-30-18
Colorado	State Program	8	N/A	12-31-17
Connecticut	State Program	1	PH-0161	03-31-19
Florida	NELAP	4	E87052	06-30-18
GA Dept. of Agriculture	State Program	4	N/A	06-12-18
Georgia	State Program	4	803	06-30-18
Guam	State Program	9	15-005r	04-16-18
Hawaii	State Program	9	N/A	06-30-18
Illinois	NELAP	5	200022	11-30-17 *
Indiana	State Program	5	N/A	06-30-18
Iowa	State Program	7	353	06-30-19
Kentucky (DW)	State Program	4	90084	12-31-17
Kentucky (UST)	State Program	4	18	06-30-18
Kentucky (WW)	State Program	4	90084	12-31-18 *
L-A-B	DoD ELAP		L2463	09-22-19
L-A-B	ISO/IEC 17025		L2463.01	09-22-19
Louisiana	NELAP	6	30690	06-30-18
Louisiana (DW)	NELAP	6	LA160019	12-31-18
Maine	State Program	1	GA00006	09-24-18
Maryland	State Program	3	250	12-31-17
Massachusetts	State Program	1	M-GA006	06-30-18
Michigan	State Program	5	9925	06-30-18
Mississippi	State Program	4	N/A	06-30-18
Nebraska	State Program	7	TestAmerica-Savannah	06-30-18
New Jersey	NELAP	2	GA769	06-30-18
New Mexico	State Program	6	N/A	06-30-18
New York	NELAP	2	10842	03-31-18
North Carolina (DW)	State Program	4	13701	07-31-18
North Carolina (WW/SW)	State Program	4	269	12-31-17
Oklahoma	State Program	6	9984	08-31-18
Pennsylvania	NELAP	3	68-00474	06-30-18
Puerto Rico	State Program	2	GA00006	12-31-17
South Carolina	State Program	4	98001	06-30-18
Tennessee	State Program	4	TN02961	06-30-18
Texas	NELAP	6	T104704185-16-9	11-30-18
Texas	State Program	6	T104704185	06-30-18
US Fish & Wildlife	Federal		LE058448-0	07-31-18
USDA	Federal		SAV 3-04	06-14-20 *
Virginia	NELAP	3	460161	06-14-18
Washington	State Program	10	C805	06-10-18
West Virginia (DW)	State Program	3	9950C	12-31-17
West Virginia DEP	State Program	3	094	06-30-18
Wisconsin	State Program	5	999819810	08-31-18
Wyoming	State Program	8	8TMS-L	06-30-16 *

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / Landfill (DCL) Leachate

TestAmerica Job ID: 680-144883-1

Laboratory: TestAmerica Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19 *

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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

TestAmerica Job ID: 680-144989-1
Client Project/Site: Devens / AOC 69W

For:
KOMAN Government Solutions, LLC
293 Boston Post Road
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Jerry Lanier

Authorized for release by:
11/15/2017 6:08:30 PM

Jerry Lanier, Project Manager I
(912)354-7858 e.3410
jerry.lanier@testamericainc.com

LINKS

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

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

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

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Job ID: 680-144989-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: Devens / AOC 69W

Report Number: 680-144989-1

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

RECEIPT

The samples were received on 11/02/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was2.1º C and 4.5º C.

METALS (ICPMS) - DISSOLVED

Samples 69W-94-13_FALL17 (680-144989-1), 69W-94-14_FALL17 (680-144989-2), ZWM-95-15X_FALL17 (680-144989-3), ZWM-95-18X_FALL17 (680-144989-4), ZWM-99-22X_FALL17 (680-144989-5), 69W-DUP1_FALL17 (680-144989-6), ZWM-99-23X_FALL17 (680-144989-7), ZWM-99-24X_FALL17 (680-144989-8), ZWM-01-25X_FALL17 (680-144989-9), 69WP-08-01_FALL17 (680-144989-10) and 69WP-13-01_FALL17 (680-144989-11) were analyzed for Metals (ICPMS) - Dissolved in accordance with EPA SW-846 Method 6020A. The samples were prepared on 11/02/2017 and analyzed on 11/03/2017.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / AOC 69W

TestAmerica Job ID: 680-144989-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-144989-1	69W-94-13_FALL17	Water	10/31/17 08:15	11/02/17 09:05
680-144989-2	69W-94-14_FALL17	Water	10/30/17 15:55	11/02/17 09:05
680-144989-3	ZWM-95-15X_FALL17	Water	10/31/17 09:35	11/02/17 09:05
680-144989-4	ZWM-95-18X_FALL17	Water	11/01/17 08:40	11/02/17 09:05
680-144989-5	ZWM-99-22X_FALL17	Water	10/30/17 12:30	11/02/17 09:05
680-144989-6	69W-DUP1_FALL17	Water	10/30/17 12:35	11/02/17 09:05
680-144989-7	ZWM-99-23X_FALL17	Water	10/30/17 13:40	11/02/17 09:05
680-144989-8	ZWM-99-24X_FALL17	Water	10/31/17 10:45	11/02/17 09:05
680-144989-9	ZWM-01-25X_FALL17	Water	10/30/17 14:40	11/02/17 09:05
680-144989-10	69WP-08-01_FALL17	Water	11/01/17 10:30	11/02/17 09:05
680-144989-11	69WP-13-01_FALL17	Water	11/01/17 11:50	11/02/17 09:05

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / AOC 69W

TestAmerica Job ID: 680-144989-1

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL SAV
MA EPH	MADEP EPH (Extractable Petroleum Hydroca	NONE	

Protocol References:

NONE = NONE

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

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

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

Definitions/Glossary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / AOC 69W

TestAmerica Job ID: 680-144989-1

Qualifiers

Metals

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Glossary

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

Client Sample ID: 69W-94-13_FALL17

Lab Sample ID: 680-144989-1
Date Collected: 10/31/17 08:15
Matrix: Water
Date Received: 11/02/17 09:05

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**24**		3.0	3.0	1.5	ug/L		11/03/17 20:34	1
Iron	**1000**		100	75	25	ug/L		11/03/17 20:34	1
Manganese	**320**		5.0	5.0	1.8	ug/L		11/03/17 20:34	1

Client Sample ID: 69W-94-14_FALL17

Lab Sample ID: 680-144989-2
Date Collected: 10/30/17 15:55
Matrix: Water
Date Received: 11/02/17 09:05

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		11/03/17 20:29	1
Iron	75	U	100	75	25	ug/L		11/03/17 20:29	1
Manganese	**270**		5.0	5.0	1.8	ug/L		11/03/17 20:29	1

Client Sample ID: ZWM-95-15X_FALL17

Lab Sample ID: 680-144989-3
Date Collected: 10/31/17 09:35
Matrix: Water
Date Received: 11/02/17 09:05

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**10**		3.0	3.0	1.5	ug/L		11/03/17 19:59	1
Iron	**550**		100	75	25	ug/L		11/03/17 19:59	1
Manganese	**220**		5.0	5.0	1.8	ug/L		11/03/17 19:59	1

Client Sample ID: ZWM-95-18X_FALL17

Lab Sample ID: 680-144989-4
Date Collected: 11/01/17 08:40
Matrix: Water
Date Received: 11/02/17 09:05

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		11/03/17 19:33	1
Iron	75	U	100	75	25	ug/L		11/03/17 19:33	1
Manganese	**29**		5.0	5.0	1.8	ug/L		11/03/17 19:33	1

Client Sample ID: ZWM-99-22X_FALL17

Lab Sample ID: 680-144989-5
Date Collected: 10/30/17 12:30
Matrix: Water
Date Received: 11/02/17 09:05

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**190**		3.0	3.0	1.5	ug/L		11/03/17 19:55	1
Iron	**24000**		100	75	25	ug/L		11/03/17 19:55	1
Manganese	**1200**		5.0	5.0	1.8	ug/L		11/03/17 19:55	1

Client Sample ID: 69W-DUP1_FALL17

Lab Sample ID: 680-144989-6
Date Collected: 10/30/17 12:35
Matrix: Water
Date Received: 11/02/17 09:05

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	170		3.0	3.0	1.5	ug/L		11/03/17 20:17	1
Iron	23000		100	75	25	ug/L		11/03/17 20:17	1
Manganese	1100		5.0	5.0	1.8	ug/L		11/03/17 20:17	1

Client Sample ID: ZWM-99-23X_FALL17

Lab Sample ID: 680-144989-7
Date Collected: 10/30/17 13:40
Matrix: Water
Date Received: 11/02/17 09:05

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	17		3.0	3.0	1.5	ug/L		11/03/17 20:04	1
Iron	2600		100	75	25	ug/L		11/03/17 20:04	1
Manganese	1800		5.0	5.0	1.8	ug/L		11/03/17 20:04	1

Client Sample ID: ZWM-99-24X_FALL17

Lab Sample ID: 680-144989-8
Date Collected: 10/31/17 10:45
Matrix: Water
Date Received: 11/02/17 09:05

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		11/03/17 20:25	1
Iron	370		100	75	25	ug/L		11/03/17 20:25	1
Manganese	100		5.0	5.0	1.8	ug/L		11/03/17 20:25	1

Client Sample ID: ZWM-01-25X_FALL17

Lab Sample ID: 680-144989-9
Date Collected: 10/30/17 14:40
Matrix: Water
Date Received: 11/02/17 09:05

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	4.5		3.0	3.0	1.5	ug/L		11/03/17 20:21	1
Iron	510		100	75	25	ug/L		11/03/17 20:21	1
Manganese	590		5.0	5.0	1.8	ug/L		11/03/17 20:21	1

Client Sample ID: 69WP-08-01_FALL17

Lab Sample ID: 680-144989-10
Date Collected: 11/01/17 10:30
Matrix: Water
Date Received: 11/02/17 09:05

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		11/03/17 20:43	1
Iron	4900		100	75	25	ug/L		11/03/17 20:43	1
Manganese	33		5.0	5.0	1.8	ug/L		11/03/17 20:43	1

Client Sample ID: 69WP-13-01_FALL17

Lab Sample ID: 680-144989-11
Date Collected: 11/01/17 11:50
Matrix: Water
Date Received: 11/02/17 09:05

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	62		5.0	5.0	1.8	ug/L		11/03/17 20:38	1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-501123/1-A
Matrix: Water
Analysis Batch: 501425

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 501123

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		11/03/17 19:25	1
Iron	75	U	100	75	25	ug/L		11/03/17 19:25	1
Manganese	5.0	U	5.0	5.0	1.8	ug/L		11/03/17 19:25	1

Lab Sample ID: LCS 680-501123/2-A
Matrix: Water
Analysis Batch: 501425

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 501123

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	109		ug/L		109	84 - 116
Iron	5000	5620		ug/L		112	87 - 118
Manganese	500	548		ug/L		110	87 - 115

Lab Sample ID: 680-144989-4 MS
Matrix: Water
Analysis Batch: 501425

Client Sample ID: ZWM-95-18X_FALL17
Prep Type: Dissolved
Prep Batch: 501123

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	3.0	U	100	110		ug/L		110	84 - 116
Iron	75	U	5000	5500		ug/L		110	87 - 118
Manganese	29		500	566		ug/L		108	87 - 115

Lab Sample ID: 680-144989-4 MSD
Matrix: Water
Analysis Batch: 501425

Client Sample ID: ZWM-95-18X_FALL17
Prep Type: Dissolved
Prep Batch: 501123

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	3.0	U	100	108		ug/L		108	84 - 116	2	20
Iron	75	U	5000	5420		ug/L		108	87 - 118	1	20
Manganese	29		500	564		ug/L		107	87 - 115	1	20

Metals

Prep Batch: 501123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144989-1	69W-94-13_FALL17	Dissolved	Water	3005A	
680-144989-2	69W-94-14_FALL17	Dissolved	Water	3005A	
680-144989-3	ZWM-95-15X_FALL17	Dissolved	Water	3005A	
680-144989-4	ZWM-95-18X_FALL17	Dissolved	Water	3005A	
680-144989-5	ZWM-99-22X_FALL17	Dissolved	Water	3005A	
680-144989-6	69W-DUP1_FALL17	Dissolved	Water	3005A	
680-144989-7	ZWM-99-23X_FALL17	Dissolved	Water	3005A	
680-144989-8	ZWM-99-24X_FALL17	Dissolved	Water	3005A	
680-144989-9	ZWM-01-25X_FALL17	Dissolved	Water	3005A	
680-144989-10	69WP-08-01_FALL17	Dissolved	Water	3005A	
680-144989-11	69WP-13-01_FALL17	Dissolved	Water	3005A	
MB 680-501123/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-501123/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
680-144989-4 MS	ZWM-95-18X_FALL17	Dissolved	Water	3005A	
680-144989-4 MSD	ZWM-95-18X_FALL17	Dissolved	Water	3005A	

Analysis Batch: 501425

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144989-1	69W-94-13_FALL17	Dissolved	Water	6020A	501123
680-144989-2	69W-94-14_FALL17	Dissolved	Water	6020A	501123
680-144989-3	ZWM-95-15X_FALL17	Dissolved	Water	6020A	501123
680-144989-4	ZWM-95-18X_FALL17	Dissolved	Water	6020A	501123
680-144989-5	ZWM-99-22X_FALL17	Dissolved	Water	6020A	501123
680-144989-6	69W-DUP1_FALL17	Dissolved	Water	6020A	501123
680-144989-7	ZWM-99-23X_FALL17	Dissolved	Water	6020A	501123
680-144989-8	ZWM-99-24X_FALL17	Dissolved	Water	6020A	501123
680-144989-9	ZWM-01-25X_FALL17	Dissolved	Water	6020A	501123
680-144989-10	69WP-08-01_FALL17	Dissolved	Water	6020A	501123
680-144989-11	69WP-13-01_FALL17	Dissolved	Water	6020A	501123
MB 680-501123/1-A	Method Blank	Total Recoverable	Water	6020A	501123
LCS 680-501123/2-A	Lab Control Sample	Total Recoverable	Water	6020A	501123
680-144989-4 MS	ZWM-95-18X_FALL17	Dissolved	Water	6020A	501123
680-144989-4 MSD	ZWM-95-18X_FALL17	Dissolved	Water	6020A	501123

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / AOC 69W

TestAmerica Job ID: 680-144989-1

Client Sample ID: 69W-94-13_FALL17
Date Collected: 10/31/17 08:15
Date Received: 11/02/17 09:05

Lab Sample ID: 680-144989-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	250 mL	501123	11/02/17 15:22	BCB	TAL SAV
Dissolved	Analysis	6020A		1			501425	11/03/17 20:34	BWR	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: 69W-94-14_FALL17
Date Collected: 10/30/17 15:55
Date Received: 11/02/17 09:05

Lab Sample ID: 680-144989-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	250 mL	501123	11/02/17 15:22	BCB	TAL SAV
Dissolved	Analysis	6020A		1			501425	11/03/17 20:29	BWR	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: ZWM-95-15X_FALL17
Date Collected: 10/31/17 09:35
Date Received: 11/02/17 09:05

Lab Sample ID: 680-144989-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	250 mL	501123	11/02/17 15:22	BCB	TAL SAV
Dissolved	Analysis	6020A		1			501425	11/03/17 19:59	BWR	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: ZWM-95-18X_FALL17
Date Collected: 11/01/17 08:40
Date Received: 11/02/17 09:05

Lab Sample ID: 680-144989-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	250 mL	501123	11/02/17 15:22	BCB	TAL SAV
Dissolved	Analysis	6020A		1			501425	11/03/17 19:33	BWR	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: ZWM-99-22X_FALL17
Date Collected: 10/30/17 12:30
Date Received: 11/02/17 09:05

Lab Sample ID: 680-144989-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	250 mL	501123	11/02/17 15:22	BCB	TAL SAV
Dissolved	Analysis	6020A		1			501425	11/03/17 19:55	BWR	TAL SAV
	Instrument ID: ICPMSC									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / AOC 69W

TestAmerica Job ID: 680-144989-1

Client Sample ID: 69W-DUP1_FALL17
Date Collected: 10/30/17 12:35
Date Received: 11/02/17 09:05

Lab Sample ID: 680-144989-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	250 mL	501123	11/02/17 15:22	BCB	TAL SAV
Dissolved	Analysis	6020A		1			501425	11/03/17 20:17	BWR	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: ZWM-99-23X_FALL17
Date Collected: 10/30/17 13:40
Date Received: 11/02/17 09:05

Lab Sample ID: 680-144989-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	250 mL	501123	11/02/17 15:22	BCB	TAL SAV
Dissolved	Analysis	6020A		1			501425	11/03/17 20:04	BWR	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: ZWM-99-24X_FALL17
Date Collected: 10/31/17 10:45
Date Received: 11/02/17 09:05

Lab Sample ID: 680-144989-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	250 mL	501123	11/02/17 15:22	BCB	TAL SAV
Dissolved	Analysis	6020A		1			501425	11/03/17 20:25	BWR	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: ZWM-01-25X_FALL17
Date Collected: 10/30/17 14:40
Date Received: 11/02/17 09:05

Lab Sample ID: 680-144989-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	250 mL	501123	11/02/17 15:22	BCB	TAL SAV
Dissolved	Analysis	6020A		1			501425	11/03/17 20:21	BWR	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: 69WP-08-01_FALL17
Date Collected: 11/01/17 10:30
Date Received: 11/02/17 09:05

Lab Sample ID: 680-144989-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	250 mL	501123	11/02/17 15:22	BCB	TAL SAV
Dissolved	Analysis	6020A		1			501425	11/03/17 20:43	BWR	TAL SAV
	Instrument ID: ICPMSC									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / AOC 69W

TestAmerica Job ID: 680-144989-1

Client Sample ID: 69WP-13-01_FALL17
Date Collected: 11/01/17 11:50
Date Received: 11/02/17 09:05

Lab Sample ID: 680-144989-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	250 mL	501123	11/02/17 15:22	BCB	TAL SAV
Dissolved	Analysis	6020A		1			501425	11/03/17 20:38	BWR	TAL SAV
	Instrument ID: ICPMSC									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

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

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: Devens Falls RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):

Matrices: Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B ✓	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	(Yes) No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1] *All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 11/14/2017

TEST AMERICA SAVANNAH
DEVENS FALL 2017 LTM,
680-141617-1
TK0258

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
DEVENS FALL 2017 LTM, 680-141617-1
TK0258

Sample Receipt

The following samples were received on November 02, 2017 and were logged in under Katahdin Analytical Services work order number TK0258 for a hardcopy due date of November 14, 2017.

KATAHDIN Sample No.	TEST AMERICA Sample Identification
TK0258-1	69W-94-13_FALL17
TK0258-2	69W-94-14_FALL17
TK0258-3	ZWM-95-15X_FALL17
TK0258-4	ZWM-95-18X_FALL17
TK0258-5	ZWM-99-22X_FALL17
TK0258-6	69W-DUP1_FALL17
TK0258-7	ZWM-99-23X_FALL17
TK0258-8	ZWM-99-24X_FALL17
TK0258-9	ZWM-01-25X_FALL17

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. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order TK0258 were analyzed in accordance with the Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

Sample TK0258-4 was used for the matrix spike (MS) and matrix spike duplicate (MSD), as per client request.

MA-EPH Analysis

Samples TK0258-5 and 6 were manually integrated for the target analyte naphthalene, the C11-C22 aromatic range, the fractionation surrogates 2-fluorobiphenyl and 2-bromonaphthalene, and/or the extraction surrogate *o*-terphenyl. 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.

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 the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond 11.14.17

Leslie Dimond
Quality Assurance Officer

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.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: TA	KAS PM: HHM	Sampled By: Client
Project:	KIMS Entry By: SO	Delivered By: Fedex
KAS Work Order#: TK0258	KIMS Review By: AMH	Received By: SO
SDG #:	Cooler: 1 of 2	Date/Time Rec.: 11-2-17 1000

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): 0.2
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
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 (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?				✓	
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
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, LLC.

Sample Receipt Condition Report

Client: TA	KAS PM: HHM	Sampled By: Client	
Project:	KIMS Entry By: SO	Delivered By: Fedex	
KAS Work Order#: TK0258	KIMS Review By: AMH	Received By: SO	
SDG #:	Cooler: 2 of 2	Date/Time Rec.: 11-2-17 1000	

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): 0.6
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
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 (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?				✓	
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
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.

TK0258

PO #	17-636	Devens - AOC69W 1024-003	Chain of Custody Record	Page: 1 of: 2

Company: KOMAN GS, LLC

Address: 293 Boston Post Road, Suite 100
Marlborough, MA 01752

Phone: 508-366-7442 Fax: 508-366-7445

Sampled by [Print Name(s)]/Affilliation: Karin L. Anderson

Sampler(s) Signature(s):

Laboratory: Test America - Savannah
Address: 510 LaRoche Ave
Savannah, GA 31404
Contact: Jerry Lanier
Regulatory Facility No.
Project Name: Devens Fall 2017 LTM
Sampling QAP No.:
Approval Date:
TAT Routine
Other:

Preservatives (see codes): H | N

Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA EPH 2-1liter amber glass(HCl)	Dissolved Metals* (SW6010/6020) 1-250 ml poly (HNO3)	Remarks	Lab. No.
	69W-94-13_FAL17	10/31	815	P	GW	3	X	X		
	69W-94-14_FAL17	10/30	1555	P	GW	3	X	X		
	ZWM-95-15X_FAL17	10/31	935	P	GW	3	X	X		
	ZWM-95-18X_FAL17	11/1	840	P	GW	9	X	X	MS/MSD	
	ZWM-99-22X_FAL17	10/30	1230	P	GW	3	X	X		
	69W-DUP1_FAL17	10/30	1235	P	GW	3	X	X		

EPH LT TO KATAHDIN

Shipping Details: courier pick up

Date Out: Via:
Returned: Via:
Additional Comments:
* = Dissolved Metals: Fe, Mn (6010); As (6020)

Total Number of Containers

Item No.	Relinquished by/Affiliation	Date	Time	Date	Time
	[signature]	11/1/17	[signature] 11-1-17	1445	
	[signature]	11-1-17 1000			
Rec'd	[signature]	11/2/17 1000			

email logins and results to:
lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐
On ICE ☐
Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: GW = Groundwater SE = Sediment SP = Soil SW = Surface Water O = Other
PRESERVATIVE CODES: H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other
COLLECTION METHOD CODES: G=Grab P= Pumping O = Other

0000607

11/15/2017

PO #	17-636	Devens - AOC69W 1024-003	Chain of Custody Record	Page: 2 of: 2

Company	KOMAN GS, LLC
Address:	293 Boston Post Road, Suite 100 Marlborough, MA 01752
Phone:	508-366-7442
Fax:	508-366-7445
Sampled by [Print Name(s)]/Affilliation	Kevin G. Anderson
Sampler(s) Signature(s)	[signature]

KGS

Preservatives (see codes): H | N

Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA EPH 2-1liter amber glass(HCl)	Dissolved Metals* (SW6010/6020) 1-250 ml poly (HNO3)	Remarks	Lab. No
ZWM-99-23X_FAL17		10/30	1340	P	GW	3	X	X	EPH - 1LT TO KATAHDIN	
ZWM-99-24X_FAL17		10/31	1045	P	GW	3	X	X		
ZWM-01-25X_FAL17		10/30	1440	P	GW	3	X	X		
69WP-08-01_FAL17		11/1	1030	P	GW	1		X		
69WP-13-01_FAL17		11/1	1150	P	GW	1		X	Mn only	

Laboratory: Test America - Savannah
Address: 510 LaRoche Ave
Savannah, GA 31404
Contact: Jerry Lanier
Regulatory Facility No.
Project Name: Devens Fall 2017 LTM
Sampling QAP No.:
Approval Date:
TAT Routine
Other:

Shipping Details: courier pick up ← Total Number of Containers

Date Out: Via:
Returned: Via:
Additional Comments:
* = Dissolved Metals: Fe, Mn (6010); As (6020)

Item No.	Relinquished by/Affiliation	Date	Time	Date	Time
	[signature]	11/1/17	[signature]	11-1-17	1445
	[signature]	11-1-17 1000			
Rec'd	[signature]	11/2/17 1000			

email logins and results to:
lekes@komangs.com

Lab Comments
Preserve Where Applicable ☐
On ICE ☐
Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info
☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES:	GW = Groundwater	SE = Sediment	SP = Soil	SW = Surface Water	O = Other
PRESERVATIVE CODES:	H = HCL + Ice	I = Ice Only	N = Nitric Acid + Ice	S = Sulfuric Acid + Ice M = Methanol	O = Other
COLLECTION METHOD CODES:		G=Grab	P= Pumping		O = Other

OW1008
11/15/2017

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Nov. 02, 2017
12:33 PM

Login Number: TK0258

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Quote/Incoming:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 4.2 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative. Sample data summary needs all forms.
CHECK NO.	:	
CLIENT PO#	:	
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	W912WJ-10-D-0003
COOLER TEMPERATURE	:	0.2, 0.6
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS033QC-XLS
LOGIN INITIALS	:	SO
PM	:	HHM
PROJECT NAME	:	Devens Fall 2017 LTM, 680-141617-1
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	Email PDF, EDD files and invoice to Jerry. No HC. Include Level 4 narrative and MCP forms. Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Sample data summary needs all forms. Email PDF, EDD files and invoice to Jerry. No HC.
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TK0258-1	69W-94-13_FALL17	31-OCT-17 08:15	02-NOV-17	:		14-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	14-NOV-17	1L N-Amber Glass		

TK0258-2	69W-94-14_FALL17	30-OCT-17 15:55	02-NOV-17			14-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	13-NOV-17	1L N-Amber Glass		

TK0258-3	ZWM-95-15X_FALL17	31-OCT-17 09:35	02-NOV-17			14-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	14-NOV-17	1L N-Amber Glass		

TK0258-4	ZWM-95-18X_FALL17	01-NOV-17 08:40	02-NOV-17			14-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	15-NOV-17	1L N-Amber Glass		**MS/MSD**

TK0258-5	ZWM-99-22X_FALL17	30-OCT-17 12:30	02-NOV-17			14-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	13-NOV-17	1L N-Amber Glass		

TK0258-6	69W-DUP1_FALL17	30-OCT-17 12:35	02-NOV-17			14-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	13-NOV-17	1L N-Amber Glass		

TK0258-7	ZWM-99-23X_FALL17	30-OCT-17 13:40	02-NOV-17			14-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	13-NOV-17	1L N-Amber Glass		

AMH 11/2/17

0000009

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Nov. 02, 2017

12:33 PM

Login Number: TK0258

Quote/Incoming:

Account: TASAV001 NoWeb

Test America Savannah

Project: TASAV-DEVENS

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TK0258-8	ZWM-99-24X_FALL17	31-OCT-17 10:45	02-NOV-17			14-NOV-17	

Matrix		*Product*	*Hold Date (shortest)*	*Bottle Type*	*Bottle Count*	*Comments*
Aqueous	S	MA-EPH	14-NOV-17	1L N-Amber Glass		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TK0258-9	ZWM-01-25X_FALL17	30-OCT-17 14:40	02-NOV-17			14-NOV-17	

Matrix		*Product*	*Hold Date (shortest)*	*Bottle Type*	*Bottle Count*	*Comments*
Aqueous	S	MA-EPH	13-NOV-17	1L N-Amber Glass		

Total Samples: *9* ***Total Analyses:*** *9*

AMH 11/2/17

000010

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0258-1
Client ID: 69W-94-13_FALL17
Project: Devens Fall 2017 LTM, 680-141617-1
SDG: TK0258
Lab File ID: CKK2064.D

Sample Date: 31-OCT-17
Received Date: 02-NOV-17
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216992

Analysis Date: 07-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		63.6	%					
o-Terphenyl		68.1	%					
2-Fluorobiphenyl		84.7	%					
2-Bromonaphthalene		86.7	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0258-2
Client ID: 69W-94-14_FALL17
Project: Devens Fall 2017 LTM, 680-141617-1
SDG: TK0258
Lab File ID: CKK2065.D

Sample Date: 30-OCT-17
Received Date: 02-NOV-17
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216992

Analysis Date: 07-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C19-C36 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C11-C22 Aromatics	U	94	ug/L	1	100	94.	47.	71.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.85	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.94	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		55.7	%					
o-Terphenyl		60.3	%					
2-Fluorobiphenyl		70.7	%					
2-Bromonaphthalene		73.6	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0258-3
Client ID: ZWM-95-15X_FALL17
Project: Devens Fall 2017 LTM, 680-141617-1
SDG: TK0258
Lab File ID: CKK2066.D

Sample Date: 31-OCT-17
Received Date: 02-NOV-17
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216992

Analysis Date: 07-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C19-C36 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C11-C22 Aromatics	U	94	ug/L	1	100	94.	47.	71.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.85	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.94	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		55.8	%					
o-Terphenyl		61.5	%					
2-Fluorobiphenyl		78.2	%					
2-Bromonaphthalene		80.2	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0258-4
Client ID: ZWM-95-18X_FALL17
Project: Devens Fall 2017 LTM, 680-141617-1
SDG: TK0258
Lab File ID: CKK2067.D

Sample Date: 01-NOV-17
Received Date: 02-NOV-17
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216992

Analysis Date: 07-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C19-C36 Aliphatics	U	94	ug/L	1	100	94.	47.	71.
C11-C22 Aromatics	U	94	ug/L	1	100	94.	47.	71.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.85	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.94	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.85	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		40.9	%					
o-Terphenyl		52.8	%					
2-Fluorobiphenyl		71.1	%					
2-Bromonaphthalene		72.2	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0258-5
Client ID: ZWM-99-22X_FALL17
Project: Devens Fall 2017 LTM, 680-141617-1
SDG: TK0258
Lab File ID: CKK2068.D

Sample Date: 30-OCT-17
Received Date: 02-NOV-17
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216992

Analysis Date: 07-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	99	ug/L	1	100	99.	50.	74.
C19-C36 Aliphatics	U	99	ug/L	1	100	99.	50.	74.
C11-C22 Aromatics		170	ug/L	1	100	99.	50.	74.
Naphthalene	J	1.5	ug/L	1	2	2.0	0.89	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	0.99	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		47.5	%					
o-Terphenyl		50.3	%					
2-Fluorobiphenyl		65.8	%					
2-Bromonaphthalene		65.9	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0258-6
Client ID: 69W-DUP1_FALL17
Project: Devens Fall 2017 LTM, 680-141617-1
SDG: TK0258
Lab File ID: CKK2069.D

Sample Date: 30-OCT-17
Received Date: 02-NOV-17
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216992

Analysis Date: 07-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	98	ug/L	1	100	98.	49.	74.
C19-C36 Aliphatics	U	98	ug/L	1	100	98.	49.	74.
C11-C22 Aromatics		140	ug/L	1	100	98.	49.	74.
Naphthalene	J	1.8	ug/L	1	2	2.0	0.88	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	0.98	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		69.5	%					
o-Terphenyl		55.2	%					
2-Fluorobiphenyl		63.8	%					
2-Bromonaphthalene		64.0	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0258-7
Client ID: ZWM-99-23X_FALL17
Project: Devens Fall 2017 LTM, 680-141617-1
SDG: TK0258
Lab File ID: CKK2070.D

Sample Date: 30-OCT-17
Received Date: 02-NOV-17
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216992

Analysis Date: 07-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	96	ug/L	1	100	96.	48.	72.
C19-C36 Aliphatics	U	96	ug/L	1	100	96.	48.	72.
C11-C22 Aromatics	U	96	ug/L	1	100	96.	48.	72.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.86	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.96	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		60.8	%					
o-Terphenyl		54.6	%					
2-Fluorobiphenyl		65.1	%					
2-Bromonaphthalene		66.9	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0258-8
Client ID: ZWM-99-24X_FALL17
Project: Devens Fall 2017 LTM, 680-141617-1
SDG: TK0258
Lab File ID: CKK2071.D

Sample Date: 31-OCT-17
Received Date: 02-NOV-17
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216992

Analysis Date: 07-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	52.	78.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	52.	78.
C11-C22 Aromatics	U	100	ug/L	1	100	100	52.	78.
Naphthalene	U	2.1	ug/L	1	2	2.1	0.94	1.6
2-Methylnaphthalene	U	2.1	ug/L	1	2	2.1	0.83	1.6
Phenanthrene	U	2.1	ug/L	1	2	2.1	0.94	1.6
Acenaphthylene	U	2.1	ug/L	1	2	2.1	0.83	1.6
Acenaphthene	U	2.1	ug/L	1	2	2.1	1.9	2.0
Anthracene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Benzo(a)anthracene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Benzo(a)pyrene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Benzo(b)fluoranthene	U	2.1	ug/L	1	2	2.1	0.83	1.6
Benzo(g,h,i)perylene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Benzo(k)fluoranthene	U	2.1	ug/L	1	2	2.1	1.0	1.6
Chrysene	U	2.1	ug/L	1	2	2.1	0.94	1.6
Dibenzo(a,h)anthracene	U	2.1	ug/L	1	2	2.1	1.2	1.6
Fluoranthene	U	2.1	ug/L	1	2	2.1	0.83	1.6
Fluorene	U	2.1	ug/L	1	2	2.1	0.94	1.6
Indeno(1,2,3-cd)pyrene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Pyrene	U	2.1	ug/L	1	2	2.1	1.1	1.6
5-Alpha Androstane		56.5	%					
o-Terphenyl		57.0	%					
2-Fluorobiphenyl		72.3	%					
2-Bromonaphthalene		74.9	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TK0258-9
Client ID: ZWM-01-25X_FALL17
Project: Devens Fall 2017 LTM, 680-141617-1
SDG: TK0258
Lab File ID: CKK2072.D

Sample Date: 30-OCT-17
Received Date: 02-NOV-17
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216992

Analysis Date: 07-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		49.1	%					
o-Terphenyl		48.4	%					
2-Fluorobiphenyl		58.8	%					
2-Bromonaphthalene		59.9	%					

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Report of Analytical Results

Client:
Lab ID: WG216992-1
Client ID: Method Blank Sample
Project:
SDG: TK0258
Lab File ID: CKK2058.D

Sample Date:
Received Date:
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216992

Analysis Date: 07-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 09-NOV-17

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		62.2	%					
o-Terphenyl		66.6	%					
2-Fluorobiphenyl		77.1	%					
2-Bromonaphthalene		77.6	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Devens Fall 2017 LTM, 680-141617-1 **Matrix:** AQ
Lab Code: KAS **SDG:** TK0258

Client Sample ID	Lab Sample ID	Col. ID	2BN	#	2FBP	#	5AA	#	OTP	#
69W-94-13_FALL17	TK0258-1	B	86.7		84.7		63.6		68.1	
69W-94-14_FALL17	TK0258-2	B	73.6		70.7		55.7		60.3	
ZWM-95-15X_FALL17	TK0258-3	B	80.2		78.2		55.8		61.5	
ZWM-95-18X_FALL17	TK0258-4	B	72.2		71.1		40.9		52.8	
ZWM-99-22X_FALL17	TK0258-5	B	65.9		65.8		47.5		50.3	
69W-DUP1_FALL17	TK0258-6	B	64.0		63.8		69.5		55.2	
ZWM-99-23X_FALL17	TK0258-7	B	66.9		65.1		60.8		54.6	
ZWM-99-24X_FALL17	TK0258-8	B	74.9		72.3		56.5		57.0	
ZWM-01-25X_FALL17	TK0258-9	B	59.9		58.8		49.1		48.4	
Method Blank Sample	WG216992-1	B	77.6		77.1		62.2		66.6	
Laboratory Control S	WG216992-2	B	87.7		84.3		71.9		77.2	
Laboratory Control S	WG216992-3	B	87.8		83.7		83.4		76.3	
Matrix Spike	WG216992-4	B	67.5		65.1		77.7		58.9	
Matrix Spike Duplica	WG216992-5	B	94.7		91.6		74.9		77.3	

		QC Limits
5AA	5-ALPHA ANDROSTANE	40-140
OTP	O-TERPHENYL	40-140
2FBP	2-FLUOROBIPHENYL	40-140
2BN	2-BROMONAPHTHALENE	40-140

= 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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LCS/LCSD Recovery Report

LCS ID: WG216992-2
LCSD ID: WG216992-3
Project:
SDG: TK0258
Report Date: 09-NOV-17
LCS File ID: CKK2059.D

Received Date:
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216992
LCSD File ID: CKK2060.d

Analysis Date: 07-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	1200	78.4	1300	85.0	ug/L	8	25	40-140
C9-C18 Aliphatics	540.	469.	86.8	514.	95.2	ug/L	9	25	40-140
C19-C36 Aliphatics	720.	555.	77.1	587.	81.5	ug/L	6	25	40-140
Naphthalene	90.0	65.8	73.1	69.4	77.1	ug/L	5	25	40-140
2-Methylnaphthalene	90.0	71.7	79.7	74.8	83.1	ug/L	4	25	40-140
Phenanthrene	90.0	63.4	70.4	66.4	73.8	ug/L	5	25	40-140
Acenaphthylene	90.0	63.1	70.1	65.9	73.2	ug/L	4	25	40-140
Acenaphthene	90.0	64.2	71.3	64.6	71.8	ug/L	1	25	40-140
Anthracene	90.0	66.6	74.0	71.0	78.9	ug/L	6	25	40-140
Benzo(a)anthracene	90.0	72.2	80.2	75.3	83.7	ug/L	4	25	40-140
Benzo(a)pyrene	90.0	76.8	85.3	79.8	88.7	ug/L	4	25	40-140
Benzo(b)fluoranthene	90.0	78.2	86.9	77.3	85.9	ug/L	1	25	40-140
Benzo(g,h,i)perylene	90.0	74.4	82.7	83.0	92.2	ug/L	11	25	40-140
Benzo(k)fluoranthene	90.0	70.0	77.8	76.7	85.2	ug/L	9	25	40-140
Chrysene	90.0	76.2	84.7	78.9	87.7	ug/L	3	25	40-140
Dibenzo(a,h)anthracene	90.0	75.7	84.1	84.0	93.3	ug/L	10	25	40-140
Fluoranthene	90.0	71.3	79.2	74.2	82.4	ug/L	4	25	40-140
Fluorene	90.0	62.4	69.3	65.7	73.0	ug/L	5	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	68.3	75.9	72.2	80.2	ug/L	6	25	40-140
Pyrene	90.0	70.2	78.0	73.1	81.2	ug/L	4	25	40-140
5-Alpha Androstane			71.9		83.4				40-140
o-Terphenyl			77.2		76.3				40-140
2-Fluorobiphenyl			84.3		83.7				40-140
2-Bromonaphthalene			87.7		87.8				40-140

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MS/MSD Recovery Report

MS ID: WG216992-4
MSD ID: WG216992-5
Sample ID: TK0258-4
Client ID: ZWM-95-18X_FALL17
Project:
SDG: TK0258
MS File ID: CKK2061.D

Received Date:
Extract Date: 03-NOV-17
Extracted By: WAS
Extraction Method: SW846 3510C
Lab Prep Batch: WG216992
Report Date: 09-NOV-17
MSD File ID: CKK2062.d

Analysis Date: 07-NOV-17
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
C9-C18 Aliphatics	509.	509.	ug/L	U94	436	425	85.6	83.4	2	25	40-140
C19-C36 Aliphatics	679.	679.	ug/L	U94	514	512	75.7	75.4	0	25	40-140
Naphthalene	84.9	84.9	ug/L	U1.9	49.9	66.9	58.8	78.8	29*	25	40-140
2-Methylnaphthalene	84.9	84.9	ug/L	U1.9	53.6	71.2	63.1	83.8	28*	25	40-140
Phenanthrene	84.9	84.9	ug/L	U1.9	47.9	63.4	56.4	74.7	28*	25	40-140
Acenaphthylene	84.9	84.9	ug/L	U1.9	47.3	63.5	55.7	74.8	29*	25	40-140
Acenaphthene	84.9	84.9	ug/L	U1.9	47.9	60.9	56.4	71.7	24	25	40-140
Anthracene	84.9	84.9	ug/L	U1.9	51.4	67.3	60.5	79.3	27*	25	40-140
Benzo(a)anthracene	84.9	84.9	ug/L	U1.9	54.1	70.7	63.7	83.3	27*	25	40-140
Benzo(a)pyrene	84.9	84.9	ug/L	U1.9	57.4	75.7	67.6	89.2	27*	25	40-140
Benzo(b)fluoranthene	84.9	84.9	ug/L	U1.9	54.2	76.8	63.8	90.4	34*	25	40-140
Benzo(g,h,i)perylene	84.9	84.9	ug/L	U1.9	58.4	78.6	68.8	92.6	29*	25	40-140
Benzo(k)fluoranthene	84.9	84.9	ug/L	U1.9	56.8	68.3	66.9	80.4	18	25	40-140
Chrysene	84.9	84.9	ug/L	U1.9	57.3	74.8	67.5	88.1	26*	25	40-140
Dibenzo(a,h)anthracene	84.9	84.9	ug/L	U1.9	60	77.9	70.7	91.7	26*	25	40-140
Fluoranthene	84.9	84.9	ug/L	U1.9	53.6	69.8	63.1	82.2	26*	25	40-140
Fluorene	84.9	84.9	ug/L	U1.9	46.4	63	54.6	74.2	30*	25	40-140
Indeno(1,2,3-cd)pyrene	84.9	84.9	ug/L	U1.9	50.5	69.4	59.5	81.7	32*	25	40-140
Pyrene	84.9	84.9	ug/L	U1.9	52.9	68.6	62.3	80.8	26*	25	40-140
5-Alpha Androstane							77.7	74.9			40-140
o-Terphenyl							58.9	77.3			40-140
2-Fluorobiphenyl							65.1	91.6			40-140
2-Bromonaphthalene							67.5	94.7			40-140

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM, 680-141617-1
Lab File ID : CKK1058.D
Instrument ID : GC12

SDG : TK0258
Lab Sample ID : WG216992-1
Date Analyzed : 07-NOV-17
Time Analyzed : 00:42
Date Extracted : 03-NOV-17

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	WG216992-2	CKK1059.I	11/07/17	01:27
Laboratory Control S	WG216992-3	CKK1060.I	11/07/17	02:13
Matrix Spike	WG216992-4	CKK1061.I	11/07/17	02:58
Matrix Spike Duplica	WG216992-5	CKK1062.I	11/07/17	03:43
69W-94-13_FALL17	TK0258-1	CKK1064.I	11/07/17	05:14
69W-94-14_FALL17	TK0258-2	CKK1065.I	11/07/17	05:59
ZWM-95-15X_FALL17	TK0258-3	CKK1066.I	11/07/17	06:45
ZWM-95-18X_FALL17	TK0258-4	CKK1067.I	11/07/17	07:30
ZWM-99-22X_FALL17	TK0258-5	CKK1068.I	11/07/17	08:15
69W-DUP1_FALL17	TK0258-6	CKK1069.I	11/07/17	09:00
ZWM-99-23X_FALL17	TK0258-7	CKK1070.I	11/07/17	09:46
ZWM-99-24X_FALL17	TK0258-8	CKK1071.I	11/07/17	10:31
ZWM-01-25X_FALL17	TK0258-9	CKK1072.I	11/07/17	11:16

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM, 680-141617-1
Lab File ID : CKK1058A.D
Instrument ID : GC12

SDG : TK0258
Lab Sample ID : WG216992-1
Date Analyzed : 07-NOV-17
Time Analyzed : 00:42
Date Extracted : 03-NOV-17

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	WG216992-2	CKK1059A	11/07/17	01:27
Laboratory Control S	WG216992-3	CKK1060A	11/07/17	02:13
Matrix Spike	WG216992-4	CKK1061A	11/07/17	02:58
Matrix Spike Duplica	WG216992-5	CKK1062A	11/07/17	03:43
69W-94-13_FALL17	TK0258-1	CKK1064A	11/07/17	05:14
69W-94-14_FALL17	TK0258-2	CKK1065A	11/07/17	05:59
ZWM-95-15X_FALL17	TK0258-3	CKK1066A	11/07/17	06:45
ZWM-95-18X_FALL17	TK0258-4	CKK1067A	11/07/17	07:30
ZWM-99-22X_FALL17	TK0258-5	CKK1068A	11/07/17	08:15
69W-DUP1_FALL17	TK0258-6	CKK1069A	11/07/17	09:00
ZWM-99-23X_FALL17	TK0258-7	CKK1070A	11/07/17	09:46
ZWM-99-24X_FALL17	TK0258-8	CKK1071A	11/07/17	10:31
ZWM-01-25X_FALL17	TK0258-9	CKK1072A	11/07/17	11:16

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM, 680-141617-1
Lab File ID : CKK2058.D
Instrument ID : GC12

SDG : TK0258
Lab Sample ID : WG216992-1
Date Analyzed : 07-NOV-17
Time Analyzed : 00:42
Date Extracted : 03-NOV-17

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	WG216992-2	CKK2059.I	11/07/17	01:27
Laboratory Control S	WG216992-3	CKK2060.I	11/07/17	02:13
Matrix Spike	WG216992-4	CKK2061.I	11/07/17	02:58
Matrix Spike Duplica	WG216992-5	CKK2062.I	11/07/17	03:43
69W-94-13_FALL17	TK0258-1	CKK2064.I	11/07/17	05:14
69W-94-14_FALL17	TK0258-2	CKK2065.I	11/07/17	05:59
ZWM-95-15X_FALL17	TK0258-3	CKK2066.I	11/07/17	06:45
ZWM-95-18X_FALL17	TK0258-4	CKK2067.I	11/07/17	07:30
ZWM-99-22X_FALL17	TK0258-5	CKK2068.I	11/07/17	08:15
69W-DUP1_FALL17	TK0258-6	CKK2069.I	11/07/17	09:00
ZWM-99-23X_FALL17	TK0258-7	CKK2070.I	11/07/17	09:46
ZWM-99-24X_FALL17	TK0258-8	CKK2071.I	11/07/17	10:31
ZWM-01-25X_FALL17	TK0258-9	CKK2072.I	11/07/17	11:16

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TK0258
Project : Devens Fall 2017 LTM, 680-141617-1 **Instrument ID:** GC12
Lab File IDs : CJL2042.d CJL2041.d CJL2040.d CJL2039.d CJL2038.d **Calibration Date(s):** 12-DEC-16 13:21 12-DEC-16 16:23

	Level 1	Level 2	Level 3	Level 4	Level 5		Crv					Max	
	1.0000	10.0000	50.0000	100.0000	200.0000		New	b	m1	m2	%RSD	%RSD	
C9-C18 Aliphatic	7526	7182	7357	7167	7368		AVG		7320		2.03259	25.00000	M (
C19-C36 Aliphatic	7220	7092	7302	7139	7317		AVG		7214		1.36770	25.00000	S O
C-9	7310	7150	7322	7139	7389		AVG		7262		1.53498	30.00000	O
C-10	7778	7150	7360	7200	7393		AVG		7376		3.35050	25.00000	O
C-12	7510	7184	7394	7207	7395		AVG		7338		1.88894	25.00000	O
C-14	7462	7209	7358	7149	7332		AVG		7302		1.69941	25.00000	O
C-16	7420	7200	7387	7182	7367		AVG		7311		1.52920	25.00000	O
C-18	7673	7197	7318	7122	7329		AVG		7328		2.88483	25.00000	O
C-19	7548	7230	7430	7235	7417		AVG		7372		1.86151	25.00000	O
C-20	7386	7150	7360	7176	7361		AVG		7287		1.56168	25.00000	O
C-22	7434	7222	7396	7200	7377		AVG		7326		1.46069	25.00000	O
C-24	7191	6900	7069	6922	7097		AVG		7036		1.74718	25.00000	O
C-26	7371	7294	7464	7287	7479		AVG		7379		1.23021	25.00000	O
C-28	7546	7210	7370	7194	7367		AVG		7337		1.95633	25.00000	O
C-30	7146	7215	7425	7258	7431		AVG		7295		1.75430	25.00000	O
C-36	6136	6516	6901	6839	7008		AVG		6680		5.31606	25.00000	O
5-alpha androstane	7350	7308	7557	7362	7557		AVG		7427		1.62567	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TK0258
Project : Devens Fall 2017 LTM, 680-141617-1 **Instrument ID:** GC12
Lab File IDs : CKA1165.d CKA1164.d CKA1163.d CKA1162.d CKA1161.d **Calibration Date(s):** 27-JAN-17 08:52 27-JAN-17 11:55

	Level 1 1.0000	Level 2 10.0000	Level 3 50.0000	Level 4 100.0000	Level 5 200.0000		Crv New	b	m1	m2	%RSD	Max %RSD	
Unadjusted C11-C22 Aromatic	9604	10055	10742	10680	10816		AVG		10379		5.09618	25.00000	M (
Naphthalene	9069	10177	10803	10769	10802		AVG		10324		7.26770	25.00000	O
2-Methylnaphthalene	8366	9250	9877	9833	9872		AVG		9439		6.94979	25.00000	O
Acenaphthylene	9940	9974	10583	10497	10520		AVG		10303		3.08087	25.00000	O
Acenaphthene	10183	10248	10912	10778	10818		AVG		10588		3.24959	25.00000	O
Fluorene	10793	10271	10803	10737	10774		AVG		10676		2.13416	25.00000	O
Phenanthrene	11041	10209	10813	10735	10785		AVG		10717		2.86411	25.00000	O
Anthracene	9100	10068	10667	10650	10721		AVG		10241		6.74935	25.00000	O
Fluoranthene	10303	10316	10868	10776	10823		AVG		10617		2.66160	25.00000	O
Pyrene	10782	10411	11079	10982	11032		AVG		10857		2.52045	25.00000	O
Benzo(a)Anthracene	9227	10336	10982	10886	10969		AVG		10480		7.15158	25.00000	O
Chrysene	9274	10263	10924	10851	10890		AVG		10440		6.76602	25.00000	O
Benzo(b)Fluoranthene	9692	11159	11927	11685	10160		AVG		10925		8.85541	25.00000	O
Benzo(k)Fluoranthene	9547	9676	10302	10336	11922		AVG		10357		9.12417	25.00000	O
Benzo(a)Pyrene	8318	9971	10694	10588	10678		AVG		10050		10.0783	25.00000	O
Indeno(1,2,3-cd)Pyrene	9301	10184	11660	12539	12267		AVG		11190		12.4639	25.00000	O
Dibenzo(a,h)Anthracene	9470	9270	9493	8636	10553		AVG		9484		7.28145	25.00000	O
Benzo(g,h,i)Perylene	8857	9158	10229	10285	10287		AVG		9763		7.15219	25.00000	O
2-Fluorobiphenyl	8915	9124	9699	9610	9692		AVG		9408		3.86923	25.00000	
2-Bromonaphthalene	4210	5999	6619	6568	6632		AVG		6005		17.2823	25.00000	
O-Terphenyl	12233	10214	10840	10690	10761		AVG		10947		6.93035	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM, 680-141
Lab ID : WG217218-2
Lab File ID : CKK1057.d
Initial Calibration Date(s): 01/27/17 08:52 01/27/17 11:55

SDG: TK0258
Analytical Date: 11/06/17 23:57
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	10324	11271	0.010	9.17477	25.00000	Averaged
60	2-Methylnaphthalene	9439	10155	0.010	7.57693	25.00000	Averaged
70	Phenanthrene	10717	10750	0.010	0.31461	25.00000	Averaged
80	Acenaphthylene	10303	10821	0.010	5.02603	25.00000	Averaged
90	Acenaphthene	10588	11231	0.010	6.07530	25.00000	Averaged
100	Anthracene	10241	10659	0.010	4.08200	25.00000	Averaged
110	Benzo(a)Anthracene	10480	11042	0.010	5.35876	25.00000	Averaged
120	Benzo(a)Pyrene	10050	11068	0.010	10.12830	25.00000	Averaged
130	Benzo(b)Fluoranthene	10925	12885	0.010	17.94388	25.00000	Averaged
140	Benzo(g,h,i)Perylene	9763	10691	0.010	9.50447	25.00000	Averaged
150	Benzo(k)Fluoranthene	10357	10078	0.010	-2.68823	25.00000	Averaged
160	Chrysene	10440	11456	0.010	9.72554	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	9484	10454	0.010	10.22853	25.00000	Averaged
180	Fluoranthene	10617	11059	0.010	4.15798	25.00000	Averaged
190	Fluorene	10676	10956	0.010	2.62704	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	11190	11627	0.010	3.90188	25.00000	Averaged
210	Pyrene	10857	11324	0.010	4.29489	25.00000	Averaged
4	2-Fluorobiphenyl	9408	10118	0.010	7.54359	25.00000	Averaged
6	2-Bromonaphthalene	6005	6748	0.010	12.36964	25.00000	Averaged
11	O-Terphenyl	10947	10754	0.010	-1.77093	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM, 680-141
Lab ID : WG217218-3
Lab File ID : CKK1076.d
Initial Calibration Date(s): 01/27/17 08:52 01/27/17 11:55

SDG: TK0258
Analytical Date: 11/07/17 14:18
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	10324	8976	0.010	-13.06058	25.00000	Averaged
60	2-Methylnaphthalene	9439	8038	0.010	-14.84994	25.00000	Averaged
70	Phenanthrene	10717	8397	0.010	-21.64672	25.00000	Averaged
80	Acenaphthylene	10303	8590	0.010	-16.62327	25.00000	Averaged
90	Acenaphthene	10588	8905	0.010	-15.89757	25.00000	Averaged
100	Anthracene	10241	8492	0.010	-17.08061	25.00000	Averaged
110	Benzo(a)Anthracene	10480	8718	0.010	-16.80880	25.00000	Averaged
120	Benzo(a)Pyrene	10050	8740	0.010	-13.02711	25.00000	Averaged
130	Benzo(b)Fluoranthene	10925	9226	0.010	-15.54400	25.00000	Averaged
140	Benzo(g,h,i)Perylene	9763	8387	0.010	-14.09949	25.00000	Averaged
150	Benzo(k)Fluoranthene	10357	8849	0.010	-14.55668	25.00000	Averaged
160	Chrysene	10440	9076	0.010	-13.07072	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	9484	8450	0.010	-10.90901	25.00000	Averaged
180	Fluoranthene	10617	8840	0.010	-16.73755	25.00000	Averaged
190	Fluorene	10676	8704	0.010	-18.46462	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	11190	8968	0.010	-19.85568	25.00000	Averaged
210	Pyrene	10857	9053	0.010	-16.62024	25.00000	Averaged
4	2-Fluorobiphenyl	9408	7873	0.010	-16.32044	25.00000	Averaged
6	2-Bromonaphthalene	6005	5300	0.010	-11.74097	25.00000	Averaged
11	O-Terphenyl	10947	8315	0.010	-24.05005	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM, 680-141
Lab ID : WG217218-5
Lab File ID : CKK2057.d
Initial Calibration Date(s): 12/12/16 13:21 12/12/16 16:23

SDG: TK0258
Analytical Date: 11/06/17 23:57
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7320	8278	0.010	13.09800	25.00000	Averaged
30	C19-C36 Aliphatic	7214	8226	0.010	14.02327	25.00000	Averaged
370	C-9	7262	8414	0.010	15.86817	30.00000	Averaged
380	C-10	7376	8438	0.010	14.39236	25.00000	Averaged
390	C-12	7338	8304	0.010	13.16539	25.00000	Averaged
400	C-14	7302	8223	0.010	12.61131	25.00000	Averaged
410	C-16	7311	8237	0.010	12.66639	25.00000	Averaged
420	C-18	7328	8053	0.010	9.89796	25.00000	Averaged
430	C-19	7372	8350	0.010	13.26699	25.00000	Averaged
440	C-20	7287	8198	0.010	12.50627	25.00000	Averaged
450	C-22	7326	8201	0.010	11.94173	25.00000	Averaged
460	C-24	7036	8232	0.010	17.00989	25.00000	Averaged
470	C-26	7379	8158	0.010	10.55782	25.00000	Averaged
480	C-28	7337	8274	0.010	12.76980	25.00000	Averaged
490	C-30	7295	8243	0.010	12.98798	25.00000	Averaged
500	C-36	6680	8149	0.010	21.98553	25.00000	Averaged
44	5-alpha androstane	7427	8343	0.010	12.33730	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM, 680-141
Lab ID : WG217218-6
Lab File ID : CKK2076.d
Initial Calibration Date(s): 12/12/16 13:21 12/12/16 16:23

SDG: TK0258
Analytical Date: 11/07/17 14:18
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7320	7924	0.010	8.25743	25.00000	Averaged
30	C19-C36 Aliphatic	7214	7947	0.010	10.15841	25.00000	Averaged
370	C-9	7262	8061	0.010	11.00839	30.00000	Averaged
380	C-10	7376	8068	0.010	9.38404	25.00000	Averaged
390	C-12	7338	8035	0.010	9.49470	25.00000	Averaged
400	C-14	7302	7813	0.010	6.99187	25.00000	Averaged
410	C-16	7311	7877	0.010	7.73601	25.00000	Averaged
420	C-18	7328	7690	0.010	4.93930	25.00000	Averaged
430	C-19	7372	7997	0.010	8.46947	25.00000	Averaged
440	C-20	7287	7890	0.010	8.27880	25.00000	Averaged
450	C-22	7326	7884	0.010	7.61657	25.00000	Averaged
460	C-24	7036	7926	0.010	12.65751	25.00000	Averaged
470	C-26	7379	7894	0.010	6.97281	25.00000	Averaged
480	C-28	7337	7952	0.010	8.37692	25.00000	Averaged
490	C-30	7295	8006	0.010	9.74716	25.00000	Averaged
500	C-36	6680	8026	0.010	20.15317	25.00000	Averaged
44	5-alpha androstane	7427	8091	0.010	8.94081	25.00000	Averaged

*** = Compound out of QC criteria**

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SDGA02536

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 12/12/16 12/12/16

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.87

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG196528-11	12/12/16	1321	16.91	
02		WG196528-10	12/12/16	1406	16.89	
03		WG196528-9	12/12/16	1452	16.88	
04		WG196528-8	12/12/16	1537	16.87	
05		WG196528-7	12/12/16	1623	16.87	
06		WG196528-12	12/12/16	1752		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 1

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 01/27/17 01/27/17

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.98 S2 : 10.36

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	S2 RT	#
01		WG199227-5	01/27/17	0852	8.99		10.37	
02		WG199227-4	01/27/17	0937	8.98		10.36	
03		WG199227-3	01/27/17	1023	8.98		10.36	
04		WG199227-2	01/27/17	1109	8.98		10.36	
05		WG199227-1	01/27/17	1155	8.98		10.36	
06		WG199227-6	01/27/17	1240				
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

QC LIMITS

S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Katahdin Analytical Services, LLC 000026

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 01/27/17 01/27/17

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.21

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG199227-5	01/27/17	0852	15.23	
02		WG199227-4	01/27/17	0937	15.22	
03		WG199227-3	01/27/17	1023	15.21	
04		WG199227-2	01/27/17	1109	15.21	
05		WG199227-1	01/27/17	1155	15.21	
06		WG199227-6	01/27/17	1240		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: TK0258

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 12/12/16 12/12/16

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.70

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG217218-5	11/06/17	2357	16.70	
02	WG216992-BLA	WG216992-1	11/07/17	0042	16.70	
03	WG216992-LCS	WG216992-2	11/07/17	0127	16.71	
04	WG216992-LCS	WG216992-3	11/07/17	0213	16.70	
05	ZWM-95-18X_F	WG216992-4	11/07/17	0258	16.71	
06	ZWM-95-18X_F	WG216992-5	11/07/17	0343	16.72	
07	69W-94-13_FA	TK0258-1	11/07/17	0514	16.71	
08	69W-94-14_FA	TK0258-2	11/07/17	0559	16.70	
09	ZWM-95-15X_F	TK0258-3	11/07/17	0645	16.71	
10	ZWM-95-18X_F	TK0258-4	11/07/17	0730	16.71	
11	ZWM-99-22X_F	TK0258-5	11/07/17	0815	16.70	
12	69W-DUP1_FAL	TK0258-6	11/07/17	0900	16.70	
13	ZWM-99-23X_F	TK0258-7	11/07/17	0946	16.70	
14	ZWM-99-24X_F	TK0258-8	11/07/17	1031	16.70	
15	ZWM-01-25X_F	TK0258-9	11/07/17	1116	16.70	
16		WG217218-6	11/07/17	1418	16.70	
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.33 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Katahdin Analytical Services, LLC 000028

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: TK0258

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 01/27/17 01/27/17

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.84 S2 : 10.21

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01		WG217218-2	11/06/17	2357	8.85		10.22	
02	WG216992-BLA	WG216992-1	11/07/17	0042	8.85		10.22	
03	WG216992-LCS	WG216992-2	11/07/17	0127	8.85		10.22	
04	WG216992-LCS	WG216992-3	11/07/17	0213	8.85		10.22	
05	ZWM-95-18X_F	WG216992-4	11/07/17	0258	8.85		10.22	
06	ZWM-95-18X_F	WG216992-5	11/07/17	0343	8.87		10.24	
07	69W-94-13_FA	TK0258-1	11/07/17	0514	8.86		10.23	
08	69W-94-14_FA	TK0258-2	11/07/17	0559	8.86		10.23	
09	ZWM-95-15X_F	TK0258-3	11/07/17	0645	8.86		10.23	
10	ZWM-95-18X_F	TK0258-4	11/07/17	0730	8.86		10.23	
11	ZWM-99-22X_F	TK0258-5	11/07/17	0815	8.85		10.23	
12	69W-DUP1_FAL	TK0258-6	11/07/17	0900	8.85		10.21	
13	ZWM-99-23X_F	TK0258-7	11/07/17	0946	8.85		10.21	
14	ZWM-99-24X_F	TK0258-8	11/07/17	1031	8.86		10.22	
15	ZWM-01-25X_F	TK0258-9	11/07/17	1116	8.85		10.22	
16		WG217218-3	11/07/17	1418	8.84		10.21	
17								
18								
19								
20								

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Katahdin Analytical Services, LLC 0000029

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: TK0258

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 01/27/17 01/27/17

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.03

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG217218-2	11/06/17	2357	15.03	
02	WG216992-BLA	WG216992-1	11/07/17	0042	15.04	
03	WG216992-LCS	WG216992-2	11/07/17	0127	15.04	
04	WG216992-LCS	WG216992-3	11/07/17	0213	15.03	
05	ZWM-95-18X_F	WG216992-4	11/07/17	0258	15.03	
06	ZWM-95-18X_F	WG216992-5	11/07/17	0343	15.06	
07	69W-94-13_FA	TK0258-1	11/07/17	0514	15.05	
08	69W-94-14_FA	TK0258-2	11/07/17	0559	15.04	
09	ZWM-95-15X_F	TK0258-3	11/07/17	0645	15.05	
10	ZWM-95-18X_F	TK0258-4	11/07/17	0730	15.05	
11	ZWM-99-22X_F	TK0258-5	11/07/17	0815	15.04	
12	69W-DUP1_FAL	TK0258-6	11/07/17	0900	15.03	
13	ZWM-99-23X_F	TK0258-7	11/07/17	0946	15.03	
14	ZWM-99-24X_F	TK0258-8	11/07/17	1031	15.04	
15	ZWM-01-25X_F	TK0258-9	11/07/17	1116	15.03	
16		WG217218-3	11/07/17	1418	15.03	
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Katahdin Analytical Services, LLC 000030

Chain of Custody Record

Page: 1 of: 2

PO #	17-636
	Devens - AOC69W 1024-003
Company	KOMAN GS, LLC
Address:	293 Boston Post Road, Suite 100 Marlborough, MA 01752
Phone: 508-366-7442	Fax: 508-366-7445
Sampled by [Print Name(s)]/Affiliation	Mark E. Anderson
Sampler(s) Signature(s)	

Preservatives (see codes): H | N

Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA EPH 2-liter amber glass(HCl)	Dissolved Metals* (SW6010/6020) 1-250 ml poly (HNO3)	Remarks	Lab. No.
	69W-94-13_FAL17	10/31	815	P	GW	3	X	X		
	69W-94-14_FAL17	10/30	1555	P	GW	3	X	X		
	ZWM-95-15X_FAL17	10/31	935	P	GW	3	X	X		
	ZWM-95-18X_FAL17	11/1	840	P	GW	9	X	X	MS/MSD	
	ZWM-99-22X_FAL17	10/30	1230	P	GW	3	X	X		
	69W-DUP1_FAL17	10/30	1235	P	GW	3	X	X		

680-144989-01 Chain of Custody

Laboratory: Test America - Savannah
Address: 510 LaRoche Ave, Savannah, GA 31404
Contact: Jerry Lanier
Regulatory Facility No.
Project Name: Devens Fall 2017 LTM
Sampling QAP No.:
Approval Date:
TAT: Routine
Other:

Shipping Details: courier pick up

← Total Number of Containers

Date Out: Via:
Returned: Via:

Additional Comments:
* = Dissolved Metals: Fe, Mn (6010); As (6020)

Item No.	Relinquished by/Affiliation	Date	Time	Date	Time
		11/1/17		11-1-17	1645
		11/1/17	1800		
				11/2/17	0905
				1.8/4.2(CF+0.3)	2.1/4.5

email logins and results to:
lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐
On ICE ☐
Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: GW = Groundwater; SE = Sediment; SP = Soil; SW = Surface Water; O = Other
PRESERVATIVE CODES: H = HCL + Ice; I = Ice Only; N = Nitric Acid + Ice; S = Sulfuric Acid + Ice; M = Methanol; O = Other
COLLECTION METHOD CODES: G=Grab; P= Pumping; O = Other

PO #	17-636	Devens - AOC69W 1024-003	Chain of Custody Record	Page: 2 of: 2

Company: KOMAN GS, LLC

Address: 293 Boston Post Road, Suite 100
Marlborough, MA 01752

Phone: 508-366-7442 **Fax:** 508-366-7445

Sampled by [Print Name(s)]/Affilliation: Kevin G. Anderson

Sampler(s) Signature(s):

Laboratory: Test America - Savannah
Address: 510 LaRoche Ave
Savannah, GA 31404
Contact: Jerry Lanier
Regulatory Facility No.
Project Name: Devens Fall 2017 LTM
Sampling QAP No.:
Approval Date:
TAT Routine
Other:

Preservatives (see codes): H | N

Analyses Requested

Item No.	Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA EPH 2-1liter amber glass(HCl)	Dissolved Metals* (SW6010/6020) 1-250 ml poly (HNO3)	Remarks	Lab. No.
	ZWM-99-23X_FAL17	10/30	1340	P	GW	3	X	X		
	ZWM-99-24X_FAL17	10/31	1045	P	GW	3	X	X		
	ZWM-01-25X_FAL17	10/30	1440	P	GW	3	X	X		
	69WP-08-01_FAL17	11/1	1030	P	GW	1		X		
	69WP-13-01_FAL17	11/1	1150	P	GW	1		X	Mn only	

680-144989-02 Chain of Custody

Shipping Details: courier pick up

Total Number of Containers

Date Out: Via:
Returned: Via:
Additional Comments:
* = Dissolved Metals: Fe, Mn (6010); As (6020)

Item No.	Relinquished by/Affiliation	Date	Time	Date	Time
	[signature]	11/1/17	[signature]	11-1-17	1445
	[signature]	11-1-17	1800		
			[signature]	11/2/17	0905
			1.8/4.2(CH+0.3)	2	1/4.5

email logins and results to:
lekes@komangs.com

Lab Comments
Preserve Where Applicable ☐
On ICE ☐
Temperature _____ C

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

NJ Data Deliverable Info
☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: GW = Groundwater SE = Sediment SP = Soil SW = Surface Water O = Other
PRESERVATIVE CODES: H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + Ice M = Methanol O = Other
COLLECTION METHOD CODES: G=Grab P= Pumping O = Other

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-144989-1

Login Number: 144989
List Number: 1
Creator: Ragnaldsen, Amy E

List Source: TestAmerica Savannah

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Devens / AOC 69W

TestAmerica Job ID: 680-144989-1

Laboratory: TestAmerica Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-18
Alaska	State Program	10		06-30-18
Alaska (UST)	State Program	10	UST-104	11-05-17 *
Arizona	State Program	9	AZ808	12-14-17 *
Arkansas DEQ	State Program	6	88-0692	02-01-18
California	State Program	9	2939	06-30-18
Colorado	State Program	8	N/A	12-31-17
Connecticut	State Program	1	PH-0161	03-31-19
Florida	NELAP	4	E87052	06-30-18
GA Dept. of Agriculture	State Program	4	N/A	06-12-18
Georgia	State Program	4	803	06-30-18
Guam	State Program	9	15-005r	04-16-18
Hawaii	State Program	9	N/A	06-30-18
Illinois	NELAP	5	200022	11-30-17 *
Indiana	State Program	5	N/A	06-30-18
Iowa	State Program	7	353	06-30-19
Kentucky (DW)	State Program	4	90084	12-31-17
Kentucky (UST)	State Program	4	18	06-30-18
Kentucky (WW)	State Program	4	90084	12-31-17
L-A-B	DoD ELAP		L2463	09-22-19
L-A-B	ISO/IEC 17025		L2463.01	09-22-19
Louisiana	NELAP	6	30690	06-30-18
Louisiana (DW)	NELAP	6	LA160019	12-31-17
Maine	State Program	1	GA00006	09-24-18
Maryland	State Program	3	250	12-31-17
Massachusetts	State Program	1	M-GA006	06-30-18
Michigan	State Program	5	9925	06-30-18
Mississippi	State Program	4	N/A	06-30-18
Nebraska	State Program	7	TestAmerica-Savannah	06-30-18
New Jersey	NELAP	2	GA769	06-30-18
New Mexico	State Program	6	N/A	06-30-18
New York	NELAP	2	10842	03-31-18
North Carolina (DW)	State Program	4	13701	07-31-18
North Carolina (WW/SW)	State Program	4	269	12-31-17
Oklahoma	State Program	6	9984	08-31-18
Pennsylvania	NELAP	3	68-00474	06-30-18
Puerto Rico	State Program	2	GA00006	12-31-17
South Carolina	State Program	4	98001	06-30-17 *
Tennessee	State Program	4	TN02961	06-30-18
Texas	NELAP	6	T104704185-16-9	11-30-17 *
Texas	State Program	6	T104704185	06-30-18
US Fish & Wildlife	Federal		LE058448-0	07-31-18
USDA	Federal		SAV 3-04	06-14-20 *
Virginia	NELAP	3	460161	06-14-18
Washington	State Program	10	C805	06-10-18
West Virginia (DW)	State Program	3	9950C	12-31-17
West Virginia DEP	State Program	3	094	06-30-18
Wisconsin	State Program	5	999819810	08-31-18
Wyoming	State Program	8	8TMS-L	06-30-16 *

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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

TestAmerica Job ID: 680-144777-2
Client Project/Site: Fort Devens / AOC 43G

For:
KOMAN Government Solutions, LLC
293 Boston Post Road
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Kathryn Smith

Authorized for release by:
11/10/2017 4:31:06 PM
Kathryn Smith, Manager of Project Management
(912)354-7858
kathy.smith@testamericainc.com

Designee for

Jerry Lanier, Project Manager I
(912)354-7858 e.3410
jerry.lanier@testamericainc.com

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

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

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

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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Job ID: 680-144777-2

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: Fort Devens / AOC 43G

Report Number: 680-144777-2

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

RECEIPT

The samples were received on 10/26/2017; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2º C and 2.6º C.

METALS

Samples AAFES-2_Fall17 (680-144777-8), XGM-93-02X_Fall17 (680-144777-9), XGM-93-04X_Fall17 (680-144777-10), XGM-97-12X_Fall17 (680-144777-11), XGM-DUP1_Fall17 (680-144777-12), AAFES-7_Fall17 (680-144777-13) and EB-01_Fall17 (680-144777-15) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared and analyzed on 10/27/2017.

The interference check standard solution (ICSA) associated with batch 680-500384 had results for one or more elements at a level greater than 2 times the limit of detection (LOD).

Manganese recovered high for the MS/MSD of sample XGM-93-04X_Fall17 (680-144777-10) in batch 680-500384.

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

ALKALINITY

Samples AAFES-2_Fall17 (680-144777-8), XGM-93-02X_Fall17 (680-144777-9), XGM-93-04X_Fall17 (680-144777-10), XGM-97-12X_Fall17 (680-144777-11), XGM-DUP1_Fall17 (680-144777-12) and EB-01_Fall17 (680-144777-15) were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 11/03/2017 and 11/07/2017.

Alkalinity was detected in method blank MB 280-394110/31 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Alkalinity was detected in method blank MB 280-394355/5 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens / AOC 43G

TestAmerica Job ID: 680-144777-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-144777-8	AAFES-2_Fall17	Water	10/25/17 10:00	10/26/17 09:20
680-144777-9	XGM-93-02X_Fall17	Water	10/24/17 11:15	10/26/17 09:20
680-144777-10	XGM-93-04X_Fall17	Water	10/25/17 11:10	10/26/17 09:20
680-144777-11	XGM-97-12X_Fall17	Water	10/24/17 12:55	10/26/17 09:20
680-144777-12	XGM-DUP1_Fall17	Water	10/24/17 13:00	10/26/17 09:20
680-144777-13	AAFES-7_Fall17	Water	10/25/17 08:45	10/26/17 09:20
680-144777-14	Trip Blank	Water	10/24/17 08:00	10/26/17 09:20
680-144777-15	EB-01_Fall17	Water	10/24/17 13:45	10/26/17 09:20

Sample 680-144777-10 should be XGM-94-04X.
The correction has been made in the data reporting tables.

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens / AOC 43G

TestAmerica Job ID: 680-144777-2

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
MA VPH	MADEP VPH Volatile Petroleum Hydrocarbon	NONE	

Protocol References:

NONE = NONE

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

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

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

Qualifiers

Metals

Qualifier	Qualifier Description
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
B	Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation

Glossary

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

Client Sample ID: AAFES-2_Fall17

Lab Sample ID: 680-144777-8
Date Collected: 10/25/17 10:00
Matrix: Water
Date Received: 10/26/17 09:20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	13		3.0	3.0	1.5	ug/L		10/27/17 18:33	1
Iron	10000		100	75	25	ug/L		10/27/17 18:33	1
Manganese	2800		5.0	5.0	1.8	ug/L		10/27/17 18:33	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	140	B	5.0	3.2	1.1	mg/L		11/07/17 15:42	1

Client Sample ID: XGM-93-02X_Fall17

Lab Sample ID: 680-144777-9
Date Collected: 10/24/17 11:15
Matrix: Water
Date Received: 10/26/17 09:20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	4.3		3.0	3.0	1.5	ug/L		10/27/17 18:37	1
Iron	6500		100	75	25	ug/L		10/27/17 18:37	1
Manganese	1400		5.0	5.0	1.8	ug/L		10/27/17 18:37	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	160	B	5.0	3.2	1.1	mg/L		11/03/17 21:50	1

Client Sample ID: XGM-93-04X_Fall17

Lab Sample ID: 680-144777-10
Date Collected: 10/25/17 11:10
Matrix: Water
Date Received: 10/26/17 09:20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.5		3.0	3.0	1.5	ug/L		10/27/17 18:15	1
Iron	1400		100	75	25	ug/L		10/27/17 18:15	1
Manganese	1700	J	5.0	5.0	1.8	ug/L		10/27/17 18:15	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	150	B	5.0	3.2	1.1	mg/L		11/07/17 15:48	1

Client Sample ID: XGM-97-12X_Fall17

Lab Sample ID: 680-144777-11
Date Collected: 10/24/17 12:55
Matrix: Water
Date Received: 10/26/17 09:20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	14		3.0	3.0	1.5	ug/L		10/27/17 18:40	1
Iron	18000		100	75	25	ug/L		10/27/17 18:40	1
Manganese	1200		5.0	5.0	1.8	ug/L		10/27/17 18:40	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	140	B	5.0	3.2	1.1	mg/L		11/03/17 21:56	1

Client Sample ID: XGM-DUP1_Fall17

Lab Sample ID: 680-144777-12
Date Collected: 10/24/17 13:00
Matrix: Water
Date Received: 10/26/17 09:20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	13		3.0	3.0	1.5	ug/L		10/27/17 18:51	1
Iron	17000		100	75	25	ug/L		10/27/17 18:51	1
Manganese	1200		5.0	5.0	1.8	ug/L		10/27/17 18:51	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	140	B	5.0	3.2	1.1	mg/L		11/03/17 21:44	1

Client Sample ID: AAFES-7_Fall17

Lab Sample ID: 680-144777-13
Date Collected: 10/25/17 08:45
Matrix: Water
Date Received: 10/26/17 09:20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/27/17 18:55	1
Manganese	330		5.0	5.0	1.8	ug/L		10/27/17 18:55	1

Client Sample ID: EB-01_Fall17

Lab Sample ID: 680-144777-15
Date Collected: 10/24/17 13:45
Matrix: Water
Date Received: 10/26/17 09:20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/27/17 18:58	1
Iron	75	U	100	75	25	ug/L		10/27/17 18:58	1
Manganese	5.0	U	5.0	5.0	1.8	ug/L		10/27/17 18:58	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	3.2	U	5.0	3.2	1.1	mg/L		11/03/17 22:02	1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-500255/1-A
Matrix: Water
Analysis Batch: 500384

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500255

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/27/17 19:42	1
Iron	75	U	100	75	25	ug/L		10/27/17 19:42	1
Manganese	5.0	U	5.0	5.0	1.8	ug/L		10/27/17 19:42	1

Lab Sample ID: LCS 680-500255/2-A
Matrix: Water
Analysis Batch: 500384

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 500255

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	90.9		ug/L		91	84 - 116
Iron	5000	4730		ug/L		95	87 - 118
Manganese	500	476		ug/L		95	87 - 115

Lab Sample ID: 680-144777-10 MS
Matrix: Water
Analysis Batch: 500384

Client Sample ID: XGM-93-04X_Fall17
Prep Type: Total/NA
Prep Batch: 500255

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	3.5		100	96.9		ug/L		93	84 - 116
Iron	1400		5000	6140		ug/L		94	87 - 118
Manganese	1700	J	500	2320	J	ug/L		133	87 - 115

Lab Sample ID: 680-144777-10 MSD
Matrix: Water
Analysis Batch: 500384

Client Sample ID: XGM-93-04X_Fall17
Prep Type: Total/NA
Prep Batch: 500255

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	3.5		100	97.6		ug/L		94	84 - 116	1	20
Iron	1400		5000	6270		ug/L		97	87 - 118	2	20
Manganese	1700	J	500	2380	J	ug/L		145	87 - 115	3	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-394110/31
Matrix: Water
Analysis Batch: 394110

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	3.09	J	5.0	3.2	1.1	mg/L		11/03/17 19:36	1

Lab Sample ID: LCS 280-394110/30
Matrix: Water
Analysis Batch: 394110

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	189		mg/L		94	90 - 110

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: MB 280-394355/5
Matrix: Water
Analysis Batch: 394355

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	3.34	J	5.0	3.2	1.1	mg/L		11/07/17 13:25	1

Lab Sample ID: LCS 280-394355/4
Matrix: Water
Analysis Batch: 394355

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	190		mg/L		95	90 - 110

Metals

Prep Batch: 500255

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144777-8	AAFES-2_Fall17	Total/NA	Water	3010A	
680-144777-9	XGM-93-02X_Fall17	Total/NA	Water	3010A	
680-144777-10	XGM-93-04X_Fall17	Total/NA	Water	3010A	
680-144777-11	XGM-97-12X_Fall17	Total/NA	Water	3010A	
680-144777-12	XGM-DUP1_Fall17	Total/NA	Water	3010A	
680-144777-13	AAFES-7_Fall17	Total/NA	Water	3010A	
680-144777-15	EB-01_Fall17	Total/NA	Water	3010A	
MB 680-500255/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-500255/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-144777-10 MS	XGM-93-04X_Fall17	Total/NA	Water	3010A	
680-144777-10 MSD	XGM-93-04X_Fall17	Total/NA	Water	3010A	

Analysis Batch: 500384

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144777-8	AAFES-2_Fall17	Total/NA	Water	6020A	500255
680-144777-9	XGM-93-02X_Fall17	Total/NA	Water	6020A	500255
680-144777-10	XGM-93-04X_Fall17	Total/NA	Water	6020A	500255
680-144777-11	XGM-97-12X_Fall17	Total/NA	Water	6020A	500255
680-144777-12	XGM-DUP1_Fall17	Total/NA	Water	6020A	500255
680-144777-13	AAFES-7_Fall17	Total/NA	Water	6020A	500255
680-144777-15	EB-01_Fall17	Total/NA	Water	6020A	500255
MB 680-500255/1-A	Method Blank	Total/NA	Water	6020A	500255
LCS 680-500255/2-A	Lab Control Sample	Total/NA	Water	6020A	500255
680-144777-10 MS	XGM-93-04X_Fall17	Total/NA	Water	6020A	500255
680-144777-10 MSD	XGM-93-04X_Fall17	Total/NA	Water	6020A	500255

General Chemistry

Analysis Batch: 394110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144777-9	XGM-93-02X_Fall17	Total/NA	Water	SM 2320B	
680-144777-11	XGM-97-12X_Fall17	Total/NA	Water	SM 2320B	
680-144777-12	XGM-DUP1_Fall17	Total/NA	Water	SM 2320B	
680-144777-15	EB-01_Fall17	Total/NA	Water	SM 2320B	
MB 280-394110/31	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-394110/30	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 394355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-144777-8	AAFES-2_Fall17	Total/NA	Water	SM 2320B	
680-144777-10	XGM-93-04X_Fall17	Total/NA	Water	SM 2320B	
MB 280-394355/5	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-394355/4	Lab Control Sample	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens / AOC 43G

TestAmerica Job ID: 680-144777-2

Client Sample ID: AAFES-2_Fall17

Lab Sample ID: 680-144777-8
Matrix: Water
Date Collected: 10/25/17 10:00
Date Received: 10/26/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	250 mL	500255	10/27/17 11:15	BCB	TAL SAV
Total/NA	Analysis	6020A		1			500384	10/27/17 18:33	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			394355	11/07/17 15:42	A1D	TAL DEN
	Instrument ID: WC_AT2									

Client Sample ID: XGM-93-02X_Fall17

Lab Sample ID: 680-144777-9
Matrix: Water
Date Collected: 10/24/17 11:15
Date Received: 10/26/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	250 mL	500255	10/27/17 11:15	BCB	TAL SAV
Total/NA	Analysis	6020A		1			500384	10/27/17 18:37	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			394110	11/03/17 21:50	A1D	TAL DEN
	Instrument ID: WC_AT2									

Client Sample ID: XGM-93-04X_Fall17

Lab Sample ID: 680-144777-10
Matrix: Water
Date Collected: 10/25/17 11:10
Date Received: 10/26/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	250 mL	500255	10/27/17 11:15	BCB	TAL SAV
Total/NA	Analysis	6020A		1			500384	10/27/17 18:15	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			394355	11/07/17 15:48	A1D	TAL DEN
	Instrument ID: WC_AT2									

Client Sample ID: XGM-97-12X_Fall17

Lab Sample ID: 680-144777-11
Matrix: Water
Date Collected: 10/24/17 12:55
Date Received: 10/26/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	250 mL	500255	10/27/17 11:15	BCB	TAL SAV
Total/NA	Analysis	6020A		1			500384	10/27/17 18:40	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			394110	11/03/17 21:56	A1D	TAL DEN
	Instrument ID: WC_AT2									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens / AOC 43G

TestAmerica Job ID: 680-144777-2

Client Sample ID: XGM-DUP1_Fall17

Date Collected: 10/24/17 13:00
Date Received: 10/26/17 09:20

Lab Sample ID: 680-144777-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	250 mL	500255	10/27/17 11:15	BCB	TAL SAV
Total/NA	Analysis	6020A		1			500384	10/27/17 18:51	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			394110	11/03/17 21:44	A1D	TAL DEN
	Instrument ID: WC_AT2									

Client Sample ID: AAFES-7_Fall17

Date Collected: 10/25/17 08:45
Date Received: 10/26/17 09:20

Lab Sample ID: 680-144777-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	250 mL	500255	10/27/17 11:15	BCB	TAL SAV
Total/NA	Analysis	6020A		1			500384	10/27/17 18:55	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: EB-01_Fall17

Date Collected: 10/24/17 13:45
Date Received: 10/26/17 09:20

Lab Sample ID: 680-144777-15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	250 mL	500255	10/27/17 11:15	BCB	TAL SAV
Total/NA	Analysis	6020A		1			500384	10/27/17 18:58	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			394110	11/03/17 22:02	A1D	TAL DEN
	Instrument ID: WC_AT2									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC.	Project #:
Project Location: Devens Fall 2017 LTM	RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
SK9990-1, 2, 3, 4, 5, 6 and 7

Matrices: (Groundwater/Surface Water) Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1] *All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 11/10/2017

TEST AMERICA SAVANNAH
DEVENS FALL 2017 LTM
SK9990

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
DEVENS FALL 2017 LTM
SK9990

Sample Receipt

The following samples were received on October 26, 2017 and were logged in under Katahdin Analytical Services work order number SK9990 for a hardcopy due date of November 07, 2017.

KATAHDIN Sample No.	TEST AMERICA Sample Identification
SK9990-1	AAFES-2_FALL17
SK9990-2	XGM-93-02X_FALL17
SK9990-3	XGM-93-04X_FALL17
SK9990-4	XGM-97-12X_FALL17
SK9990-5	XGM-DUP1_FALL17
SK9990-6	EB-01-FALL17
SK9990-7	TRIP BLANK

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. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order SK9990 were analyzed in accordance with the Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

Sample SK9990-3 was used for the matrix spike (MS) and matrix spike duplicate (MSD), as per client request.

MA-VPH Analysis

All samples with the exception of SK9990-6 and 7 were manually integrated for the surrogate 2,5-dibromotoluene on the PID/FID, the C9-C10 aromatic range, and/or several hydrocarbons.

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 closing calibration CVs (files 2KJ10298 and 2KK10022) had low responses for the compound n-decane that resulted in %D's that were greater than the method acceptance limit of 25%.

The MS/MSD WG216748-6 and 7 had high recoveries for the C9-C12 aliphatic range that was outside of the method acceptance limits. Since the associated LCS/LCSD were acceptable, no further action was taken.

There were no other protocol deviations or observations noted by the organics laboratory staff.

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 the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond
11.10.17

Leslie Dimond
Quality Assurance Officer

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.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Test America	KAS PM: HMM	Sampled By: Client
Project:	KIMS Entry By: SO	Delivered By: Fedex
KAS Work Order#: 5K1990	KIMS Review By: AMH	Received By: JCB
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 10.26.17 8.50

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?	✓ JCB	✓			
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 0.4
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
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 (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
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-01-Fall 17 not on chain of custody, but present in cooler

Allison Harbottle

From: Ragnaldsen, Amy <Amy.Ragnaldsen@testamericainc.com>
Sent: Friday, October 27, 2017 9:40 AM
To: 'Allison Harbottle'
Cc: Lanier, Jerry
Subject: RE: SK9990: Devens Fall 2017 * Updated from TestAmerica in Savannah / Samples received by Kathadin on Thursday 10/26/17
Attachments: SK9990.pdf

Importance: High

Follow Up Flag: Follow up
Flag Status: Flagged

Allison,

For the samples you received yesterday on the attached COC, the client does want the equipment blank run for the VPH that was not listed.
Please update the ID to EB-01-Fall 17

There are 2 IDs on your attached sample receipt that need to be revised to match the COC.

Sample ID: XGM-**92**-02X_Fall17 needs to XGM-**93**-02X_Fall17

Sample ID: XGM-**92**-04X_Fall17 needs to XGM-**93**-04X_Fall17

The client had a typo; all IDs should end in **_Fall17**, not with just one letter l as **_Fal17.**

Please let us know you received this update.

Thank you,
Amy

AMY RAGNALDSEN
Project Management Assistant

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

5102 Laroche Avenue
Savannah, GA 31404
Tel 912.354.7858 | Fax 912.352.0165
www.testamericainc.com

From: Allison Harbottle [mailto:aharbottle@katahdinlab.com]
Sent: Thursday, October 26, 2017 5:33 PM
To: Lanier, Jerry
Subject: SK9990: Devens Fall 2017

Good evening Jerry,

We received an equipment blank sample (ID: EB-01-F-1117) that **was NOT** on the chain of custody. Currently, we have logged this sample in per the sample label and will be running it for VPH analysis. If you would like us not to run the sample please let us know ASAP.

The samples were received today in good condition and within temp. I'm attaching the sample receipt and login file sheets for your review.

Regards,
Allison Harbottle
Client Accounts Manager
aharbottle@katahdinlab.com

Katahdin Analytical Services
600 Technology Way
Scarborough, ME, 04074
T +1.207.874.2400
www.katahdinlab.com

SK9990 380325-Boston

Chain of Custody Record

380325-Boston

PO #	17-636	Devens - AOC43G 1024-003	Page: 1 of: 1

Company	KOMAN GS, LLC
Address:	293 Boston Post Road, Suite 100 Marlborough, MA 01752
Phone: 508-366-7442	Fax: 508-366-7445
Sampled by [Print Name(s)]/Affilliation	
Sampler(s) Signature(s)	

Laboratory: Test America - Savannah
Address: 510 LaRoche Ave
Savannah, GA 31404
Contact: Jerry Lanier
Regulatory Facility No.
Project Nan Devens Fall 2017 LTM
Sampling QAP No.:
Approval Date:
TAT Routine
Other:

Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	Preservatives (see codes) H	N	I	Analyses Requested: MA VPH 3-40ml VOAvials (HCl)	Total Metals* (SW6010/6020) 1-250 ml poly (HNO3)	Alkalinity (SM2320B) 1-250ml Poly	Remarks	Lab. No.
AAFES-2_FAL17	10/25	1090	P	GW	5				X	X	X		
XGM-93-02X_FAL17	10/24	1115	P	GW	5				X	X	X		
XGM-93-04X_FAL17	10/25	1110	P	GW	15				X	X	X	MS/MSD	
XGM-97-12X_FAL17	10/24	1255	P	GW	5				X	X	X		
XGM-DUP1_FAL17	10/24	1300	P	GW	5				X	X	X		
AAFES-7_FAL17	10/25	845	P	GW	1					X		As, Mn Only	
Trip Blank	10/24	800	G	WQ	2				X				
Shipping Details			courier pick up		0	← Total Number of Containers							

Date Out:	Via:
Returned:	Via:

Additional Comments:
* = Metals: As (6020) Fe, Mn (6010)

email logins and results to:
lekes@komangs.com

Item No.	Relinquished by/Affiliation	Date	Time	Date	Time
		10/25/17	1510		
		10-25-17	1510	10-25-17	
		10.25.17	1800		
		10.26.17	850		

Lab Comments

Preserve Where Applicable ☐
On ICE ☐
Temperature _____C

NJ Data Deliverable Info

☐ NJ Reduced
☐ NJ Full
☐ Full CLP
☐ Disk Deliverable
☐ Other (Specify)

☐ Commercial "A"
☐ Commercial "B"
☐ State Forms

MATRIX CODES: GW = Groundwater SE = Sediment SP = Soil SW = Surface Water O = Other
PRESERVATIVE CODES: H = HCL + Ice I = Ice Only N = Nitric Acid + Ice S = Sulfuric Acid + I M = Methanol O = Other
COLLECTION METHOD CODES: G=Grab P= Pumping O = Other

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Oct. 27, 2017
04:29 PM

Login Number: SK9990

Account: TASAV001
Test America Savannah

Project: TASAV-DEVENS

Quote/Incoming:

NoWeb

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 4.2 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	17-636 Devens AOC43G 1024-003
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	W912WJ-10-D-0003
COOLER TEMPERATURE	:	0.4
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS033QC-XLS
LOGIN INITIALS	:	SO
PM	:	HHM
PROJECT NAME	:	Devens Fall 2017 LTM
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	Sample data summary needs all forms. Email PDF, EDD files and invoice to Jerry. No HC. Include Level 4 narrative and MCP forms. Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS.

Laboratory Sample ID	Client Sample Number	SDG ID / SDG STATUS / VERBAL TAT	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SK9990-1	AAFES-2_FALL17		25-OCT-17 10:00	26-OCT-17			07-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	08-NOV-17	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number							
SK9990-2	XGM-93-02X_FALL17		24-OCT-17 11:15	26-OCT-17			07-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	07-NOV-17	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number							
SK9990-3	XGM-93-04X_FALL17		25-OCT-17 11:10	26-OCT-17			07-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	08-NOV-17	40mL Vial+HCl		**MS/MSD**

Laboratory Sample ID	Client Sample Number							
SK9990-4	XGM-97-12X_FALL17		24-OCT-17 12:55	26-OCT-17			07-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	07-NOV-17	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number							
SK9990-5	XGM-DUP1_FALL17		24-OCT-17 13:00	26-OCT-17			07-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	07-NOV-17	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number							
SK9990-6	EB-01-FALL17		24-OCT-17 13:45	26-OCT-17			07-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	07-NOV-17	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number							
SK9990-7	TRIP BLANK		24-OCT-17 08:00	26-OCT-17			07-NOV-17	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	07-NOV-17	40mL Vial+HCl		

AMH 10/27/17

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Oct. 27, 2017

04:29 PM

Login Number: SK9990

Quote/Incoming:

Account: TASAV001

Test America Savannah

NoWeb

Project: TASAV-DEVENS

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed

Total Samples: *7* ***Total Analyses:*** *7*

AMH 10/27/17

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Report of Analytical Results

Client: Test America Savannah
Lab ID: SK9990-1
Client ID: AAFES-2_FALL17
Project: Devens Fall 2017 LTM
SDG: SK9990
Lab File ID: 2KJ10289.D

Sample Date: 25-OCT-17
Received Date: 26-OCT-17
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 03-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics		890	ug/L	1	100	100	50.
C9-C12 Aliphatics	E	530	ug/L	1	100	100	50.
C9-C10 Aromatics	E	1100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene		23	ug/L	1	5	5.0	0.42
Methyl tert-butylether		5.9	ug/L	1	5	5.0	0.31
Naphthalene		20	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	J	6.6	ug/L	1	10	10.	0.92
o-Xylene	J	2.1	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		88.4	%				
2,5-Dibromotoluene (PID)		104.	%				

600 Technology Way
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Tel:(207) 874-2400 Fax:(207) 775-4029

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK9990-1DL
Client ID: AAFES-2_FALL17
Project: Devens Fall 2017 LTM
SDG: SK9990
Lab File ID: 2KK10017.I

Sample Date: 25-OCT-17
Received Date: 26-OCT-17
Extract Date: 01-NOV-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216829

Analysis Date: 01-NOV-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 03-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics		600	ug/L	5	100	500	250
C9-C12 Aliphatics	U	500	ug/L	5	100	500	250
C9-C10 Aromatics		1200	ug/L	5	100	500	250
Benzene	U	15	ug/L	5	3	15.	1.6
Ethylbenzene	J	20	ug/L	5	5	25.	2.1
Methyl tert-butylether	J	5.0	ug/L	5	5	25.	1.6
Naphthalene	J	16	ug/L	5	5	25.	8.0
Toluene	U	25	ug/L	5	5	25.	1.7
m+p-Xylenes	J	5.9	ug/L	5	10	50.	4.6
o-Xylene	U	25	ug/L	5	5	25.	2.4
2,5-Dibromotoluene (FID)		76.0	%				
2,5-Dibromotoluene (PID)		89.3	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK9990-2
Client ID: XGM-93-02X_FALL17
Project: Devens Fall 2017 LTM
SDG: SK9990
Lab File ID: 2KJ10290.D

Sample Date: 24-OCT-17
Received Date: 26-OCT-17
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 03-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	J	79	ug/L	1	100	100	50.
C9-C12 Aliphatics	J	78	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	J	0.38	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether		7.8	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		80.0	%				
2,5-Dibromotoluene (PID)		90.9	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK9990-3
Client ID: XGM-93-04X_FALL17
Project: Devens Fall 2017 LTM
SDG: SK9990
Lab File ID: 2KJ10291.D

Sample Date: 25-OCT-17
Received Date: 26-OCT-17
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 03-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics		360	ug/L	1	100	100	50.
C9-C12 Aliphatics	J	58	ug/L	1	100	100	50.
C9-C10 Aromatics	E	410	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene		25	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	J	4.6	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	J	3.6	ug/L	1	10	10.	0.92
o-Xylene	J	2.1	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		75.9	%				
2,5-Dibromotoluene (PID)		87.8	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK9990-3DL
Client ID: XGM-93-04X_FALL17
Project: Devens Fall 2017 LTM
SDG: SK9990
Lab File ID: 2KK10014.I

Sample Date: 25-OCT-17
Received Date: 26-OCT-17
Extract Date: 01-NOV-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216829

Analysis Date: 01-NOV-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 03-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	J	190	ug/L	2	100	200	100
C9-C12 Aliphatics	U	200	ug/L	2	100	200	100
C9-C10 Aromatics		400	ug/L	2	100	200	100
Benzene	U	6.0	ug/L	2	3	6.0	0.62
Ethylbenzene		22	ug/L	2	5	10.	0.84
Methyl tert-butylether	U	10	ug/L	2	5	10.	0.62
Naphthalene	J	4.7	ug/L	2	5	10.	3.2
Toluene	U	10	ug/L	2	5	10.	0.68
m+p-Xylenes	J	3.4	ug/L	2	10	20.	1.8
o-Xylene	J	1.8	ug/L	2	5	10.	0.94
2,5-Dibromotoluene (FID)		87.1	%				
2,5-Dibromotoluene (PID)		101.	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK9990-4
Client ID: XGM-97-12X_FALL17
Project: Devens Fall 2017 LTM
SDG: SK9990
Lab File ID: 2KJ10292.D

Sample Date: 24-OCT-17
Received Date: 26-OCT-17
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 03-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics		350	ug/L	1	100	100	50.
C9-C12 Aliphatics	E	170	ug/L	1	100	100	50.
C9-C10 Aromatics	E	430	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene		18	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene		5.1	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	J	1.6	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		79.2	%				
2,5-Dibromotoluene (PID)		93.3	%				

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Tel:(207) 874-2400 Fax:(207) 775-4029

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK9990-4DL
Client ID: XGM-97-12X_FALL17
Project: Devens Fall 2017 LTM
SDG: SK9990
Lab File ID: 2KK10015.I

Sample Date: 24-OCT-17
Received Date: 26-OCT-17
Extract Date: 01-NOV-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216829

Analysis Date: 01-NOV-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 03-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics		240	ug/L	2	100	200	100
C9-C12 Aliphatics	J	110	ug/L	2	100	200	100
C9-C10 Aromatics		430	ug/L	2	100	200	100
Benzene	U	6.0	ug/L	2	3	6.0	0.62
Ethylbenzene		15	ug/L	2	5	10.	0.84
Methyl tert-butylether	U	10	ug/L	2	5	10.	0.62
Naphthalene	J	4.5	ug/L	2	5	10.	3.2
Toluene	U	10	ug/L	2	5	10.	0.68
m+p-Xylenes	U	20	ug/L	2	10	20.	1.8
o-Xylene	U	10	ug/L	2	5	10.	0.94
2,5-Dibromotoluene (FID)		82.8	%				
2,5-Dibromotoluene (PID)		99.4	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK9990-5
Client ID: XGM-DUP1_FALL17
Project: Devens Fall 2017 LTM
SDG: SK9990
Lab File ID: 2KJ10293.D

Sample Date: 24-OCT-17
Received Date: 26-OCT-17
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 03-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics		370	ug/L	1	100	100	50.
C9-C12 Aliphatics	E	200	ug/L	1	100	100	50.
C9-C10 Aromatics	E	440	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene		18	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene		5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	J	1.6	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		86.5	%				
2,5-Dibromotoluene (PID)		101.	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK9990-5DL
Client ID: XGM-DUP1_FALL17
Project: Devens Fall 2017 LTM
SDG: SK9990
Lab File ID: 2KK10016.I

Sample Date: 24-OCT-17
Received Date: 26-OCT-17
Extract Date: 01-NOV-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216829

Analysis Date: 01-NOV-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 03-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics		230	ug/L	2	100	200	100
C9-C12 Aliphatics	J	100	ug/L	2	100	200	100
C9-C10 Aromatics		430	ug/L	2	100	200	100
Benzene	U	6.0	ug/L	2	3	6.0	0.62
Ethylbenzene		16	ug/L	2	5	10.	0.84
Methyl tert-butylether	U	10	ug/L	2	5	10.	0.62
Naphthalene	J	4.6	ug/L	2	5	10.	3.2
Toluene	U	10	ug/L	2	5	10.	0.68
m+p-Xylenes	U	20	ug/L	2	10	20.	1.8
o-Xylene	U	10	ug/L	2	5	10.	0.94
2,5-Dibromotoluene (FID)		81.8	%				
2,5-Dibromotoluene (PID)		96.5	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK9990-6
Client ID: EB-01-FALL17
Project: Devens Fall 2017 LTM
SDG: SK9990
Lab File ID: 2KJ10279.D

Sample Date: 24-OCT-17
Received Date: 26-OCT-17
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 03-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		94.9	%				
2,5-Dibromotoluene (PID)		92.9	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SK9990-7
Client ID: TRIP BLANK
Project: Devens Fall 2017 LTM
SDG: SK9990
Lab File ID: 2KJ10280.D

Sample Date: 24-OCT-17
Received Date: 26-OCT-17
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 03-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		73.3	%				
2,5-Dibromotoluene (PID)		70.1	%				

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Report of Analytical Results

Client:
Lab ID: WG216748-1RA
Client ID: Method Blank Sample
Project:
SDG: SK9990
Lab File ID: 2KJ10278.D

Sample Date:
Received Date:
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 03-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		112.	%				
2,5-Dibromotoluene (PID)		109.	%				

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Report of Analytical Results

Client:
Lab ID: WG216829-1
Client ID: Method Blank Sample
Project:
SDG: SK9990
Lab File ID: 2KK10002.D

Sample Date:
Received Date:
Extract Date: 01-NOV-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216829

Analysis Date: 01-NOV-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 03-NOV-17

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		88.6	%				
2,5-Dibromotoluene (PID)		88.0	%				

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Devens Fall 2017 LTM **Matrix:** AQ
Lab Code: KAS **SDG:** SK9990

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
AAFES-2_FALL17	SK9990-1	B	88.4		104.	
AAFES-2_FALL17	SK9990-1DL	B	76.0		89.3	
XGM-93-02X_FALL17	SK9990-2	B	80.0		90.9	
XGM-93-04X_FALL17	SK9990-3	B	75.9		87.8	
XGM-93-04X_FALL17	SK9990-3DL	B	87.1		101.	
XGM-97-12X_FALL17	SK9990-4	B	79.2		93.3	
XGM-97-12X_FALL17	SK9990-4DL	B	82.8		99.4	
XGM-DUP1_FALL17	SK9990-5	B	86.5		101.	
XGM-DUP1_FALL17	SK9990-5DL	B	81.8		96.5	
EB-01-FALL17	SK9990-6	B	94.9		92.9	
TRIP BLANK	SK9990-7	B	73.3		70.1	
Method Blank Sample	WG216748-1RA	B	112.		109.	
Laboratory Control S	WG216748-2	B	81.8		81.3	
Laboratory Control S	WG216748-3	B	82.9		81.8	
Matrix Spike	WG216748-6	B	75.6		86.8	
Matrix Spike Duplica	WG216748-7	B	75.3		86.1	
Method Blank Sample	WG216829-1	B	88.6		88.0	
Laboratory Control S	WG216829-2	B	79.6		80.0	
Laboratory Control S	WG216829-3	B	82.0		82.8	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= 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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LCS/LCSD Recovery Report

LCS ID: WG216748-2
LCSD ID: WG216748-3
Project:
SDG: SK9990
Report Date: 03-NOV-17
LCS File ID: 2KJ10276.D

Received Date:
Extract Date: 31-OCT-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748
LCSD File ID: 2KJ10277.D

Analysis Date: 31-OCT-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	304.	101.	303.	101.	ug/L	0	25	70-130
C9-C12 Aliphatics	200.	197.	98.5	197.	98.5	ug/L	0	25	70-130
C9-C10 Aromatics	100.	99.6	99.6	100.	100.	ug/L	0	25	70-130
Benzene	100.	90.0	90.0	90.8	90.8	ug/L	1	25	70-130
Ethylbenzene	100.	92.7	92.7	93.2	93.2	ug/L	0	25	70-130
Methyl tert-butylether	100.	91.0	91.0	92.2	92.2	ug/L	1	25	70-130
Naphthalene	100.	97.7	97.7	99.1	99.1	ug/L	1	25	70-130
Toluene	100.	89.0	89.0	89.6	89.6	ug/L	1	25	70-130
m+p-Xylenes	200.	179.	89.5	180.	90.0	ug/L	0	25	70-130
o-Xylene	100.	89.1	89.1	89.6	89.6	ug/L	0	25	70-130
2,5-Dibromotoluene (FID)			81.8		82.9				70-130
2,5-Dibromotoluene (PID)			81.3		81.8				70-130

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LCS/LCSD Recovery Report

LCS ID: WG216829-2
LCSD ID: WG216829-3
Project:
SDG: SK9990
Report Date: 03-NOV-17
LCS File ID: 2KK10003.D

Received Date:
Extract Date: 01-NOV-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216829
LCSD File ID: 2KK10004.D

Analysis Date: 01-NOV-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	293.	97.7	295.	98.3	ug/L	1	25	70-130
C9-C12 Aliphatics	200.	192.	96.0	192.	96.0	ug/L	0	25	70-130
C9-C10 Aromatics	100.	100.	100.	102.	102.	ug/L	2	25	70-130
Benzene	100.	91.2	91.2	91.7	91.7	ug/L	0	25	70-130
Ethylbenzene	100.	93.8	93.8	94.4	94.4	ug/L	1	25	70-130
Methyl tert-butylether	100.	91.2	91.2	92.1	92.1	ug/L	1	25	70-130
Naphthalene	100.	97.4	97.4	98.5	98.5	ug/L	1	25	70-130
Toluene	100.	90.0	90.0	90.6	90.6	ug/L	1	25	70-130
m+p-Xylenes	200.	181.	90.5	183.	91.5	ug/L	1	25	70-130
o-Xylene	100.	90.0	90.0	90.6	90.6	ug/L	1	25	70-130
2,5-Dibromotoluene (FID)			79.6		82.0				70-130
2,5-Dibromotoluene (PID)			80.0		82.8				70-130

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MS/MSD Recovery Report

MS ID: WG216748-6
MSD ID: WG216748-7
Sample ID: SK9990-3
Client ID: XGM-93-04X_FALL17
Project:
SDG: SK9990
MS File ID: 2KJ10296.D

Received Date:
Extract Date: 01-NOV-17
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG216748
Report Date: 03-NOV-17
MSD File ID: 2KJ10297.D

Analysis Date: 01-NOV-17
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	300.	ug/L	360	600	576	81.7	73.7	4	50	70-130
C9-C12 Aliphatics	200.	200.	ug/L	J58	604	583	273.*	262.*	4	50	70-130
C9-C10 Aromatics	100.	100.	ug/L	E410	521	497	111.	87.0	5	50	70-130
Benzene	100.	100.	ug/L	U3.0	102	103	102.	103.	1	50	70-130
Ethylbenzene	100.	100.	ug/L	25	126	126	101.	101.	0	50	70-130
Methyl tert-butylether	100.	100.	ug/L	U5.0	94.1	102	94.1	102.	8	50	70-130
Naphthalene	100.	100.	ug/L	J4.6	111	107	106.	102.	4	50	70-130
Toluene	100.	100.	ug/L	U5.0	98.2	99.2	98.2	99.2	1	50	70-130
m+p-Xylenes	200.	200.	ug/L	J3.6	196	198	96.2	97.2	1	50	70-130
o-Xylene	100.	100.	ug/L	J2.1	98.6	99.2	96.5	97.1	1	50	70-130
2,5-Dibromotoluene (FID)							75.6	75.3			70-130
2,5-Dibromotoluene (PID)							86.8	86.1			70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM
Lab File ID : 2KK10002.D
Instrument ID : GC02

SDG : SK9990
Lab Sample ID : WG216829-1
Date Analyzed : 01-NOV-17
Time Analyzed : 09:55
Date Extracted : 01-NOV-17

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	WG216829-2	2KK10003.	11/01/17	10:37
Laboratory Control S	WG216829-3	2KK10004.	11/01/17	11:18
XGM-93-04X_FALL17	SK9990-3DL	2KK10014.	11/01/17	19:59
XGM-97-12X_FALL17	SK9990-4DL	2KK10015.	11/01/17	20:41
XGM-DUP1_FALL17	SK9990-5DL	2KK10016.	11/01/17	21:22
AAFES-2_FALL17	SK9990-1DL	2KK10017.	11/01/17	22:03

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM
Lab File ID : 2KJ10278.D
Instrument ID : GC02

SDG : SK9990
Lab Sample ID : WG216748-1RA
Date Analyzed : 31-OCT-17
Time Analyzed : 10:59
Date Extracted : 31-OCT-17

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	WG216748-2	2KJ10276.I	10/31/17	09:24
Laboratory Control S	WG216748-3	2KJ10277.I	10/31/17	10:06
EB-01-FALL17	SK9990-6	2KJ10279.I	10/31/17	13:45
TRIP BLANK	SK9990-7	2KJ10280.I	10/31/17	14:26
AAFES-2_FALL17	SK9990-1	2KJ10289.I	10/31/17	21:09
XGM-93-02X_FALL17	SK9990-2	2KJ10290.I	10/31/17	21:50
XGM-93-04X_FALL17	SK9990-3	2KJ10291.I	10/31/17	22:31
XGM-97-12X_FALL17	SK9990-4	2KJ10292.I	10/31/17	23:13
XGM-DUP1_FALL17	SK9990-5	2KJ10293.I	10/31/17	23:54
Matrix Spike	WG216748-6	2KJ10296.I	11/01/17	01:57
Matrix Spike Duplica	WG216748-7	2KJ10297.I	11/01/17	02:39

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SK9990

Project : Devens Fall 2017 LTM **Instrument ID:** GC02

Lab File IDs : 2KJ10242.D 2KJ10243.D 2KJ10244.D 2KJ10241.D 2KJ10245.D 2KJ10246.D **Calibration Date(s):** 28-OCT-17 08:51 28-OCT-17 12:26

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	191	171	198	230	241	226	AVG		209		12.9443(	25.00000	M (
Methyl tert-butylether	107	120	119	125	130	124	AVG		121		6.38746	25.00000	O
Benzene	309	254	265	272	281	263	AVG		274		7.02796	25.00000	O
Toluene	285	231	245	255	263	243	AVG		254		7.41945	25.00000	O
Ethylbenzene	219	189	204	222	230	212	AVG		213		6.95726	25.00000	O
m+p-Xylene	268	229	248	257	259	231	AVG		249		6.44870	25.00000	O
o-Xylene	246	202	210	225	232	214	AVG		222		7.18332	25.00000	O
1,2,4-trimethylbenzene	191	171	198	230	241	226	AVG		209		12.9443(	25.00000	O
Naphthalene	186	136	142	191	220	228	AVG		184		20.8737(	25.00000	O
2,5-Dibromotoluene (PID)	158	488	808	6774	16227	60183	QUA	2.12060	0.00663	-2.789e-0	0.99945	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SK9990
Project : Devens Fall 2017 LTM **Instrument ID:** GC02
Lab File IDs : 2KJ10242.D 2KJ10243.D 2KJ10244.D **Calibration Date(s):** 28-OCT-17 08:51
2KJ10241.D 2KJ10245.D 2KJ10246.D 28-OCT-17 12:26

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	4726	4419	4420	4862	5145	5047	AVG		4770		6.45080	25.00000	M (
C9-C12 Aliphatic	4628	3913	4171	4450	5217	5631	AVG		4668		13.86355	25.00000	M (
n-Pentane	4141	3328	3468	4224	4473	4438	AVG		4012		12.30544	25.00000	O
2-Methylpentane	4639	4783	4678	4956	5251	5128	AVG		4906		5.07151	25.00000	O
Methyl tert-butylether	3009	3577	3542	3607	3750	3693	AVG		3530		7.54517	25.00000	O
2,2,4-Trimethylpentane	5399	5146	5114	5407	5712	5574	AVG		5392		4.33484	25.00000	O
Benzene	7840	6312	6524	6596	6994	6823	AVG		6848		7.89394	25.00000	O
Toluene	7510	6200	6388	6576	7012	6795	AVG		6747		6.98991	25.00000	O
n-Nonane	4710	3917	4095	4714	5165	5486	AVG		4681		12.85353	25.00000	O
n-Decane	4428	2906	3281	3934	5115	5569	AVG		4206		24.60511	25.00000	O
Ethylbenzene	6265	5402	5794	6322	6756	6594	AVG		6189		8.18658	25.00000	O
m+p-Xylene	6688	5844	6346	6588	6953	6728	AVG		6525		5.94226	25.00000	O
o-Xylene	6491	5930	6338	6475	6897	6698	AVG		6472		5.09472	25.00000	O
1,2,4-trimethylbenzene	5592	5002	5432	6169	6650	6533	AVG		5896		11.13554	25.00000	O
n-Butylcyclohexane	4828	4921	5061	4965	5318	5693	AVG		5131		6.27894	25.00000	O
Naphthalene	3656	2861	3495	4175	4685	4730	AVG		3934		18.60235	25.00000	O
2,5-Dibromotoluene (FID)	1367	5024	8264	73200	170513	590015	QUA	2.15029	0.00062	-1.937e-0	0.99954	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM
Lab ID : WG216748-8
Lab File ID : 2KJ10274.D
Initial Calibration Date(s): 10/28/17 08:51 10/28/17 12:26

SDG: SK9990
Analytical Date: 10/31/17 08:01
Instrument ID: GC02
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
2	Methyl tert-butylether	121	114	114	0.100	-5.60104	25.00000	Averaged
3	Benzene	274	254	254	0.100	-7.36348	25.00000	Averaged
4	Toluene	254	240	240	0.100	-5.37730	25.00000	Averaged
5	Ethylbenzene	213	213	213	0.100	-0.03448	25.00000	Averaged
6	m+p-Xylene	249	246	246	0.100	-1.20864	25.00000	Averaged
7	o-Xylene	222	215	215	0.100	-2.90284	25.00000	Averaged
8	1,2,4-trimethylbenzene	209	222	222	0.100	6.06574	25.00000	Averaged
10	Naphthalene	184	200	200	0.100	8.87224	25.00000	Averaged
11	2,5-Dibromotoluene (PID)	50.00000	53.71386	161	0.100	7.42773	25.00000	Quadratic

*** = Compound out of QC criteria**

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11/10/2017

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM
Lab ID : WG216748-8
Lab File ID : 2KJ10274.D
Initial Calibration Date(s): 10/28/17 08:51 10/28/17 12:26

SDG: SK9990
Analytical Date: 10/31/17 08:01
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
5	n-Pentane	4012	3826	3826	0.100	-4.63219	25.00000	Averaged
6	2-Methylpentane	4906	4543	4543	0.100	-7.39922	25.00000	Averaged
7	Methyl tert-butylether	3530	3301	3301	0.100	-6.47236	25.00000	Averaged
8	2,2,4-Trimethylpentane	5392	5097	5097	0.100	-5.46280	25.00000	Averaged
9	Benzene	6848	6196	6196	0.100	-9.52966	25.00000	Averaged
11	Toluene	6747	6261	6261	0.100	-7.20534	25.00000	Averaged
12	n-Nonane	4681	4563	4563	0.100	-2.53667	30.00000	Averaged
13	n-Decane	4206	3899	3899	0.100	-7.28032	25.00000	Averaged
14	Ethylbenzene	6189	6094	6094	0.100	-1.53739	25.00000	Averaged
15	m+p-Xylene	6525	6350	6350	0.100	-2.66971	25.00000	Averaged
16	o-Xylene	6472	6288	6288	0.100	-2.83501	25.00000	Averaged
18	1,2,4-trimethylbenzene	5896	5997	5997	0.100	1.71120	25.00000	Averaged
19	n-Butylcyclohexane	5131	4789	4789	0.100	-6.67387	25.00000	Averaged
20	Naphthalene	3934	4289	4289	0.100	9.03355	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	50.00000	54.55567	1741	0.100	9.11135	25.00000	Quadratic

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM
Lab ID : WG216748-9
Lab File ID : 2KJ10298.D
Initial Calibration Date(s): 10/28/17 08:51 10/28/17 12:26

SDG: SK9990
Analytical Date: 11/01/17 03:20
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
2	Methyl tert-butylether	121	116	116	0.100	-3.89463	25.00000	Averaged
3	Benzene	274	258	258	0.100	-5.91182	25.00000	Averaged
4	Toluene	254	244	244	0.100	-3.62663	25.00000	Averaged
5	Ethylbenzene	213	214	214	0.100	0.73672	25.00000	Averaged
6	m+p-Xylene	249	247	247	0.100	-0.70972	25.00000	Averaged
7	o-Xylene	222	217	217	0.100	-2.26244	25.00000	Averaged
8	1,2,4-trimethylbenzene	209	221	221	0.100	5.55967	25.00000	Averaged
10	Naphthalene	184	186	186	0.100	1.40584	25.00000	Averaged
11	2,5-Dibromotoluene (PID)	50.00000	44.64940	132	0.100	-10.70119	25.00000	Quadratic

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM
Lab ID : WG216748-9
Lab File ID : 2KJ10298.D
Initial Calibration Date(s): 10/28/17 08:51 10/28/17 12:26

SDG: SK9990
Analytical Date: 11/01/17 03:20
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
5	n-Pentane	4012	3709	3709	0.100	-7.54803	25.00000	Averaged	
6	2-Methylpentane	4906	4355	4355	0.100	-11.22490	25.00000	Averaged	
7	Methyl tert-butylether	3530	3301	3301	0.100	-6.46386	25.00000	Averaged	
8	2,2,4-Trimethylpentane	5392	4726	4726	0.100	-12.35143	25.00000	Averaged	
9	Benzene	6848	6177	6177	0.100	-9.79776	25.00000	Averaged	
11	Toluene	6747	6245	6245	0.100	-7.44575	25.00000	Averaged	
12	n-Nonane	4681	3667	3667	0.100	-21.65927	30.00000	Averaged	
13	n-Decane	4206	3017	3017	0.100	-28.25030	25.00000	Averaged	*
14	Ethylbenzene	6189	6047	6047	0.100	-2.28198	25.00000	Averaged	
15	m+p-Xylene	6525	6288	6288	0.100	-3.63070	25.00000	Averaged	
16	o-Xylene	6472	6222	6222	0.100	-3.85301	25.00000	Averaged	
18	1,2,4-trimethylbenzene	5896	5860	5860	0.100	-0.61566	25.00000	Averaged	
19	n-Butylcyclohexane	5131	4047	4047	0.100	-21.13428	25.00000	Averaged	
20	Naphthalene	3934	4002	4002	0.100	1.73180	25.00000	Averaged	
21	2,5-Dibromotoluene (FID)	50.00000	45.04165	1418	0.100	-9.91671	25.00000	Quadratic	

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM
Lab ID : WG216829-4
Lab File ID : 2KK10001.D
Initial Calibration Date(s): 10/28/17 08:51 10/28/17 12:26

SDG: SK9990
Analytical Date: 11/01/17 09:14
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
2	Methyl tert-butylether	121	115	115	0.100	-4.37508	25.00000	Averaged
3	Benzene	274	262	262	0.100	-4.37262	25.00000	Averaged
4	Toluene	254	250	250	0.100	-1.48956	25.00000	Averaged
5	Ethylbenzene	213	219	219	0.100	3.06916	25.00000	Averaged
6	m+p-Xylene	249	253	253	0.100	1.80905	25.00000	Averaged
7	o-Xylene	222	222	222	0.100	0.20896	25.00000	Averaged
8	1,2,4-trimethylbenzene	209	228	228	0.100	8.64386	25.00000	Averaged
10	Naphthalene	184	190	190	0.100	3.48468	25.00000	Averaged
11	2,5-Dibromotoluene (PID)	50.00000	44.51798	132	0.100	-10.96404	25.00000	Quadratic

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM
Lab ID : WG216829-4
Lab File ID : 2KK10001.D
Initial Calibration Date(s): 10/28/17 08:51 10/28/17 12:26

SDG: SK9990
Analytical Date: 11/01/17 09:14
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
5	n-Pentane	4012	3811	3811	0.100	-5.00857	25.00000	Averaged
6	2-Methylpentane	4906	4489	4489	0.100	-8.49384	25.00000	Averaged
7	Methyl tert-butylether	3530	3246	3246	0.100	-8.02384	25.00000	Averaged
8	2,2,4-Trimethylpentane	5392	5046	5046	0.100	-6.40609	25.00000	Averaged
9	Benzene	6848	6248	6248	0.100	-8.76012	25.00000	Averaged
11	Toluene	6747	6359	6359	0.100	-5.74541	25.00000	Averaged
12	n-Nonane	4681	4549	4549	0.100	-2.81907	30.00000	Averaged
13	n-Decane	4206	3846	3846	0.100	-8.54247	25.00000	Averaged
14	Ethylbenzene	6189	6165	6165	0.100	-0.39014	25.00000	Averaged
15	m+p-Xylene	6525	6443	6443	0.100	-1.25045	25.00000	Averaged
16	o-Xylene	6472	6350	6350	0.100	-1.87573	25.00000	Averaged
18	1,2,4-trimethylbenzene	5896	6002	6002	0.100	1.79023	25.00000	Averaged
19	n-Butylcyclohexane	5131	4797	4797	0.100	-6.50704	25.00000	Averaged
20	Naphthalene	3934	4021	4021	0.100	2.21581	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	50.00000	44.67666	1405	0.100	-10.64668	25.00000	Quadratic

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM
Lab ID : WG216829-5
Lab File ID : 2KK10022.D
Initial Calibration Date(s): 10/28/17 08:51 10/28/17 12:26

SDG: SK9990
Analytical Date: 11/02/17 01:30
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
2	Methyl tert-butylether	121	112	112	0.100	-6.82700	25.00000	Averaged
3	Benzene	274	253	253	0.100	-7.62609	25.00000	Averaged
4	Toluene	254	241	241	0.100	-4.78585	25.00000	Averaged
5	Ethylbenzene	213	212	212	0.100	-0.47652	25.00000	Averaged
6	m+p-Xylene	249	244	244	0.100	-1.95703	25.00000	Averaged
7	o-Xylene	222	214	214	0.100	-3.48912	25.00000	Averaged
8	1,2,4-trimethylbenzene	209	217	217	0.100	3.64040	25.00000	Averaged
10	Naphthalene	184	181	181	0.100	-1.46752	25.00000	Averaged
11	2,5-Dibromotoluene (PID)	50.00000	43.81037	129	0.100	-12.37926	25.00000	Quadratic

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM
Lab ID : WG216829-5
Lab File ID : 2KK10022.D
Initial Calibration Date(s): 10/28/17 08:51 10/28/17 12:26

SDG: SK9990
Analytical Date: 11/02/17 01:30
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
5	n-Pentane	4012	3488	3488	0.100	-13.05418	25.00000	Averaged	
6	2-Methylpentane	4906	4119	4119	0.100	-16.03350	25.00000	Averaged	
7	Methyl tert-butylether	3530	3191	3191	0.100	-9.59516	25.00000	Averaged	
8	2,2,4-Trimethylpentane	5392	4497	4497	0.100	-16.59159	25.00000	Averaged	
9	Benzene	6848	6066	6066	0.100	-11.41686	25.00000	Averaged	
11	Toluene	6747	6184	6184	0.100	-8.34780	25.00000	Averaged	
12	n-Nonane	4681	3634	3634	0.100	-22.36548	30.00000	Averaged	
13	n-Decane	4206	2981	2981	0.100	-29.10964	25.00000	Averaged	*
14	Ethylbenzene	6189	5968	5968	0.100	-3.55882	25.00000	Averaged	
15	m+p-Xylene	6525	6217	6217	0.100	-4.71277	25.00000	Averaged	
16	o-Xylene	6472	6154	6154	0.100	-4.90933	25.00000	Averaged	
18	1,2,4-trimethylbenzene	5896	5756	5756	0.100	-2.37403	25.00000	Averaged	
19	n-Butylcyclohexane	5131	3933	3933	0.100	-23.35725	25.00000	Averaged	
20	Naphthalene	3934	3913	3913	0.100	-0.54281	25.00000	Averaged	
21	2,5-Dibromotoluene (FID)	50.00000	38.51124	1197	0.100	-22.97751	25.00000	Quadratic	

*** = Compound out of QC criteria**

Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services
Project : Devens Fall 2017 LTM
Instrument ID : GC02

SDG : SK9990

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG216757-4	10/28/17	08:51		31.542
Initial Calibration	WG216757-4	10/28/17	08:51	31.532	
Initial Calibration	WG216757-1	10/28/17	09:34		31.537
Initial Calibration	WG216757-1	10/28/17	09:34	31.523	
Initial Calibration	WG216757-2	10/28/17	10:17		31.537
Initial Calibration	WG216757-2	10/28/17	10:17	31.529	
Initial Calibration	WG216757-3	10/28/17	11:00		31.541
Initial Calibration	WG216757-3	10/28/17	11:00	31.531	
Initial Calibration	WG216757-5	10/28/17	11:43		31.542
Initial Calibration	WG216757-5	10/28/17	11:43	31.532	
Initial Calibration	WG216757-6	10/28/17	12:26		31.543
Initial Calibration	WG216757-6	10/28/17	12:26	31.533	
Independent Source	WG216757-7	10/28/17	13:08	31.53	31.54
Continuing Calibrati	WG216748-8	10/31/17	08:01	31.533	31.543
Laboratory Control S	WG216748-2	10/31/17	09:24	31.533	31.543
Laboratory Control S	WG216748-3	10/31/17	10:06	31.532	31.542
Method Blank Sample	WG216748-1RA	10/31/17	10:59	31.532	31.542
EB-01-FALL17	SK9990-6	10/31/17	13:45	31.532	31.542
TRIP BLANK	SK9990-7	10/31/17	14:26	31.531	31.542
AAFES-2_FALL17	SK9990-1	10/31/17	21:09	31.526	31.538
XGM-93-02X_FALL17	SK9990-2	10/31/17	21:50	31.526	31.536
XGM-93-04X_FALL17	SK9990-3	10/31/17	22:31	31.52	31.531
XGM-97-12X_FALL17	SK9990-4	10/31/17	23:13	31.522	31.533
XGM-DUP1_FALL17	SK9990-5	10/31/17	23:54	31.522	31.532
Matrix Spike	WG216748-6	11/01/17	01:57	31.519	31.529
Matrix Spike Duplica	WG216748-7	11/01/17	02:39	31.52	31.531
Continuing Calibrati	WG216748-9	11/01/17	03:20	31.52	31.53
Continuing Calibrati	WG216829-4	11/01/17	09:14	31.514	31.525
Method Blank Sample	WG216829-1	11/01/17	09:55	31.515	31.525
Laboratory Control S	WG216829-2	11/01/17	10:37	31.515	31.525
Laboratory Control S	WG216829-3	11/01/17	11:18	31.513	31.523
XGM-93-04X_FALL17	SK9990-3DL	11/01/17	19:59	31.513	31.524
XGM-97-12X_FALL17	SK9990-4DL	11/01/17	20:41	31.511	31.522
XGM-DUP1_FALL17	SK9990-5DL	11/01/17	21:22	31.509	31.52
AAFES-2_FALL17	SK9990-1DL	11/01/17	22:03	31.511	31.522
Continuing Calibrati	WG216829-5	11/02/17	01:30	31.511	31.521

360325-Boston

360325 Boston

PO #	17-636	Devens - AOC43G 1024-003	**Chain of Custody Record**	Page: 1	of: 1

Company	KOMAN GS, LLC
Address:	293 Boston Post Road, Suite 100 Marlborough, MA 01752
Phone: 508-366-7442	Fax: 508-366-7445
Sampled by [Print Name(s)]/Affilliation	
Sampler(s) Signature(s)	

Preservatives (see codes): H | N | I

Analyses Requested

Field ID No.	Sampled Date	Sampled Time	Col. Method (see codes)	Matrix (see codes)	Number of Containers	MA VPH 3-40ml VOAvials (HCl)	Total Metals* (SW6010/6020) 1-250 ml poly (HNO3)	Alkalinity (SM2320B) 1-250ml Poly	Remarks	Lab. No.
AAFES-2_FAL17	10/25	1090	P	GW	5	X	X	X		
XGM-93-02X_FAL17	10/24	1115	P	GW	5	X	X	X		
XGM-93-04X_FAL17	10/25	1110	P	GW	15	X	X	X	MS/MSD	
XGM-97-12X_FAL17	10/24	1255	P	GW	5	X	X	X		
XGM-DUP1_FAL17	10/24	1300	P	GW	5	X	X	X		
AAFES-7_FAL17	10/25	845	P	GW	1		X		As, Mn Only	
Trip Blank	10/24	800	G	WQ	2	X				

680-144777-01 Chain of Custody

Shipping Details	courier pick up	0	← Total Number of Containers

Laboratory: Test America - Savannah
Address: 510 LaRoche Ave Savannah, GA 31404
Contact: Jerry Lanier
Regulatory Facility No.
Project Nan Devens Fall 2017 LTM
Sampling QAP No.:
Approval Date:
TAT Routine
Other:

Date Out:	Via:	Item No.	Relinquished by/Affiliation	Date	Time	Date	Time
Returned:	Via:			10/25/17	1510		
Additional Comments:				10-25-17	1510	10-25-17	
* = Metals: As (6020) Fe, Mn (6010)				10.25.17 1800			
email logins and results to:				10/26/17 0920	2.4(C+0.2)	2.6	

lekes@komangs.com

Lab Comments

Preserve Where Applicable ☐

On ICE ☐

Temperature _____C

NJ Data Deliverable Info

☐ NJ Reduced — Commercial "A"

☐ NJ Full — Commercial "B"

☐ Full CLP — State Forms

☐ Disk Deliverable

☐ Other (Specify) _____

MATRIX CODES:	GW = Groundwater	SE = Sediment	SP = Soil	SW = Surface Water	O = Other
PRESERVATIVE CODES:	H = HCL + Ice	I = Ice Only	N = Nitric Acid + Ice	S = Sulfuric Acid + I	M = Methanol O = Other
COLLECTION METHOD CODES:		G=Grab	P= Pumping		O = Other

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-144777-2

Login Number: 144777
List Number: 1
Creator: Ragnaldsen, Amy E

List Source: TestAmerica Savannah

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens / AOC 43G

TestAmerica Job ID: 680-144777-2

Laboratory: TestAmerica Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-18
Alaska	State Program	10		06-30-18
Alaska (UST)	State Program	10	UST-104	11-05-17 *
Arizona	State Program	9	AZ808	12-14-17 *
Arkansas DEQ	State Program	6	88-0692	02-01-18
California	State Program	9	2939	06-30-18
Colorado	State Program	8	N/A	12-31-17
Connecticut	State Program	1	PH-0161	03-31-19
Florida	NELAP	4	E87052	06-30-18
GA Dept. of Agriculture	State Program	4	N/A	06-12-18
Georgia	State Program	4	803	06-30-18
Guam	State Program	9	15-005r	04-16-18
Hawaii	State Program	9	N/A	06-30-18
Illinois	NELAP	5	200022	11-30-17 *
Indiana	State Program	5	N/A	06-30-18
Iowa	State Program	7	353	06-30-19
Kentucky (DW)	State Program	4	90084	12-31-17
Kentucky (UST)	State Program	4	18	06-30-18
Kentucky (WW)	State Program	4	90084	12-31-17
L-A-B	DoD ELAP		L2463	09-22-19
L-A-B	ISO/IEC 17025		L2463.01	09-22-19
Louisiana	NELAP	6	30690	06-30-18
Louisiana (DW)	NELAP	6	LA160019	12-31-17
Maine	State Program	1	GA00006	09-24-18
Maryland	State Program	3	250	12-31-17
Massachusetts	State Program	1	M-GA006	06-30-18
Michigan	State Program	5	9925	06-30-18
Mississippi	State Program	4	N/A	06-30-18
Nebraska	State Program	7	TestAmerica-Savannah	06-30-18
New Jersey	NELAP	2	GA769	06-30-18
New Mexico	State Program	6	N/A	06-30-18
New York	NELAP	2	10842	03-31-18
North Carolina (DW)	State Program	4	13701	07-31-18
North Carolina (WW/SW)	State Program	4	269	12-31-17
Oklahoma	State Program	6	9984	08-31-18
Pennsylvania	NELAP	3	68-00474	06-30-18
Puerto Rico	State Program	2	GA00006	12-31-17
South Carolina	State Program	4	98001	06-30-17 *
Tennessee	State Program	4	TN02961	06-30-18
Texas	NELAP	6	T104704185-16-9	11-30-17 *
Texas	State Program	6	T104704185	06-30-18
US Fish & Wildlife	Federal		LE058448-0	07-31-18
USDA	Federal		SAV 3-04	06-14-20 *
Virginia	NELAP	3	460161	06-14-18
Washington	State Program	10	C805	06-10-18
West Virginia (DW)	State Program	3	9950C	12-31-17
West Virginia DEP	State Program	3	094	06-30-18
Wisconsin	State Program	5	999819810	08-31-18
Wyoming	State Program	8	8TMS-L	06-30-16 *

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens / AOC 43G

TestAmerica Job ID: 680-144777-2

Laboratory: TestAmerica Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19 *

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

APPENDIX C
ANALYTICAL DATA VALIDATION REPORTS
(on CD)

C.1

Data Validation Reports
Spring 2017 LTM Event

Total and Dissolved Metals
SW 846/6010C/6020A
USEPA Level II Review

Site: AOC 57 - Spring 2017	SDG #: 680-140428-1
Laboratory: Test America-Savannah, GA	Date: 7/21/2017
KGS Environmental, Inc. Reviewer: Laurie Ekes	Project: 1024

Lab Sample ID	Client Sample ID	Date Sampled	Analysis	Matrix
680-140428-1	57M-96-11X-SPR17	6/26/2017	Total and Dissolved As, Fe and Mn	Groundwater
680-140428-2	57M-DUP01-SPR17	6/26/2017	Total and Dissolved As, Fe and Mn	Groundwater
680-140428-3	57M-95-03X-SPR17	6/26/2017	Total and Dissolved As, Fe and Mn	Groundwater
680-140428-4	57M-SW-1-SPR17	6/26/2017	Total and Dissolved As, Fe and Mn	Surface Water
680-140428-5	57M-SWDUP-SPR17	6/26/2017	Total and Dissolved As, Fe and Mn	Surface Water

Summary – Data validation was performed on the data for two (2) groundwater samples, one (1) groundwater field duplicate sample, one (1) surface water sample and one (1) surface water field duplicate sample collected and submitted for total and dissolved arsenic, iron and manganese analyses. Iron and manganese were analyzed and reported by method SW6010B and arsenic was reported by method SW6020A.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 6/29/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries (%R) for the reported target analytes met the %R control limits established in the QAPP.

Qualification: None required.

MS/MSD – Groundwater sample 57M-95-03X (Lab Sample ID: 680-140428-3) was spiked and analyzed as matrix spike/matrix spike duplicate samples. The %R for dissolved iron from the MSD was slightly below control limits. All other %Rs and calculated RPDs for spiked analytes were within the laboratory control limits.

Qualification: The result for dissolved iron in the native sample 57M-95-03X (Lab Sample ID: 680-140428-3) was qualified as estimated (J).

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – Sample 57M-DUP01-SPR17 (Lab sample ID: 680-140428-2) was a field duplicate of groundwater sample 57M-96-11X-SPR17 (Lab sample ID: 680-140428-1). Sample 57M-SWDUP-SPR17 (Lab Sample ID: 680-140428-5) was the field duplicate of surface water sample 57M-SW1-SPR17 (Lab Sample ID: 680-140428-4). Detected results for both total and dissolved analytes were comparable with RPDs less than 20%. FD results are summarized in the table below.

	Lab Sample ID	57M-96-11X-SPR17	680-140428-2	
	Client Sample ID	680-140428-1	57M-DUP01-SPR17	
	Collection Date	6/26/2017	6/26/2017	
Prep Type	**Analyte**	**Result (µg/L)**	**Result (µg/L)**	**RPD (%)**
Dissolved	Arsenic	120	120	0
Dissolved	Iron	29,000	30,000	3.4
Dissolved	Manganese	3,000	3,100	3.3
Total/NA	Arsenic	180	170	5.7
Total/NA	Iron	31,000	31,000	0
Total/NA	Manganese	2,900	3,000	3.4
	Lab Sample ID	680-140428-4	680-140428-5	
	Client Sample ID	57M-SW-1-SPR17	57M-SWDUP-SPR17	
	Collection Date	6/26/2017	6/26/2017	
Prep Type	**Analyte**	**Result (µg/L)**	**Result (µg/L)**	**RPD (%)**
Dissolved	Arsenic	17	18	5.7
Dissolved	Iron	15,000	16,000	6.5
Dissolved	Manganese	1,300	1,300	0
Total/NA	Arsenic	31	27	10.3
Total/NA	Iron	21,000	18,000	15.3
Total/NA	Manganese	1,200	1,200	0

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The total and dissolved metals results reported in this SDG are acceptable as reported and the data may be used for its intended purpose.

Lab Sample ID	Client Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value	Validation Qualifier (µg/L)
680-140428-1	57M-96-11X-SPR17	Total and Dissolved As, Fe, Mn	No qualifications needed.			
680-140428-2	57M-DUP01-SPR17	Total and Dissolved As, Fe, Mn	No qualifications needed.			
680-140428-3	57M-95-03X-SPR17	Dissolved Iron	5,600	J	5,600	J
680-140428-4	57M-SW-1-SPR17	Total and Dissolved As, Fe, Mn	No qualifications needed.			
680-140428-5	57M-SWDUP-SPR17	Total and Dissolved As, Fe, Mn	No qualifications needed.			

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
680-140428-1	57M-96-11X-SPR17	6/26/2017	6020A	Dissolved	Arsenic	**120**	ug/L		3	3	1.5	1
680-140428-1	57M-96-11X-SPR17	6/26/2017	6010C	Dissolved	Iron	**29,000**	ug/L		50	50	17	1
680-140428-1	57M-96-11X-SPR17	6/26/2017	6010C	Dissolved	Manganese	**3,000**	ug/L		10	3	1	1
680-140428-1	57M-96-11X-SPR17	6/26/2017	6020A	Total/NA	Arsenic	**180**	ug/L		3	3	1.5	1
680-140428-1	57M-96-11X-SPR17	6/26/2017	6010C	Total/NA	Iron	**31,000**	ug/L		50	50	17	1
680-140428-1	57M-96-11X-SPR17	6/26/2017	6010C	Total/NA	Manganese	**2,900**	ug/L		10	3	1	1
680-140428-2	57M-DUP01-SPR17	6/26/2017	6020A	Dissolved	Arsenic	**120**	ug/L		3	3	1.5	1
680-140428-2	57M-DUP01-SPR17	6/26/2017	6010C	Dissolved	Iron	**30,000**	ug/L		50	50	17	1
680-140428-2	57M-DUP01-SPR17	6/26/2017	6010C	Dissolved	Manganese	**3,100**	ug/L		10	3	1	1
680-140428-2	57M-DUP01-SPR17	6/26/2017	6020A	Total/NA	Arsenic	**170**	ug/L		3	3	1.5	1
680-140428-2	57M-DUP01-SPR17	6/26/2017	6010C	Total/NA	Iron	**31,000**	ug/L		50	50	17	1
680-140428-2	57M-DUP01-SPR17	6/26/2017	6010C	Total/NA	Manganese	**3,000**	ug/L		10	3	1	1
680-140428-3	57M-95-03X-SPR17	6/26/2017	6020A	Dissolved	Arsenic	**30**	ug/L		3	3	1.5	1
680-140428-3	57M-95-03X-SPR17	6/26/2017	6010C	Dissolved	Iron	**5,600**	ug/L	J	50	50	17	1
680-140428-3	57M-95-03X-SPR17	6/26/2017	6010C	Dissolved	Manganese	**120**	ug/L		10	3	1	1
680-140428-3	57M-95-03X-SPR17	6/26/2017	6020A	Total/NA	Arsenic	**27**	ug/L		3	3	1.5	1
680-140428-3	57M-95-03X-SPR17	6/26/2017	6010C	Total/NA	Iron	**5,300**	ug/L		50	50	17	1
680-140428-3	57M-95-03X-SPR17	6/26/2017	6010C	Total/NA	Manganese	**110**	ug/L		10	3	1	1
680-140428-4	57M-SW-1-SPR17	6/26/2017	6020A	Dissolved	Arsenic	**17**	ug/L		3	3	1.5	1
680-140428-4	57M-SW-1-SPR17	6/26/2017	6010C	Dissolved	Iron	**15,000**	ug/L		50	50	17	1
680-140428-4	57M-SW-1-SPR17	6/26/2017	6010C	Dissolved	Manganese	**1,300**	ug/L		10	3	1	1
680-140428-4	57M-SW-1-SPR17	6/26/2017	6020A	Total/NA	Arsenic	**31**	ug/L		3	3	1.5	1
680-140428-4	57M-SW-1-SPR17	6/26/2017	6010C	Total/NA	Iron	**21,000**	ug/L		50	50	17	1
680-140428-4	57M-SW-1-SPR17	6/26/2017	6010C	Total/NA	Manganese	**1,200**	ug/L		10	3	1	1
680-140428-5	57M-SWDUP-SPR17	6/26/2017	6020A	Dissolved	Arsenic	**18**	ug/L		3	3	1.5	1
680-140428-5	57M-SWDUP-SPR17	6/26/2017	6010C	Dissolved	Iron	**16,000**	ug/L		50	50	17	1
680-140428-5	57M-SWDUP-SPR17	6/26/2017	6010C	Dissolved	Manganese	**1,300**	ug/L		10	3	1	1
680-140428-5	57M-SWDUP-SPR17	6/26/2017	6020A	Total/NA	Arsenic	**27**	ug/L		3	3	1.5	1
680-140428-5	57M-SWDUP-SPR17	6/26/2017	6010C	Total/NA	Iron	**18,000**	ug/L		50	50	17	1
680-140428-5	57M-SWDUP-SPR17	6/26/2017	6010C	Total/NA	Manganese	**1,200**	ug/L		10	3	1	1

Notes:
µg/L = microgram per liter
LOQ = Limit of Quantitation
LOD = Limit of Detection
DL = Method Detection Limit
U = non-detect
J = Estimated Result

Volatile Organic Compounds
SW-846 Method 8260B
USEPA Level II Review

Site: AOC 32/43A – Spring 2017	SDG #: 680-140428-2
Laboratory: Test America-Savannah, GA	Date: 8/7/2017
KGS Reviewer: Laurie Ekes	Project: 1024

Lab Sample ID	Client Sample ID	Collection Date	Analysis	Matrix
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	VOCs	Groundwater
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	VOCs	Groundwater
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	VOCs	Groundwater
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	VOCs	Groundwater
680-140428-10	32M-DUP01-SPR17	6/26/2017	VOCs	Groundwater
680-140428-11	Trip Blank	6/28/2017	VOCs	Groundwater

Summary - Data validation was performed on the data for four (4) groundwater samples, one (1) field duplicate sample and one (1) trip blank sample collected from AOC32 and submitted for Volatile Organic (VOC) analyses by SW-846 Method 8260B.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Sample Delivery and Condition – All samples arrived at the laboratory on 6/29/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the 14-day holding time required for preserved aqueous samples.

Qualification: None required.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Qualification: None required.

Initial Calibration - Initial calibration curve analyzed on 6/30/2017 (Analytical batch 486209) exhibited acceptable %RSDS (≤30%) for and average RRF (>0.050) values for all target compounds.

Qualification: None required.

Initial Calibration Verification (ICV): - Initial calibration verification analyzed on 6/30/2017 (ICV 680-486209/19) exhibited acceptable %Ds (≤25.0%) for all target compounds.

Qualification: None required.

Continuing Calibration Verification (CCV): - The CCVs analyzed on 7/9 and 7/12/2017 (CCVs 680-487091/3 and 680-487395/2) exhibited %Ds less than 20% and acceptable RRF values for all target compounds.

Qualification: None required.

Surrogates – Surrogate recoveries were within the control limits for all samples.

Qualification: None required.

Internal Standard (IS) Area Performance: - All samples exhibited acceptable area counts for all internal standards.

Qualification: None required.

LCS/LCSD – Percent recoveries and RPDs for the LCS/LCSDs analyzed with these samples were within control limits for all target VOCs.

Qualification: None required.

MS/MSD – Sample 32M-01-17XBR (Lab Sample ID: 280-126310-9) was spiked and analyzed as matrix spike/matrix spike duplicate samples. The %Rs and calculated RPDs were within control limits for all target VOCs.

Qualification: None required.

Method Blank – The method blanks analyzed on 7/9, 7/10 and 7/12/2017 with these samples were free of contamination.

Qualification: None required.

Field Blanks – Sample Trip Blank (Lab Sample ID: 680-140428-11) was the trip blank submitted with these samples. Target VOCs were all non-detect.

Qualification: None required.

Field Duplicate – Sample 32M-DUP01-SPR17 (Lab Sample ID: 680-140428-10) was the field duplicate of sample 32M-01-18XBR-SPR17 (Lab Sample ID: 680-140428-9). Sample 32M-01-18XBR-SPR17 was analyzed at a five (5) times dilution; the reporting limits for all VOCs were elevated accordingly. Sample 32M-DUP01-SPR17 was analyzed and reported undiluted for all VOCs; however, the sample was diluted 5 times due to high level of 1,2-dichlorobenzene exceeding the upper calibration limit. The 1,2-dichlorobenzene result is reported from the diluted analysis. FD sample results are summarized in the table below.

Lab Sample ID	680-140428-9	680-140428-10	
Client Sample ID	32M-01-18XBR-SPR17	32M-DUP01-SPR17	
Collection Date	6/26/2017	6/26/2017	
Analyte	**Result (µg/L)**	**Result (µg/L)**	**RPD (%)**
1,2-Dichlorobenzene	390	410	5.0
1,3-Dichlorobenzene	70	83	17
1,4-Dichlorobenzene	46	52	12
Chlorobenzene	170	180	5.7
Isopropylbenzene	--	0.79 J	--
N-Propylbenzene	--	0.52 J	--
sec-Butylbenzene	--	0.58 J	--

Qualification: Estimated results were not reported for the native sample since all results were reported from the diluted sample; therefore, %RPDs could not be calculated for the estimated sample results. No qualifications are required.

Compound Quantitation – Sample 32M-01-18XBR (Lab Sample ID: 280-126310-10) was analyzed at a 5X dilution due to high level of target compounds. Analyte non-detections were reported as "ND";

these results should be considered the equivalent of "LOD U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The VOC results reported in this SDG are acceptable and may be used for its intended purpose.

Lab Sample ID	Client Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
680-140428-6	32M-01-13XBR-SPR17	VOCs	No qualifications needed.			
680-140428-7	32M-01-14XOB-SPR17	VOCs	No qualifications needed.			
680-140428-8	32M-01-17XBR-SPR17	VOCs	No qualifications needed.			
680-140428-9	32M-01-18XBR-SPR17	VOCs	No qualifications needed.			
680-140428-10	32M-DUP01-SPR17	VOCs	No qualifications needed.			

Volatile Petroleum Hydrocarbons
MADEP Method VPH-04-1.1
USEPA Level II Review

Site: AOC 32/43A – Spring 2017	SDG #: 680-140428-2
Laboratory: Test America-Savannah, GA Subcontracted to Katahdin Analytical and reported in SDG SK5622	Date: 7/21/2017
KGS Reviewer: Laurie Ekes	Project: 1024

TAL Lab Sample ID	Katahdin Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Matrix
680-140428-6	SK5622-1	32M-01-13XBR-SPR17	6/26/2017	MADEP VPH	Groundwater
680-140428-7	SK5622-2	32M-01-14XOB-SPR17	6/28/2017	MADEP VPH	Groundwater
680-140428-8	SK5622-3	32M-01-17XBR-SPR17	6/28/2017	MADEP VPH	Groundwater
680-140428-9	SK5622-4	32M-01-18XBR-SPR17	6/26/2017	MADEP VPH	Groundwater
680-140428-10	SK5622-5	32M-DUP01-SPR17	6/26/2017	MADEP VPH	Groundwater
680-140428-11	SK5622-6	Trip Blank	6/28/2017	MADEP VPH	Groundwater

Summary – Samples for VPH analysis were subcontracted by Test America to Katahdin Analytical Services in Scarborough, Maine. Data validation was performed on the data for four (4) groundwater samples, one (1) field duplicate sample and one (1) trip blank sample submitted for Volatile Petroleum Hydrocarbon (VPH) analyses by MADEP method VPH 04-1.1.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 06/29/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 14-day holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Surrogates – All surrogate recoveries were within the laboratory control limits.

Qualification: None required

Laboratory Control Sample – LCS/LCSD pairs analyzed with these samples met the %R and RPD control limits.

Qualification: None required.

MS/MSD – Sample 32M-01-17XBR-SPR17 (Lab Sample ID: 680-140428-8/SK5622-3) was spiked and analyzed as matrix spike/matrix spike duplicate samples. The %Rs and RPDs for all spiked VPH compounds were within acceptance limits.

Qualification: None required.

Method Blank – Method blanks analyzed with these samples were non-detect for all target VPH compounds.

Qualification: None required.

Trip Blanks – One trip blank sample TRIP BLANK (Lab Sample ID: 680-140428-11/SK5622-6) was submitted with these samples. The TB sample was non-detect for all target VPH.

Qualification: None required.

Field Duplicate – Samples 32M-DUP01-SPR17 (Lab Sample ID: 680-140438-10/SK2622-5) was the field duplicate sample of 32M-01-18XBR-SPR17 (Lab Sample ID: 680-140428-9/SK2622-4). The FD sample results are summarized in the table below.

LABSAMPNO	SK5622-4	SK5622-5	
FIELD_ID	32M-01-18XBR-SPR17	32M-DUP01-SPR17	
SAMP_DATE	06/26/17	06/26/17	
ANALYTE	**Result (µg/L)**	**Result (µg/L)**	**RPD (%)**
C9-C10 AROMATICS	410	400	2.5

Qualification: None required.

Compound Quantitation – In addition to reporting VPH carbon ranges, the VPH method includes the analysis and reporting of BTEX compounds analyzed by GC. Ethylbenzene was initially reported from the FD sample pair, 32M-DUP01-SPR17/32M-01-18XBR-SPR17. However, review of historical data indicated that ethylbenzene was never detected at this location. It was suspected that the ethylbenzene was a false positive and the laboratory was requested to re-run the samples by GC/MS to "confirm" the identity/presence of ethylbenzene. Ethylbenzene was not confirmed by GC/MS and all other VPH target BTEX compounds were non-detect by GC/MS. The laboratory did note that the peak initially reported in these sample as ethylbenzene was chlorobenzene, which is not included as a VPH reported compound. Target VOCs are reported by method SW8260.

The FD sample pair required 2X dilution due to high levels of C9-C10 aromatic hydrocarbons. The diluted results were reported since the C9-C10 aromatic concentrations were greater than the upper calibration limit. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U."

Qualification: None required.

Qualification Summary Table - The VPH results are acceptable as reported and the data may be used for its intended purpose.

Katahdin Lab Sample ID	Client Sample ID	Analysis	Lab Value	Lab Qualifier	Validated Value	Validation Qualifier
SK5622-1	32M-01-13XBR-SPR17	MADEP VPH	No qualifications needed.			
SK5622-2	32M-01-14XOB-SPR17	MADEP VPH	No qualifications needed.			
SK5622-3	32M-01-17XBR-SPR17	MADEP VPH	No qualifications needed.			
SK5622-4	32M-01-18XBR-SPR17	MADEP VPH	No qualifications needed.			
SK5622-5	32M-DUP01-SPR17	MADEP VPH	No qualifications needed.			
SK5622-6	Trip Blank	MADEP VPH	No qualifications needed.			

Total and Dissolved Metals
SW 846/6010C/6020A
USEPA Level II Review

Site: AOC 32/43A – Spring 2017	SDG #: 680-140428-2
Laboratory: Test America-Savannah, GA	Date: 7/21/2017
KGS Reviewer: Laurie Ekes	Project: 1024

Lab Sample ID	Client Sample ID	Collection Date	Analysis	Matrix
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	Total and Dissolved As, Mn	Groundwater
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	Total and Dissolved As, Mn	Groundwater
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	Total and Dissolved As, Mn	Groundwater
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	Total and Dissolved As, Mn	Groundwater
680-140428-10	32M-DUP01-SPR17	6/26/2017	Total and Dissolved As, Mn	Groundwater

Summary – Data validation was performed on the data for four (4) groundwater samples and one (1) field duplicate sample collected and submitted for total and dissolved arsenic and manganese analyses. Manganese was analyzed and reported by method SW6010B and arsenic was reported by method SW6020A.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 6/29/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries (%R) for the reported target analytes met the %R control limits established in the QAPP.

Qualification: None required.

MS/MSD – Sample 32M-01-17XBR-SPR17 (Lab Sample ID: 680-140428-8) was spiked and analyzed as matrix spike/matrix spike duplicate samples. The %Rs and calculated RPDs for spiked analytes were within laboratory control limits.

Qualification: None required.

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – Sample 32M-DUP01-SPR17 (Lab Sample ID: 680-140428-10) was the field duplicate of sample 32M-01-18XBR-SPR17 (Lab Sample ID: 680-140428-9). The %RPDs for the

for total and dissolved manganese and total arsenic were less than 25%. The %RPD for the dissolved arsenic results was 31.6%. FD sample results are summarized in the table below.

	Lab Sample ID	680-140428-9	680-140428-10	
	Client Sample ID	32M-01-18XBR-SPR17	32M-DUP01-SPR17	
	Collection Date	6/26/2017	6/26/2017	
	Analyte	**Result (µg/L)**	**Result (µg/L)**	**RPD (%)**
Dissolved	Manganese	2700	2900	7.1
Total/NA	Manganese	2300	1800	24.4
Dissolved	Arsenic	2.4	3.3	31.6
Total/NA	Arsenic	4.7	4.4	6.7

Qualification: The results for dissolved arsenic in the FD sample pair were qualified as estimated (J).

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The dissolved metals results reported in this SDG are acceptable with the noted qualifications. The data may be used for its intended purpose.

Lab Sample ID	**Client Sample ID**	**Analysis/Analyte**	**Lab Value (µg/L)**	**Lab Qualifier**	**Validated Value (µg/L)**	**Validation Qualifier**
680-140428-6	32M-01-13XBR-SPR17	Total and Dissolved As, Mn	No qualifications needed.			
680-140428-7	32M-01-14XOB-SPR17	Total and Dissolved As, Mn	No qualifications needed.			
680-140428-8	32M-01-17XBR-SPR17	Total and Dissolved As, Mn	No qualifications needed.			
680-140428-9	32M-01-18XBR-SPR17	Dissolved As	2.4	J	2.4	J
680-140428-10	32M-DUP01-SPR17	Dissolved As	3.3		3.3	J

AOC32 Spring 2017 Validated Analytical Data

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	6010C	Dissolved	Manganese	**52**	ug/L		10	3	1	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	6010C	Total/NA	Manganese	**64**	ug/L		10	3	1	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	6020A	Dissolved	Arsenic	3.0	ug/L	U	3	3	1.5	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	6020A	Total/NA	Arsenic	**1.7**	ug/L	J	3	3	1.5	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,1,1,2-Tetrachloroethane	1.0	ug/L	U	1	1	0.37	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,1,1-Trichloroethane	1.0	ug/L	U	1	1	0.37	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,1,2,2-Tetrachloroethane	1.0	ug/L	U	1	1	0.62	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,1,2-Trichloroethane	0.5	ug/L	U	1	0.5	0.33	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,1-Dichloroethane	1.0	ug/L	U	1	1	0.38	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,1-Dichloroethene	1.0	ug/L	U	1	1	0.36	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,1-Dichloropropene	1.0	ug/L	U	1	1	0.34	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,2,3-Trichlorobenzene	5.0	ug/L	U	5	5	2.5	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,2,3-Trichloropropane	1.0	ug/L	U	1	1	0.39	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,2,4-Trichlorobenzene	5.0	ug/L	U	5	5	2.5	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,2,4-Trimethylbenzene	1.0	ug/L	U	1	1	0.47	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,2-Dibromo-3-Chloropropane	2.0	ug/L	U	5	2	1.1	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,2-Dichlorobenzene	1.0	ug/L	U	1	1	0.37	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,2-Dichloroethane	1.0	ug/L	U	1	1	0.5	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,2-Dichloroethene, Total	1.0	ug/L	U	2	1	0.74	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,2-Dichloropropane	1.0	ug/L	U	1	1	0.67	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,3,5-Trimethylbenzene	0.5	ug/L	U	1	0.5	0.31	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,3-Dichlorobenzene	1.0	ug/L	U	1	1	0.43	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,3-Dichloropropane	1.0	ug/L	U	1	1	0.34	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	1,4-Dichlorobenzene	1.0	ug/L	U	1	1	0.46	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	2,2-Dichloropropane	1.0	ug/L	U	1	1	0.37	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	2-Butanone (MEK)	10	ug/L	U	10	10	3.4	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	2-Chlorotoluene	0.5	ug/L	U	1	0.5	0.27	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	2-Hexanone	5.0	ug/L	U	10	5	2	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	4-Chlorotoluene	1.0	ug/L	U	1	1	0.45	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	4-Isopropyltoluene	1.0	ug/L	U	1	1	0.48	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	4-Methyl-2-pentanone (MIBK)	5.0	ug/L	U	10	5	2.1	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Acetone	10	ug/L	U	10	10	7	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Benzene	1.0	ug/L	U	1	1	0.43	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Bromobenzene	1.0	ug/L	U	1	1	0.5	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Bromoform	1.0	ug/L	U	1	1	0.43	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Bromomethane	5.0	ug/L	U	5	5	2.5	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Carbon disulfide	2.0	ug/L	U	2	2	0.43	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Carbon tetrachloride	0.5	ug/L	U	1	0.5	0.33	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Chlorobenzene	0.5	ug/L	U	1	0.5	0.26	1

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Chlorobromomethane	1.0	ug/L	U	1	1	0.45	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Chlorodibromomethane	0.5	ug/L	U	1	0.5	0.32	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Chloroethane	5.0	ug/L	U	5	5	2.5	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Chloroform	1.0	ug/L	U	1	1	0.5	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Chloromethane	1.0	ug/L	U	1	1	0.4	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	cis-1,2-Dichloroethene	1.0	ug/L	U	1	1	0.41	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	cis-1,3-Dichloropropene	1.0	ug/L	U	1	1	0.4	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Dibromomethane	1.0	ug/L	U	1	1	0.35	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Dichlorobromomethane	1.0	ug/L	U	1	1	0.44	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Dichlorodifluoromethane	1.0	ug/L	U	1	1	0.6	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Ethylbenzene	0.5	ug/L	U	1	0.5	0.33	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Ethylene Dibromide	1.0	ug/L	U	1	1	0.44	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Hexachlorobutadiene	5.0	ug/L	U	5	5	2.5	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Isopropylbenzene	1.0	ug/L	U	1	1	0.35	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Methyl tert-butyl ether	0.5	ug/L	U	10	0.5	0.3	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Methylene Chloride	5.0	ug/L	U	5	5	2.5	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	m-Xylene & p-Xylene	1.0	ug/L	U	1	1	0.35	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Naphthalene	5.0	ug/L	U	5	5	2.5	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	n-Butylbenzene	1.0	ug/L	U	1	1	0.47	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	N-Propylbenzene	1.0	ug/L	U	1	1	0.38	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	o-Xylene	0.5	ug/L	U	1	0.5	0.23	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	sec-Butylbenzene	1.0	ug/L	U	1	1	0.42	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Styrene	0.5	ug/L	U	1	0.5	0.27	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	tert-Butylbenzene	1.0	ug/L	U	1	1	0.45	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Tetrachloroethene	1.0	ug/L	U	1	1	0.74	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Toluene	1.0	ug/L	U	1	1	0.48	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	trans-1,2-Dichloroethene	1.0	ug/L	U	1	1	0.37	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	trans-1,3-Dichloropropene	1.0	ug/L	U	1	1	0.42	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Trichloroethene	1.0	ug/L	U	1	1	0.48	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Trichlorofluoromethane	1.0	ug/L	U	1	1	0.42	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Vinyl acetate	2.0	ug/L	U	2	2	0.81	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Vinyl chloride	1.0	ug/L	U	1	1	0.5	1
680-140428-6	32M-01-13XBR-SPR17	6/26/2017	8260B	Total/NA	Xylenes, Total	0.5	ug/L	U	2	0.5	0.23	1
SK5622-1	32M-01-13XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	BENZENE	3.0	ug/L	U	3		0.31	1
SK5622-1	32M-01-13XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	C5-C8 ALIPHATICS	100	ug/L	U	100		50	1
SK5622-1	32M-01-13XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	C9-C10 AROMATICS	100	ug/L	U	100		50	1
SK5622-1	32M-01-13XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	C9-C12 ALIPHATICS	100	ug/L	U	100		50	1
SK5622-1	32M-01-13XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5.0	ug/L	U	5		0.42	1
SK5622-1	32M-01-13XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	M-,P-XYLENE	10	ug/L	U	10		0.92	1

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
SK5622-1	32M-01-13XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	METHYL TERT-BUTYL ETHER	5.0	ug/L	U	5		0.31	1
SK5622-1	32M-01-13XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	NAPHTHALENE	5.0	ug/L	U	5		1.6	1
SK5622-1	32M-01-13XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	O-XYLENE	5.0	ug/L	U	5		0.47	1
SK5622-1	32M-01-13XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	TOLUENE	5.0	ug/L	U	5		0.34	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	6010C	Dissolved	Manganese	**2,900**	ug/L		10	3	1	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	6010C	Total/NA	Manganese	**2,900**	ug/L		10	3	1	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	6020A	Dissolved	Arsenic	**30**	ug/L		3	3	1.5	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	6020A	Total/NA	Arsenic	**33**	ug/L		3	3	1.5	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,1,1,2-Tetrachloroethane	1.0	ug/L	U	1	1	0.37	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,1,1-Trichloroethane	1.0	ug/L	U	1	1	0.37	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,1,2,2-Tetrachloroethane	1.0	ug/L	U	1	1	0.62	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,1,2-Trichloroethane	0.5	ug/L	U	1	0.5	0.33	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,1-Dichloroethane	1.0	ug/L	U	1	1	0.38	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,1-Dichloroethene	1.0	ug/L	U	1	1	0.36	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,1-Dichloropropene	1.0	ug/L	U	1	1	0.34	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,2,3-Trichlorobenzene	5.0	ug/L	U	5	5	2.5	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,2,3-Trichloropropane	1.0	ug/L	U	1	1	0.39	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,2,4-Trichlorobenzene	5.0	ug/L	U	5	5	2.5	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,2,4-Trimethylbenzene	1.0	ug/L	U	1	1	0.47	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,2-Dibromo-3-Chloropropane	2.0	ug/L	U	5	2	1.1	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,2-Dichlorobenzene	1.0	ug/L	U	1	1	0.37	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,2-Dichloroethane	1.0	ug/L	U	1	1	0.5	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,2-Dichloroethene, Total	1.0	ug/L	U	2	1	0.74	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,2-Dichloropropane	1.0	ug/L	U	1	1	0.67	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,3,5-Trimethylbenzene	0.5	ug/L	U	1	0.5	0.31	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,3-Dichlorobenzene	1.0	ug/L	U	1	1	0.43	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,3-Dichloropropane	1.0	ug/L	U	1	1	0.34	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	1,4-Dichlorobenzene	1.0	ug/L	U	1	1	0.46	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	2,2-Dichloropropane	1.0	ug/L	U	1	1	0.37	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	2-Butanone (MEK)	10	ug/L	U	10	10	3.4	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	2-Chlorotoluene	0.5	ug/L	U	1	0.5	0.27	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	2-Hexanone	5.0	ug/L	U	10	5	2	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	4-Chlorotoluene	1.0	ug/L	U	1	1	0.45	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	4-Isopropyltoluene	1.0	ug/L	U	1	1	0.48	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	4-Methyl-2-pentanone (MIBK)	5.0	ug/L	U	10	5	2.1	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Acetone	10	ug/L	U	10	10	7	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Benzene	1.0	ug/L	U	1	1	0.43	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Bromobenzene	1.0	ug/L	U	1	1	0.5	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Bromoform	1.0	ug/L	U	1	1	0.43	1

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Bromomethane	5.0	ug/L	U	5	5	2.5	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Carbon disulfide	2.0	ug/L	U	2	2	0.43	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Carbon tetrachloride	0.5	ug/L	U	1	0.5	0.33	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Chlorobenzene	0.5	ug/L	U	1	0.5	0.26	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Chlorobromomethane	1.0	ug/L	U	1	1	0.45	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Chlorodibromomethane	0.5	ug/L	U	1	0.5	0.32	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Chloroethane	5.0	ug/L	U	5	5	2.5	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Chloroform	1.0	ug/L	U	1	1	0.5	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Chloromethane	1.0	ug/L	U	1	1	0.4	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	cis-1,2-Dichloroethene	1.0	ug/L	U	1	1	0.41	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	cis-1,3-Dichloropropene	1.0	ug/L	U	1	1	0.4	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Dibromomethane	1.0	ug/L	U	1	1	0.35	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Dichlorobromomethane	1.0	ug/L	U	1	1	0.44	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Dichlorodifluoromethane	1.0	ug/L	U	1	1	0.6	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Ethylbenzene	0.5	ug/L	U	1	0.5	0.33	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Ethylene Dibromide	1.0	ug/L	U	1	1	0.44	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Hexachlorobutadiene	5.0	ug/L	U	5	5	2.5	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Isopropylbenzene	1.0	ug/L	U	1	1	0.35	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Methyl tert-butyl ether	0.5	ug/L	U	10	0.5	0.3	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Methylene Chloride	5.0	ug/L	U	5	5	2.5	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	m-Xylene & p-Xylene	1.0	ug/L	U	1	1	0.35	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Naphthalene	5.0	ug/L	U	5	5	2.5	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	n-Butylbenzene	1.0	ug/L	U	1	1	0.47	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	N-Propylbenzene	1.0	ug/L	U	1	1	0.38	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	o-Xylene	0.5	ug/L	U	1	0.5	0.23	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	sec-Butylbenzene	1.0	ug/L	U	1	1	0.42	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Styrene	0.5	ug/L	U	1	0.5	0.27	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	tert-Butylbenzene	1.0	ug/L	U	1	1	0.45	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Tetrachloroethene	1.0	ug/L	U	1	1	0.74	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Toluene	1.0	ug/L	U	1	1	0.48	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	trans-1,2-Dichloroethene	1.0	ug/L	U	1	1	0.37	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	trans-1,3-Dichloropropene	1.0	ug/L	U	1	1	0.42	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Trichloroethene	1.0	ug/L	U	1	1	0.48	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Trichlorofluoromethane	1.0	ug/L	U	1	1	0.42	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Vinyl acetate	2.0	ug/L	U	2	2	0.81	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Vinyl chloride	1.0	ug/L	U	1	1	0.5	1
680-140428-7	32M-01-14XOB-SPR17	6/28/2017	8260B	Total/NA	Xylenes, Total	0.5	ug/L	U	2	0.5	0.23	1
SK5622-2	32M-01-14XOB-SPR17	6/28/2017	MA DEP VPH	METHOD	BENZENE	3.0	ug/L	U	3		0.31	1
SK5622-2	32M-01-14XOB-SPR17	6/28/2017	MA DEP VPH	METHOD	C5-C8 ALIPHATICS	100	ug/L	U	100		50	1

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
SK5622-2	32M-01-14XOB-SPR17	6/28/2017	MA DEP VPH	METHOD	C9-C10 AROMATICS	100	ug/L	U	100		50	1
SK5622-2	32M-01-14XOB-SPR17	6/28/2017	MA DEP VPH	METHOD	C9-C12 ALIPHATICS	100	ug/L	U	100		50	1
SK5622-2	32M-01-14XOB-SPR17	6/28/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5.0	ug/L	U	5		0.42	1
SK5622-2	32M-01-14XOB-SPR17	6/28/2017	MA DEP VPH	METHOD	M-,P-XYLENE	10	ug/L	U	10		0.92	1
SK5622-2	32M-01-14XOB-SPR17	6/28/2017	MA DEP VPH	METHOD	METHYL TERT-BUTYL ETHER	5.0	ug/L	U	5		0.31	1
SK5622-2	32M-01-14XOB-SPR17	6/28/2017	MA DEP VPH	METHOD	NAPHTHALENE	5.0	ug/L	U	5		1.6	1
SK5622-2	32M-01-14XOB-SPR17	6/28/2017	MA DEP VPH	METHOD	O-XYLENE	5.0	ug/L	U	5		0.47	1
SK5622-2	32M-01-14XOB-SPR17	6/28/2017	MA DEP VPH	METHOD	TOLUENE	5.0	ug/L	U	5		0.34	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	6010C	Dissolved	Manganese	**1.3**	ug/L	J	10	3	1	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	6010C	Total/NA	Manganese	**3.9**	ug/L	J	10	3	1	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	6020A	Dissolved	Arsenic	3.0	ug/L	U	3	3	1.5	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	6020A	Total/NA	Arsenic	**2.6**	ug/L	J	3	3	1.5	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,1,1,2-Tetrachloroethane	1.0	ug/L	U	1	1	0.37	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,1,1-Trichloroethane	1.0	ug/L	U	1	1	0.37	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,1,2,2-Tetrachloroethane	1.0	ug/L	U	1	1	0.62	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,1,2-Trichloroethane	0.5	ug/L	U	1	0.5	0.33	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,1-Dichloroethane	1.0	ug/L	U	1	1	0.38	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,1-Dichloroethene	1.0	ug/L	U	1	1	0.36	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,1-Dichloropropene	1.0	ug/L	U	1	1	0.34	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,2,3-Trichlorobenzene	5.0	ug/L	U	5	5	2.5	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,2,3-Trichloropropane	1.0	ug/L	U	1	1	0.39	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,2,4-Trichlorobenzene	5.0	ug/L	U	5	5	2.5	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,2,4-Trimethylbenzene	1.0	ug/L	U	1	1	0.47	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,2-Dibromo-3-Chloropropane	2.0	ug/L	U	5	2	1.1	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,2-Dichlorobenzene	1.0	ug/L	U	1	1	0.37	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,2-Dichloroethane	1.0	ug/L	U	1	1	0.5	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,2-Dichloroethene, Total	1.0	ug/L	U	2	1	0.74	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,2-Dichloropropane	1.0	ug/L	U	1	1	0.67	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,3,5-Trimethylbenzene	0.5	ug/L	U	1	0.5	0.31	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,3-Dichlorobenzene	**0.6**	ug/L	J	1	1	0.43	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,3-Dichloropropane	1.0	ug/L	U	1	1	0.34	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	1,4-Dichlorobenzene	1.0	ug/L	U	1	1	0.46	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	2,2-Dichloropropane	1.0	ug/L	U	1	1	0.37	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	2-Butanone (MEK)	10	ug/L	U	10	10	3.4	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	2-Chlorotoluene	0.5	ug/L	U	1	0.5	0.27	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	2-Hexanone	5.0	ug/L	U	10	5	2	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	4-Chlorotoluene	1.0	ug/L	U	1	1	0.45	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	4-Isopropyltoluene	1.0	ug/L	U	1	1	0.48	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	4-Methyl-2-pentanone (MIBK)	5.0	ug/L	U	10	5	2.1	1

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Acetone	10	ug/L	U	10	10	7	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Benzene	1.0	ug/L	U	1	1	0.43	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Bromobenzene	1.0	ug/L	U	1	1	0.5	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Bromoform	1.0	ug/L	U	1	1	0.43	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Bromomethane	5.0	ug/L	U	5	5	2.5	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Carbon disulfide	2.0	ug/L	U	2	2	0.43	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Carbon tetrachloride	0.5	ug/L	U	1	0.5	0.33	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Chlorobenzene	0.5	ug/L	U	1	0.5	0.26	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Chlorobromomethane	1.0	ug/L	U	1	1	0.45	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Chlorodibromomethane	0.5	ug/L	U	1	0.5	0.32	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Chloroethane	5.0	ug/L	U	5	5	2.5	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Chloroform	1.0	ug/L	U	1	1	0.5	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Chloromethane	1.0	ug/L	U	1	1	0.4	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	cis-1,2-Dichloroethene	1.0	ug/L	U	1	1	0.41	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	cis-1,3-Dichloropropene	1.0	ug/L	U	1	1	0.4	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Dibromomethane	1.0	ug/L	U	1	1	0.35	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Dichlorobromomethane	1.0	ug/L	U	1	1	0.44	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Dichlorodifluoromethane	1.0	ug/L	U	1	1	0.6	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Ethylbenzene	0.5	ug/L	U	1	0.5	0.33	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Ethylene Dibromide	1.0	ug/L	U	1	1	0.44	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Hexachlorobutadiene	5.0	ug/L	U	5	5	2.5	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Isopropylbenzene	1.0	ug/L	U	1	1	0.35	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Methyl tert-butyl ether	0.5	ug/L	U	10	0.5	0.3	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Methylene Chloride	5.0	ug/L	U	5	5	2.5	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	m-Xylene & p-Xylene	1.0	ug/L	U	1	1	0.35	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Naphthalene	5.0	ug/L	U	5	5	2.5	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	n-Butylbenzene	1.0	ug/L	U	1	1	0.47	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	N-Propylbenzene	1.0	ug/L	U	1	1	0.38	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	o-Xylene	0.5	ug/L	U	1	0.5	0.23	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	sec-Butylbenzene	1.0	ug/L	U	1	1	0.42	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Styrene	0.5	ug/L	U	1	0.5	0.27	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	tert-Butylbenzene	1.0	ug/L	U	1	1	0.45	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Tetrachloroethene	1.0	ug/L	U	1	1	0.74	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Toluene	1.0	ug/L	U	1	1	0.48	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	trans-1,2-Dichloroethene	1.0	ug/L	U	1	1	0.37	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	trans-1,3-Dichloropropene	1.0	ug/L	U	1	1	0.42	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Trichloroethene	1.0	ug/L	U	1	1	0.48	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Trichlorofluoromethane	1.0	ug/L	U	1	1	0.42	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Vinyl acetate	2.0	ug/L	U	2	2	0.81	1

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Vinyl chloride	1.0	ug/L	U	1	1	0.5	1
680-140428-8	32M-01-17XBR-SPR17	6/28/2017	8260B	Total/NA	Xylenes, Total	0.5	ug/L	U	2	0.5	0.23	1
SK5622-3	32M-01-17XBR-SPR17	6/28/2017	MA DEP VPH	METHOD	BENZENE	3.0	ug/L	U	3		0.31	1
SK5622-3	32M-01-17XBR-SPR17	6/28/2017	MA DEP VPH	METHOD	C5-C8 ALIPHATICS	100	ug/L	U	100		50	1
SK5622-3	32M-01-17XBR-SPR17	6/28/2017	MA DEP VPH	METHOD	C9-C10 AROMATICS	100	ug/L	U	100		50	1
SK5622-3	32M-01-17XBR-SPR17	6/28/2017	MA DEP VPH	METHOD	C9-C12 ALIPHATICS	100	ug/L	U	100		50	1
SK5622-3	32M-01-17XBR-SPR17	6/28/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5.0	ug/L	U	5		0.42	1
SK5622-3	32M-01-17XBR-SPR17	6/28/2017	MA DEP VPH	METHOD	M-,P-XYLENE	10	ug/L	U	10		0.92	1
SK5622-3	32M-01-17XBR-SPR17	6/28/2017	MA DEP VPH	METHOD	METHYL TERT-BUTYL ETHER	5.0	ug/L	U	5		0.31	1
SK5622-3	32M-01-17XBR-SPR17	6/28/2017	MA DEP VPH	METHOD	NAPHTHALENE	5.0	ug/L	U	5		1.6	1
SK5622-3	32M-01-17XBR-SPR17	6/28/2017	MA DEP VPH	METHOD	O-XYLENE	5.0	ug/L	U	5		0.47	1
SK5622-3	32M-01-17XBR-SPR17	6/28/2017	MA DEP VPH	METHOD	TOLUENE	5.0	ug/L	U	5		0.34	1
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	6010C	Dissolved	Manganese	**2,700**	ug/L		10	3	1	1
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	6010C	Total/NA	Manganese	**2,300**	ug/L		10	3	1	1
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	6020A	Dissolved	Arsenic	**2.4**	ug/L	J	3	3	1.5	1
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	6020A	Total/NA	Arsenic	**4.7**	ug/L		3	3	1.5	1
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,1,1,2-Tetrachloroethane	5.0	ug/L	U	5	5	1.9	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,1,1-Trichloroethane	5.0	ug/L	U	5	5	1.9	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,1,2,2-Tetrachloroethane	5.0	ug/L	U	5	5	3.1	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,1,2-Trichloroethane	2.5	ug/L	U	5	2.5	1.7	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,1-Dichloroethane	5.0	ug/L	U	5	5	1.9	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,1-Dichloroethene	5.0	ug/L	U	5	5	1.8	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,1-Dichloropropene	5.0	ug/L	U	5	5	1.7	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,2,3-Trichlorobenzene	25	ug/L	U	25	25	13	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,2,3-Trichloropropane	5.0	ug/L	U	5	5	2	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,2,4-Trichlorobenzene	25	ug/L	U	25	25	13	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,2,4-Trimethylbenzene	5.0	ug/L	U	5	5	2.4	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,2-Dibromo-3-Chloropropane	10	ug/L	U	25	10	5.5	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,2-Dichlorobenzene	**390**	ug/L		5	5	1.9	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,2-Dichloroethane	5.0	ug/L	U	5	5	2.5	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,2-Dichloroethene, Total	5.0	ug/L	U	10	5	3.7	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,2-Dichloropropane	5.0	ug/L	U	5	5	3.4	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,3,5-Trimethylbenzene	2.5	ug/L	U	5	2.5	1.6	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,3-Dichlorobenzene	**70**	ug/L		5	5	2.2	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,3-Dichloropropane	5.0	ug/L	U	5	5	1.7	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	1,4-Dichlorobenzene	**46**	ug/L		5	5	2.3	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	2,2-Dichloropropane	5.0	ug/L	U	5	5	1.9	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	2-Butanone (MEK)	50	ug/L	U	50	50	17	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	2-Chlorotoluene	2.5	ug/L	U	5	2.5	1.4	5

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	2-Hexanone	25	ug/L	U	50	25	10	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	4-Chlorotoluene	5.0	ug/L	U	5	5	2.3	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	4-Isopropyltoluene	5.0	ug/L	U	5	5	2.4	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	4-Methyl-2-pentanone (MIBK)	25	ug/L	U	50	25	11	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Acetone	50	ug/L	U	50	50	35	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Benzene	5.0	ug/L	U	5	5	2.2	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Bromobenzene	5.0	ug/L	U	5	5	2.5	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Bromoform	5.0	ug/L	U	5	5	2.2	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Bromomethane	25	ug/L	U	25	25	13	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Carbon disulfide	10	ug/L	U	10	10	2.2	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Carbon tetrachloride	2.5	ug/L	U	5	2.5	1.7	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Chlorobenzene	**170**	ug/L		5	2.5	1.3	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Chlorobromomethane	5.0	ug/L	U	5	5	2.3	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Chlorodibromomethane	2.5	ug/L	U	5	2.5	1.6	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Chloroethane	25	ug/L	U	25	25	13	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Chloroform	5.0	ug/L	U	5	5	2.5	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Chloromethane	5.0	ug/L	U	5	5	2	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	cis-1,2-Dichloroethene	5.0	ug/L	U	5	5	2.1	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	cis-1,3-Dichloropropene	5.0	ug/L	U	5	5	2	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Dibromomethane	5.0	ug/L	U	5	5	1.8	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Dichlorobromomethane	5.0	ug/L	U	5	5	2.2	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Dichlorodifluoromethane	5.0	ug/L	U	5	5	3	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Ethylbenzene	2.5	ug/L	U	5	2.5	1.7	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Ethylene Dibromide	5.0	ug/L	U	5	5	2.2	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Hexachlorobutadiene	25	ug/L	U	25	25	13	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Isopropylbenzene	5.0	ug/L	U	5	5	1.8	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Methyl tert-butyl ether	2.5	ug/L	U	50	2.5	1.5	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Methylene Chloride	25	ug/L	U	25	25	13	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	m-Xylene & p-Xylene	5.0	ug/L	U	5	5	1.8	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Naphthalene	25	ug/L	U	25	25	13	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	n-Butylbenzene	5.0	ug/L	U	5	5	2.4	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	N-Propylbenzene	5.0	ug/L	U	5	5	1.9	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	o-Xylene	2.5	ug/L	U	5	2.5	1.2	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	sec-Butylbenzene	5.0	ug/L	U	5	5	2.1	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Styrene	2.5	ug/L	U	5	2.5	1.4	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	tert-Butylbenzene	5.0	ug/L	U	5	5	2.3	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Tetrachloroethene	5.0	ug/L	U	5	5	3.7	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Toluene	5.0	ug/L	U	5	5	2.4	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	trans-1,2-Dichloroethene	5.0	ug/L	U	5	5	1.9	5

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	trans-1,3-Dichloropropene	5.0	ug/L	U	5	5	2.1	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Trichloroethene	5.0	ug/L	U	5	5	2.4	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Trichlorofluoromethane	5.0	ug/L	U	5	5	2.1	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Vinyl acetate	10	ug/L	U	10	10	4.1	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Vinyl chloride	5.0	ug/L	U	5	5	2.5	5
680-140428-9	32M-01-18XBR-SPR17	6/26/2017	8260B	Total/NA	Xylenes, Total	2.5	ug/L	U	10	2.5	1.2	5
SK5622-4	32M-01-18XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	BENZENE	3.0	ug/L	U	3		0.31	1
SK5622-4	32M-01-18XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	C5-C8 ALIPHATICS	100	ug/L	U	100		50	1
SK5622-4DL	32M-01-18XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	C9-C10 AROMATICS	**410**	ug/L		200		100	2
SK5622-4	32M-01-18XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	C9-C12 ALIPHATICS	100	ug/L	U	100		50	1
SK5622-4DL	32M-01-18XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5.0	ug/L	U	10		0.84	2
SK5622-4	32M-01-18XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5.0	ug/L	U	5		0.42	1
SK5622-4	32M-01-18XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	M-,P-XYLENE	10	ug/L	U	10		0.92	1
SK5622-4	32M-01-18XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	METHYL TERT-BUTYL ETHER	5.0	ug/L	U	5		0.31	1
SK5622-4	32M-01-18XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	NAPHTHALENE	5.0	ug/L	U	5		1.6	1
SK5622-4	32M-01-18XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	O-XYLENE	5.0	ug/L	U	5		0.47	1
SK5622-4	32M-01-18XBR-SPR17	6/26/2017	MA DEP VPH	METHOD	TOLUENE	5.0	ug/L	U	5		0.34	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	6010C	Dissolved	Manganese	**2,900**	ug/L		10	3	1	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	6010C	Total/NA	Manganese	**1,800**	ug/L		10	3	1	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	6020A	Dissolved	Arsenic	**3.3**	ug/L	J	3	3	1.5	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	6020A	Total/NA	Arsenic	**4.4**	ug/L		3	3	1.5	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,1,1,2-Tetrachloroethane	1.0	ug/L	U	1	1	0.37	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,1,1-Trichloroethane	1.0	ug/L	U	1	1	0.37	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,1,2,2-Tetrachloroethane	1.0	ug/L	U	1	1	0.62	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,1,2-Trichloroethane	0.5	ug/L	U	1	0.5	0.33	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,1-Dichloroethane	1.0	ug/L	U	1	1	0.38	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,1-Dichloroethene	1.0	ug/L	U	1	1	0.36	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,1-Dichloropropene	1.0	ug/L	U	1	1	0.34	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,2,3-Trichlorobenzene	5.0	ug/L	U	5	5	2.5	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,2,3-Trichloropropane	1.0	ug/L	U	1	1	0.39	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,2,4-Trichlorobenzene	5.0	ug/L	U	5	5	2.5	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,2,4-Trimethylbenzene	1.0	ug/L	U	1	1	0.47	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,2-Dibromo-3-Chloropropane	2.0	ug/L	U	5	2	1.1	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,2-Dichlorobenzene	**410**	ug/L		5	5	1.9	5
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,2-Dichloroethane	1.0	ug/L	U	1	1	0.5	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,2-Dichloroethene, Total	1.0	ug/L	U	2	1	0.74	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,2-Dichloropropane	1.0	ug/L	U	1	1	0.67	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,3,5-Trimethylbenzene	0.5	ug/L	U	1	0.5	0.31	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,3-Dichlorobenzene	**83**	ug/L		1	1	0.43	1

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,3-Dichloropropane	1.0	ug/L	U	1	1	0.34	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	1,4-Dichlorobenzene	**52**	ug/L		1	1	0.46	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	2,2-Dichloropropane	1.0	ug/L	U	1	1	0.37	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	2-Butanone (MEK)	10	ug/L	U	10	10	3.4	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	2-Chlorotoluene	0.5	ug/L	U	1	0.5	0.27	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	2-Hexanone	5.0	ug/L	U	10	5	2	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	4-Chlorotoluene	1.0	ug/L	U	1	1	0.45	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	4-Isopropyltoluene	1.0	ug/L	U	1	1	0.48	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	4-Methyl-2-pentanone (MIBK)	5.0	ug/L	U	10	5	2.1	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Acetone	10	ug/L	U	10	10	7	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Benzene	1.0	ug/L	U	1	1	0.43	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Bromobenzene	1.0	ug/L	U	1	1	0.5	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Bromoform	1.0	ug/L	U	1	1	0.43	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Bromomethane	5.0	ug/L	U	5	5	2.5	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Carbon disulfide	2.0	ug/L	U	2	2	0.43	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Carbon tetrachloride	0.5	ug/L	U	1	0.5	0.33	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Chlorobenzene	**180**	ug/L		1	0.5	0.26	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Chlorobromomethane	1.0	ug/L	U	1	1	0.45	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Chlorodibromomethane	0.5	ug/L	U	1	0.5	0.32	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Chloroethane	5.0	ug/L	U	5	5	2.5	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Chloroform	1.0	ug/L	U	1	1	0.5	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Chloromethane	1.0	ug/L	U	1	1	0.4	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	cis-1,2-Dichloroethene	1.0	ug/L	U	1	1	0.41	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	cis-1,3-Dichloropropene	1.0	ug/L	U	1	1	0.4	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Dibromomethane	1.0	ug/L	U	1	1	0.35	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Dichlorobromomethane	1.0	ug/L	U	1	1	0.44	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Dichlorodifluoromethane	1.0	ug/L	U	1	1	0.6	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Ethylbenzene	0.5	ug/L	U	1	0.5	0.33	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Ethylene Dibromide	1.0	ug/L	U	1	1	0.44	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Hexachlorobutadiene	5.0	ug/L	U	5	5	2.5	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Isopropylbenzene	**0.8**	ug/L	J	1	1	0.35	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Methyl tert-butyl ether	0.5	ug/L	U	10	0.5	0.3	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Methylene Chloride	5.0	ug/L	U	5	5	2.5	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	m-Xylene & p-Xylene	1.0	ug/L	U	1	1	0.35	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Naphthalene	5.0	ug/L	U	5	5	2.5	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	n-Butylbenzene	1.0	ug/L	U	1	1	0.47	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	N-Propylbenzene	**0.5**	ug/L	J	1	1	0.38	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	o-Xylene	0.5	ug/L	U	1	0.5	0.23	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	sec-Butylbenzene	**0.6**	ug/L	J	1	1	0.42	1

AOC32 Spring 2017 Validated Analytical Data

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Styrene	0.5	ug/L	U	1	0.5	0.27	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	tert-Butylbenzene	1.0	ug/L	U	1	1	0.45	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Tetrachloroethene	1.0	ug/L	U	1	1	0.74	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Toluene	1.0	ug/L	U	1	1	0.48	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	trans-1,2-Dichloroethene	1.0	ug/L	U	1	1	0.37	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	trans-1,3-Dichloropropene	1.0	ug/L	U	1	1	0.42	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Trichloroethene	1.0	ug/L	U	1	1	0.48	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Trichlorofluoromethane	1.0	ug/L	U	1	1	0.42	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Vinyl acetate	2.0	ug/L	U	2	2	0.81	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Vinyl chloride	1.0	ug/L	U	1	1	0.5	1
680-140428-10	32M-DUP01-SPR17	6/26/2017	8260B	Total/NA	Xylenes, Total	0.5	ug/L	U	2	0.5	0.23	1
SK5622-5	32M-DUP01-SPR17	6/26/2017	MA DEP VPH	METHOD	BENZENE	3.0	ug/L	U	3		0.31	1
SK5622-5	32M-DUP01-SPR17	6/26/2017	MA DEP VPH	METHOD	C5-C8 ALIPHATICS	100	ug/L	U	100		50	1
SK5622-5DL	32M-DUP01-SPR17	6/26/2017	MA DEP VPH	METHOD	C9-C10 AROMATICS	**400**	ug/L		200		100	2
SK5622-5	32M-DUP01-SPR17	6/26/2017	MA DEP VPH	METHOD	C9-C12 ALIPHATICS	100	ug/L	U	100		50	1
SK5622-5DL	32M-DUP01-SPR17	6/26/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5.0	ug/L	U	10		0.84	2
SK5622-5	32M-DUP01-SPR17	6/26/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5.0	ug/L	U	5		0.42	1
SK5622-5	32M-DUP01-SPR17	6/26/2017	MA DEP VPH	METHOD	M-,P-XYLENE	10	ug/L	U	10		0.92	1
SK5622-5	32M-DUP01-SPR17	6/26/2017	MA DEP VPH	METHOD	METHYL TERT-BUTYL ETHER	5.0	ug/L	U	5		0.31	1
SK5622-5	32M-DUP01-SPR17	6/26/2017	MA DEP VPH	METHOD	NAPHTHALENE	5.0	ug/L	U	5		1.6	1
SK5622-5	32M-DUP01-SPR17	6/26/2017	MA DEP VPH	METHOD	O-XYLENE	5.0	ug/L	U	5		0.47	1
SK5622-5	32M-DUP01-SPR17	6/26/2017	MA DEP VPH	METHOD	TOLUENE	5.0	ug/L	U	5		0.34	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,1,1,2-Tetrachloroethane	1.0	ug/L	U	1	1	0.37	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,1,1-Trichloroethane	1.0	ug/L	U	1	1	0.37	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,1,2,2-Tetrachloroethane	1.0	ug/L	U	1	1	0.62	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,1,2-Trichloroethane	0.5	ug/L	U	1	0.5	0.33	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,1-Dichloroethane	1.0	ug/L	U	1	1	0.38	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,1-Dichloroethene	1.0	ug/L	U	1	1	0.36	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,1-Dichloropropene	1.0	ug/L	U	1	1	0.34	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,2,3-Trichlorobenzene	5.0	ug/L	U	5	5	2.5	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,2,3-Trichloropropane	1.0	ug/L	U	1	1	0.39	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,2,4-Trichlorobenzene	5.0	ug/L	U	5	5	2.5	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,2,4-Trimethylbenzene	1.0	ug/L	U	1	1	0.47	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,2-Dibromo-3-Chloropropane	2.0	ug/L	U	5	2	1.1	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,2-Dichlorobenzene	1.0	ug/L	U	1	1	0.37	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,2-Dichloroethane	1.0	ug/L	U	1	1	0.5	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,2-Dichloroethene, Total	1.0	ug/L	U	2	1	0.74	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,2-Dichloropropane	1.0	ug/L	U	1	1	0.67	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,3,5-Trimethylbenzene	0.5	ug/L	U	1	0.5	0.31	1

AOC32 Spring 2017 Validated Analytical Data

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,3-Dichlorobenzene	1.0	ug/L	U	1	1	0.43	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,3-Dichloropropane	1.0	ug/L	U	1	1	0.34	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	1,4-Dichlorobenzene	1.0	ug/L	U	1	1	0.46	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	2,2-Dichloropropane	1.0	ug/L	U	1	1	0.37	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	2-Butanone (MEK)	10	ug/L	U	10	10	3.4	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	2-Chlorotoluene	0.5	ug/L	U	1	0.5	0.27	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	2-Hexanone	5.0	ug/L	U	10	5	2	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	4-Chlorotoluene	1.0	ug/L	U	1	1	0.45	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	4-Isopropyltoluene	1.0	ug/L	U	1	1	0.48	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	4-Methyl-2-pentanone (MIBK)	5.0	ug/L	U	10	5	2.1	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Acetone	10	ug/L	U	10	10	7	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Benzene	1.0	ug/L	U	1	1	0.43	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Bromobenzene	1.0	ug/L	U	1	1	0.5	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Bromoform	1.0	ug/L	U	1	1	0.43	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Bromomethane	5.0	ug/L	U	5	5	2.5	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Carbon disulfide	2.0	ug/L	U	2	2	0.43	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Carbon tetrachloride	0.5	ug/L	U	1	0.5	0.33	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Chlorobenzene	0.5	ug/L	U	1	0.5	0.26	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Chlorobromomethane	1.0	ug/L	U	1	1	0.45	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Chlorodibromomethane	0.5	ug/L	U	1	0.5	0.32	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Chloroethane	5.0	ug/L	U	5	5	2.5	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Chloroform	1.0	ug/L	U	1	1	0.5	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Chloromethane	1.0	ug/L	U	1	1	0.4	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	cis-1,2-Dichloroethene	1.0	ug/L	U	1	1	0.41	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	cis-1,3-Dichloropropene	1.0	ug/L	U	1	1	0.4	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Dibromomethane	1.0	ug/L	U	1	1	0.35	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Dichlorobromomethane	1.0	ug/L	U	1	1	0.44	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Dichlorodifluoromethane	1.0	ug/L	U	1	1	0.6	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Ethylbenzene	0.5	ug/L	U	1	0.5	0.33	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Ethylene Dibromide	1.0	ug/L	U	1	1	0.44	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Hexachlorobutadiene	5.0	ug/L	U	5	5	2.5	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Isopropylbenzene	1.0	ug/L	U	1	1	0.35	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Methyl tert-butyl ether	0.5	ug/L	U	10	0.5	0.3	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Methylene Chloride	5.0	ug/L	U	5	5	2.5	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	m-Xylene & p-Xylene	1.0	ug/L	U	1	1	0.35	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Naphthalene	5.0	ug/L	U	5	5	2.5	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	n-Butylbenzene	1.0	ug/L	U	1	1	0.47	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	N-Propylbenzene	1.0	ug/L	U	1	1	0.38	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	o-Xylene	0.5	ug/L	U	1	0.5	0.23	1

AOC32 Spring 2017 Validated Analytical Data

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Dilution Factor
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	sec-Butylbenzene	1.0	ug/L	U	1	1	0.42	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Styrene	0.5	ug/L	U	1	0.5	0.27	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	tert-Butylbenzene	1.0	ug/L	U	1	1	0.45	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Tetrachloroethene	1.0	ug/L	U	1	1	0.74	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Toluene	1.0	ug/L	U	1	1	0.48	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	trans-1,2-Dichloroethene	1.0	ug/L	U	1	1	0.37	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	trans-1,3-Dichloropropene	1.0	ug/L	U	1	1	0.42	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Trichloroethene	1.0	ug/L	U	1	1	0.48	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Trichlorofluoromethane	1.0	ug/L	U	1	1	0.42	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Vinyl acetate	2.0	ug/L	U	2	2	0.81	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Vinyl chloride	1.0	ug/L	U	1	1	0.5	1
680-140428-11	Trip Blank	6/28/2017	8260B	Total/NA	Xylenes, Total	0.5	ug/L	U	2	0.5	0.23	1
SK5622-6	Trip Blank	6/28/2017	MA DEP VPH	METHOD	BENZENE	3.0	ug/L	U	3		0.31	1
SK5622-6	Trip Blank	6/28/2017	MA DEP VPH	METHOD	C5-C8 ALIPHATICS	100	ug/L	U	100		50	1
SK5622-6	Trip Blank	6/28/2017	MA DEP VPH	METHOD	C9-C10 AROMATICS	100	ug/L	U	100		50	1
SK5622-6	Trip Blank	6/28/2017	MA DEP VPH	METHOD	C9-C12 ALIPHATICS	100	ug/L	U	100		50	1
SK5622-6	Trip Blank	6/28/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5.0	ug/L	U	5		0.42	1
SK5622-6	Trip Blank	6/28/2017	MA DEP VPH	METHOD	M-,P-XYLENE	10	ug/L	U	10		0.92	1
SK5622-6	Trip Blank	6/28/2017	MA DEP VPH	METHOD	METHYL TERT-BUTYL ETHER	5.0	ug/L	U	5		0.31	1
SK5622-6	Trip Blank	6/28/2017	MA DEP VPH	METHOD	NAPHTHALENE	5.0	ug/L	U	5		1.6	1
SK5622-6	Trip Blank	6/28/2017	MA DEP VPH	METHOD	O-XYLENE	5.0	ug/L	U	5		0.47	1
SK5622-6	Trip Blank	6/28/2017	MA DEP VPH	METHOD	TOLUENE	5.0	ug/L	U	5		0.34	1

Notes:

µg/L = microgram per liter

LOQ = Limit of Quantitation

LOD = Limit of Detection

DL = Method Detection Limit

U = non-detect

J = Estimated Result

Volatile Petroleum Hydrocarbons
MADEP Method VPH-04-1.1
USEPA Level II Review

Site: Devens Consolidation Landfill (DCL) – Spring 2017	SDG #: 680-140237-1 and 680-141617-1
Laboratory: Test America-Savannah, GA VPH analyses subcontracted to Katahdin, Scarborough, ME	Date: 08-17-2017
KGS Reviewer: Laurie Ekes	Project: 1024

TAL Lab Sample ID	Katahdin Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Matrix
680-140237-1	SK5423-1	LFM-99-02B-SPR17	6/22/2017	MADEP VPH	Groundwater
680-140237-2	SK5423-2	LFM-99-05A-SPR17	6/22/2017	MADEP VPH	Groundwater
680-140237-3	SK5423-3	LFM-DUP01-SPR17	6/22/2017	MADEP VPH	Groundwater
680-140237-4	SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MADEP VPH	Groundwater
680-140237-5	SK5423-5	TRIP BLANK	6/22/2017	MADEP VPH	Trip Blank
680-141617-1	SK6816-1	LFM-03-07-SPR17	8/1/2018	MADEP VPH	Groundwater
680-141617-2	SK6816-2	TRIP BLANK	8/1/2017	MADEP VPH	Trip Blank

Summary –Data validation was performed on the data for four (4) groundwater samples, one (1) field duplicate sample and two (2) trip blank samples submitted for Volatile Petroleum Hydrocarbon (VPH) analyses by MADEP method VPH 04-1.1. Samples for VPH analysis were subcontracted by Test America to Katahdin Analytical Services in Scarborough, Maine. Location LFM-03-07 was buried due to construction in 2016; the well was uncovered and repaired in July 2017 and was sampled on 8/1/2017. The results from this sample are reported in SDG 680-141617-1 and are included in this data review report. VPH results for the DCL samples are reported in Katahdin SDGs SK5423 and SK6812.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 06/23/2017 and 8/2/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 14-day holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Surrogates – All surrogate recoveries were within the laboratory control limits.

Qualification: None required

Laboratory Control Sample – LCS/LCSD pairs analyzed with these samples met the %R and RPD control limits.

Qualification: None required.

MS/MSD – Sample LFM-99-06ARP-SPR17 (Lab Sample ID: 680-140237-4) was spiked and analyzed as matrix spike/matrix spike duplicate samples. The %Rs and RPDs for all spiked VPH compounds were within acceptance limits.

Qualification: None required.

Method Blank – Method blanks analyzed with these samples were non-detect for all target VPH compounds.

Qualification: None required.

Trip Blanks – Trip blank samples were submitted with each sample delivery. TRIP BLANK (Lab Sample ID: 680-140237-5/SK5423-5) was submitted on 6/22/2017 with the samples collected in June and TRIP BLANK (Lab Sample ID: 680-141617-2/SK6812-2) was submitted with the sample collected 8/1/2017. The TB samples were non-detect for all target VPH.

Qualification: None required.

Field Duplicate – Sample LFM-DUP1-SPR17 (Lab Sample ID: 680-140237-3) was the field duplicate sample of LFM-99-05A-SPR17 (Lab Sample ID: 680-140237-2). The results for all VPH compounds were non-detect in both samples.

Qualification: None required.

Compound Quantitation – VPH results were non-detect in all samples. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U."

Qualification: None required.

Qualification Summary Table - The VPH results are acceptable as reported and the data may be used for its intended purpose.

Katahdin Lab Sample ID	Client Sample ID	Analysis	Lab Value	Lab Qualifier	Validated Value	Validation Qualifier
SK5423-1	LFM-99-02B-SPR17	MADEP VPH	No qualifications needed.			
SK5423-2	LFM-99-05A-SPR17	MADEP VPH	No qualifications needed.			
SK5423-3	LFM-DUP01-SPR17	MADEP VPH	No qualifications needed.			
SK5423-4	LFM-99-06A RP-SPR17	MADEP VPH	No qualifications needed.			
SK5423-5	TRIP BLANK	MADEP VPH	No qualifications needed.			
SK6816-1	LFM-03-07-SPR17	MADEP VPH	No qualifications needed.			
SK6816-2	TRIP BLANK	MADEP VPH	No qualifications needed.			

Extractable Petroleum Hydrocarbons
MADEP Method EPH-04-1.1
USEPA Level II Review

Site: Devens Consolidation Landfill (DCL) – Spring 2017	SDG #: 680-140237-1 and 680-141617-1
Laboratory: Test America-Savannah, GA VPH analyses subcontracted to Katahdin, Scarborough, ME	Date: 08/18/2017
KGS Reviewer: Laurie Ekes	Project: 1024

TAL Lab Sample ID	Katahdin Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Matrix
680-140237-1	SK5423-1	LFM-99-02B-SPR17	6/22/2017	MADEP EPH	Groundwater
680-140237-2	SK5423-2	LFM-99-05A-SPR17	6/22/2017	MADEP EPH	Groundwater
680-140237-3	SK5423-3	LFM-DUP01-SPR17	6/22/2017	MADEP EPH	Groundwater
680-140237-4	SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MADEP EPH	Groundwater
690-141617-1	SK6816-1	LFM-03-07-SPR17	8/1/2017	MADEP EPH	Groundwater

Summary –Data validation was performed on the data for four (4) groundwater samples and one (1) field duplicate sample and submitted for Extractable Petroleum Hydrocarbon (EPH) analyses by MADEP method EPH 04-1.1. Samples for EPH analysis were subcontracted by Test America to Katahdin Analytical Services in Scarborough, Maine. Location LFM-03-07 was buried due to construction in 2016; the well was uncovered and repaired in July 2017 and was sampled on 8/1/2017. The results from this sample are reported in SDG 680-141617-1 and are included in this data review report. EPH results for the DCL samples are reported in Katahdin SDGs SK5423 and SK6812.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 06/23/2017 and 8/02/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 14-day holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Surrogates – Surrogate recoveries were within the laboratory control limits.

Qualification: None required

Laboratory Control Sample – The LCS/LCSD samples prepared and analyzed with these samples met the %R and RPD control limits for all target EPH compounds.

Qualification: None required.

MS/MSD – Sample LFM-99-06ARP-SPR17 (Lab Sample ID: 680-140237-4) was spiked and analyzed as matrix spike/matrix spike duplicate samples. The %Rs for all spiked EPH compounds were within acceptance limits; however, the %RPDs were all above the %RPD limit of 25%. This discrepancy is likely due to laboratory error since the native sample results were all non-detect.

Qualification: None required.

Method Blank – Method blanks prepared and analyzed with these samples were non-detect for all target EPH compounds.

Qualification: None required.

Field Duplicate – Sample LFM-DUP1-SPR17 (Lab Sample ID: 680-140237-3) was the field duplicate sample of LFM-99-05A-SPR17 (Lab Sample ID: 680-140237-2). The results for all EPH target compounds were non-detect in both samples.

Qualification: None required.

Compound Quantitation – EPH results were non-detect in all samples. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U."

Qualification: None required.

Qualification Summary Table - The EPH results are acceptable as reported and the data may be used for its intended purpose.

Katahdin Lab Sample ID	Client Sample ID	Analysis	Lab Value	Lab Qualifier	Validated Value	Validation Qualifier
SK5423-1	LFM-99-02B-SPR17	MADEP EPH	No qualifications needed.			
SK5423-2	LFM-99-05A-SPR17	MADEP EPH	No qualifications needed.			
SK5423-3	LFM-DUP01-SPR17	MADEP EPH	No qualifications needed.			
SK5423-4	LFM-99-06A RP-SPR17	MADEP EPH	No qualifications needed.			
SK5816-1	LFM-03-07-SPR17	MADEP EPH	No qualifications needed.			

Pesticides
SW846/8081B
USEPA Level II Review

Site: Devens Consolidation Landfill (DCL) – Spring 2017	SDG #: 680-140237-1 and 680-141617-1
Laboratory: Test America-Savannah, GA	Date: 08/17/2017
KGS Reviewer: Laurie Ekes	Project: 1024

Lab Sample ID	Client Sample ID	Collection Date	Analysis	Matrix
680-140237-1	LFM-99-02B-SPR17	6/22/2017	Pesticides	Groundwater
680-140237-2	LFM-99-05A-SPR17	6/22/2017	Pesticides	Groundwater
680-140237-3	LFM-DUP01-SPR17	6/22/2017	Pesticides	Groundwater
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	Pesticides	Groundwater
680-141617-1	LFM-03-07-SPR17	8/01/2017	Pesticides	Groundwater

Summary - Data validation was performed on the data for four (4) groundwater samples and one (1) field duplicate sample collected 6/21 and 6/22/2017 and 8/1/2017 and submitted for Pesticide analyses by EPA method SW846/8081B. Location LFM-03-07 was buried due to construction in 2016; the well was uncovered and repaired in July 2017 and was sampled on 8/1/2017. The results from this sample are reported in SDG 680-141617-1 and are included in this data review report.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 6/23/2017 and 8/2/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 14-day holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Surrogates – Surrogate recoveries were within the control limits specified in the QAPP

Qualification: None required

Laboratory Control Sample – The LCSs analyzed with these samples met the %R control limits for all pesticide compounds.

Qualification: None required.

MS/MSD – Sample LFM-99-06ARP-SPR17 (Lab Sample ID: 680-140237-4) was spiked and analyzed as matrix spike/matrix spike duplicate samples. The %Rs and RPDs for all spiked pesticide compounds were within acceptance limits.

Qualification: None required.

Method Blank – The method blanks prepared and analyzed for pesticides with these samples

were non-detect for all pesticide compounds.

Qualification: None required.

Field Duplicate – Sample LFM-DUP1-SPR17 (Lab Sample ID: 680-140237-3) was the field duplicate sample of LFM-99-05A-SPR17 (Lab Sample ID: 680-140237-2). The results for all pesticide compounds were non-detect in both samples.

Qualification: None required.

Compound Quantitation – Pesticides results were non-detect in all field samples. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "LOD U."

Qualification: None required.

Qualification Summary Table - The Pesticide results reported in this SDG are acceptable as reported and may be used for their intended purpose.

Lab Sample ID	Client Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
680-140237-1	LFM-99-02B-SPR17	Pesticides	No qualifications needed.			
680-140237-2	LFM-99-05A-SPR17	Pesticides	No qualifications needed.			
680-140237-3	LFM-DUP01-SPR17	Pesticides	No qualifications needed.			
680-140237-4	LFM-99-06A RP-SPR17	Pesticides	No qualifications needed.			
680-141617-1	LFM-03-07-SPR17	Pesticides	No qualifications needed.			

Total Metals
SW 846/6010C/6020A/7470A
USEPA Level II Review

Site: Devens Consolidation Landfill (DCL) – Spring 2017	SDG #: 680-140237-1 and 680-141617-1
Laboratory: Test America-Savannah, GA	Date: 08/18/2017
KGS Reviewer: Laurie Ekes	Project: 1024

Lab Sample ID	Client Sample ID	Collection Date	Analysis	Matrix
680-140237-1	LFM-99-02B-SPR17	6/22/2017	Select Total Metals	Groundwater
680-140237-2	LFM-99-05A-SPR17	6/22/2017	Select Total Metals	Groundwater
680-140237-3	LFM-DUP01-SPR17	6/22/2017	Select Total Metals	Groundwater
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	Select Total Metals	Groundwater
680-141617-1	LFM-03-7-SPR17	8/1/2017	Select Total Metals	Groundwater

Summary – Data validation was performed on the data for four (4) groundwater samples and one (1) field duplicate sample submitted for select total metals analysis for the following analytes: barium, cadmium, chromium, copper, iron, lead, manganese, selenium and silver by method SW6010C; arsenic by method SW6020A and mercury by method SW7470A. Location LFM-03-07 was buried due to construction in 2016; the well was uncovered and repaired in July 2017 and was sampled on 8/1/2017. The results from this sample are reported in SDG 680-141617-1 and are included in this data review report.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 06/23/2017 and 8/2/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries (%R) for all target analytes met %R control limits.

Qualification: None required.

MS/MSD – Sample LFM-99-06ARP-SPR17 (Lab Sample ID: 680-140237-4) was spiked and analyzed as matrix spike/matrix spike duplicate samples. The result for calcium in the native sample was greater than four (4) times the spike level. The MS %R for iron was 142% with the MSD %R of 101; the RPD was 34%. The %Rs and RPDs for the remaining analytes were within laboratory control limits.

Qualification: The result for iron in sample LFM-99-06ARP-SPR17 (Lab Sample ID: 680-140237-4) was qualified as estimated (J) by the laboratory; no further qualification is needed.

Method Blank – The method blanks prepared and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – Sample LFM-DUP01-SPR17 (Lab sample ID: 680-140237-3) was the field duplicate of sample LFM-99-06ARP-SPR17 (Lab sample ID: 680-140237-2). Barium and calcium were detected in both samples; iron was estimated in the FD sample but was non-detect in the native sample. The detected results were comparable. The results for all other analytes results were non-detect. FD sample results are summarized in the table below.

	LFM-99-05A-SPR17	LFM-DUP01-SPR17	
	680-140237-2	680-140237-3	
	6/22/2017	6/22/2017	
Analyte	**Result (µg/L)**	**Result (µg/L)**	**RPD (%)**
Barium	14	14	0
Calcium	62,000	63,000	1.6
Iron	50 U	23 J	

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "LOD U." Analyte detections below the LOQ were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The results for select total metals reported in this SDG are acceptable as reported and the data may be used for its intended purpose.

Lab Sample ID	Client Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
680-140237-1	LFM-99-02B-SPR17	Select Total Metals	No qualifications needed.			
680-140237-2	LFM-99-05A-SPR17	Select Total Metals	No qualifications needed.			
680-140237-3	LFM-DUP01-SPR17	Select Total Metals	No qualifications needed.			
680-140237-4	LFM-99-06A RP-SPR17	Select Total Metals	No qualifications needed.			
680-141617-1	LFM-03-07-SPR17	Select Total Metals	No qualifications needed.			

Wet Chemistry

Total Alkalinity (SM2320B), Chloride and Sulfate (SW9056A) Nitrate/Nitrite (E353.2), Total Cyanide (SW9012B), Total Dissolved Solids (TDS) (SM2540C) and Chemical Oxygen Demand (COD) (E410.4)

USEPA Level II Review

Site: Devens Consolidation Landfill (DCL) – Spring 2017	SDG #: 680-140237-1 and 680-141617-1
Laboratory: Test America-Savannah, GA	Date: 08/18/2017
KGS Reviewer: Laurie Ekes	Project: 1024

Lab Sample ID	Client Sample ID	Collection Date	Analysis	Matrix
680-140237-1	LFM-99-02B-SPR17	6/22/2017	Miscellaneous Parameters	Groundwater
680-140237-2	LFM-99-05A-SPR17	6/22/2017	Miscellaneous Parameters	Groundwater
680-140237-3	LFM-DUP01-SPR17	6/22/2017	Miscellaneous Parameters	Groundwater
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	Miscellaneous Parameters	Groundwater
680-141617-1	LFM-03-07-SPR17	8/1/2017	Miscellaneous Parameters	Groundwater

Summary - Data validation was performed on the data for four (4) groundwater samples and one (1) field duplicate sample submitted for the miscellaneous wet chemistry analyses listed above. The samples submitted for alkalinity, TDS, nitrate/nitrite and COD analyses were shipped to Test America-Denver for analysis. The samples submitted for chloride, sulfate and total cyanide analyses were analyzed at Test America-Savannah.

Location LFM-03-07 was buried due to construction in 2016; the well was uncovered and repaired in July 2017 and was sampled on 8/1/2017. The results from this sample are reported in SDG 680-141617-1 and are included in this data review report.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory on 06/23/2017 and 8/2/2017 in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the respective holding times required by the QAPP for preserved aqueous samples.

Qualification: None required.

Method Blank – A low level of alkalinity (3.05 mg/L) was reported in the MB analyzed with the samples in SDG 680-140437. Alkalinity was also reported (2.68 mg/L) in the MB analyzed with the sample in SDG 680-141617. Sample results for alkalinity were greater than 10 times the blank level; qualifications were not needed. The method blanks for all other parameters were free from contamination.

Qualification: None required.

Laboratory Control Sample – The LCS and/or LCSD %R results for all methods associated with these samples met the control limits established by the QAPP.

Qualification: None required.

MS/Duplicate – Sample LFM-99-06ARP-SPR17 (Lab Sample ID: 680-140237-4) was spiked and analyzed as matrix spike/duplicate samples. The %R and RPD results were within the laboratory control limits for all analytes.

Qualification: None required.

Field Duplicate – Sample DUP01-SPR17 (Lab sample ID: 680-140237-3) was a field duplicate of sample LFM-99-05A-SPR17 (Lab sample ID: 680-140237-2). The results for COD and total cyanide were non-detect. Detected results for TDS, nitrate/nitrite, chloride, sulfate and alkalinity were comparable. FD results are summarized below.

	LFM-99-05A-SPR17	LFM-DUP01-SPR17	
	680-140237-2	680-140237-3	
Analyte	**Result (mg/L)**	**Result (mg/L)**	**RPD (%)**
Nitrate Nitrite as N	2.1	2.1	0
Chloride	170	160	6.1
Sulfate	20	20	0
Alkalinity	82	82	0
Total Dissolved Solids (TDS)	440	450	2.2

Qualification: None required.

Compound Quantitation – All samples required dilutions due to high levels of chloride. Sample LFM-03-07-SPR17 (Lab Sample ID: 680-141617-1) was diluted due to high levels of both chloride and sulfate. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "LOD U." Analyte detections below the LOQ were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table: The results for the miscellaneous parameters reported in this are acceptable as reported and the data may be used for its intended purpose.

Lab Sample ID	**Client Sample ID**	**Analysis**	**Lab Value (mg/L)**	**Lab Qualifier**	**Validated Value (mg/L)**	**Validation Qualifier**
680-140237-1	LFM-99-02B-SPR17	Miscellaneous Parameters	No qualifications needed.			
680-140237-2	LFM-99-05A-SPR17	Miscellaneous Parameters	No qualifications needed.			
680-140237-3	LFM-DUP01-SPR17	Miscellaneous Parameters	No qualifications needed.			
680-140237-4	LFM-99-06A RP-SPR17	Miscellaneous Parameters	No qualifications needed.			
680-141617-1	LFM-03-07-SPR17	Miscellaneous Parameters	No qualifications needed.			

DCL LTM-Spring 2017 Validated Analytical Results

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL
680-140237-1	LFM-99-02B-SPR17	6/22/2017	353.2	Total/NA	Nitrate Nitrite as N	**0.47**	mg/L		0.1	0.05	0.019
680-140237-1	LFM-99-02B-SPR17	6/22/2017	410.4	Total/NA	Chemical Oxygen Demand	**5.4**	mg/L	J	20	10	4.1
680-140237-1	LFM-99-02B-SPR17	6/22/2017	6010C	Total/NA	Barium	**12**	ug/L		10	5	1.7
680-140237-1	LFM-99-02B-SPR17	6/22/2017	6010C	Total/NA	Cadmium	3.0	ug/L	U	5	3	1
680-140237-1	LFM-99-02B-SPR17	6/22/2017	6010C	Total/NA	Calcium	**44,000**	ug/L		500	75	25
680-140237-1	LFM-99-02B-SPR17	6/22/2017	6010C	Total/NA	Chromium	4.0	ug/L	U	10	4	1.6
680-140237-1	LFM-99-02B-SPR17	6/22/2017	6010C	Total/NA	Copper	5.0	ug/L	U	20	5	1.8
680-140237-1	LFM-99-02B-SPR17	6/22/2017	6010C	Total/NA	Iron	50	ug/L	U	50	50	17
680-140237-1	LFM-99-02B-SPR17	6/22/2017	6010C	Total/NA	Lead	10	ug/L	U	10	10	3.9
680-140237-1	LFM-99-02B-SPR17	6/22/2017	6010C	Total/NA	Manganese	3.0	ug/L	U	10	3	1
680-140237-1	LFM-99-02B-SPR17	6/22/2017	6010C	Total/NA	Selenium	20	ug/L	U	20	20	9.9
680-140237-1	LFM-99-02B-SPR17	6/22/2017	6010C	Total/NA	Silver	1.5	ug/L	U	10	1.5	0.6
680-140237-1	LFM-99-02B-SPR17	6/22/2017	6020A	Total/NA	Arsenic	3.0	ug/L	U	3	3	1.5
680-140237-1	LFM-99-02B-SPR17	6/22/2017	7470A	Total/NA	Mercury	0.20	ug/L	U	0.2	0.2	0.08
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	4,4'-DDD		ug/L	U	0.048	0.0096	0.006
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	4,4'-DDE	0.0096	ug/L	U	0.048	0.0096	0.0049
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	4,4'-DDT	0.017	ug/L	U	0.048	0.017	0.0067
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	Aldrin	0.017	ug/L	U	0.048	0.017	0.0069
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	alpha-BHC	0.0096	ug/L	U	0.048	0.0096	0.0033
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	beta-BHC	0.017	ug/L	U	0.048	0.017	0.0087
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	Chlordane (technical)	0.29	ug/L	U	0.48	0.29	0.091
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	delta-BHC	0.017	ug/L	U	0.048	0.017	0.0072
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	Dieldrin	0.0096	ug/L	U	0.048	0.0096	0.0036
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	Endosulfan I	0.0096	ug/L	U	0.048	0.0096	0.0033
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	Endosulfan II	0.0096	ug/L	U	0.048	0.0096	0.004
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	Endosulfan sulfate	0.0096	ug/L	U	0.048	0.0096	0.0049
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	Endrin	0.0096	ug/L	U	0.048	0.0096	0.0051
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	Endrin aldehyde	0.0096	ug/L	U	0.048	0.0096	0.0058
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	Endrin ketone	0.0096	ug/L	U	0.048	0.0096	0.0044
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	gamma-BHC (Lindane)	0.0096	ug/L	U	0.048	0.0096	0.0034
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	Heptachlor	0.017	ug/L	U	0.048	0.017	0.0068
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	Heptachlor epoxide	0.0096	ug/L	U	0.048	0.0096	0.0035
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	Methoxychlor	0.017	ug/L	U	0.048	0.017	0.0094
680-140237-1	LFM-99-02B-SPR17	6/22/2017	8081B 8082A	Total/NA	Toxaphene	0.76	ug/L	U	4.8	0.76	0.38
680-140237-1	LFM-99-02B-SPR17	6/22/2017	9012B	Total/NA	Cyanide, Total	0.005	mg/L	U	0.01	0.005	0.0025
680-140237-1	LFM-99-02B-SPR17	6/22/2017	9056A	Total/NA	Chloride	**320**	mg/L		5	5	2
680-140237-1	LFM-99-02B-SPR17	6/22/2017	9056A	Total/NA	Sulfate	**16**	mg/L		1	1	0.4
680-140237-1	LFM-99-02B-SPR17	6/22/2017	SM 2320B	Total/NA	Alkalinity	**60**	mg/L		5	3.2	1.1

DCL LTM-Spring 2017 Validated Analytical Results

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL
680-140237-1	LFM-99-02B-SPR17	6/22/2017	SM 2540C	Total/NA	Total Dissolved Solids (TDS)	**630**	mg/L		10	10	4.7
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	2-METHYLNAPHTHALENE	1.9	UG/L	U	1.9		0.77
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	ACENAPHTHENE	1.9	UG/L	U	1.9		1.7
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	ACENAPHTHYLENE	1.9	UG/L	U	1.9		0.77
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	ANTHRACENE	1.9	UG/L	U	1.9		1.3
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO(A)ANTHRACENE	1.9	UG/L	U	1.9		1.3
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO(A)PYRENE	1.9	UG/L	U	1.9		1.2
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO(B)FLUORANTHENE	1.9	UG/L	U	1.9		0.77
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO(K)FLUORANTHENE	1.9	UG/L	U	1.9		0.96
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO[G,H,I]PERYLENE	1.9	UG/L	U	1.9		1.2
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	C11-C22 AROMATICS	96	UG/L	U	96		48
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	C19-C36 ALIPHATICS	96	UG/L	U	96		48
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	C9-C18 ALIPHATICS	96	UG/L	U	96		48
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	CHRYSENE	1.9	UG/L	U	1.9		0.86
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	DIBENZO(A,H)ANTHRACENE	1.9	UG/L	U	1.9		1.2
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	FLUORANTHENE	1.9	UG/L	U	1.9		0.77
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	FLUORENE	1.9	UG/L	U	1.9		0.86
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	INDENO(1,2,3-CD)PYRENE	1.9	UG/L	U	1.9		1.3
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	NAPHTHALENE	1.9	UG/L	U	1.9		0.86
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	PHENANTHRENE	1.9	UG/L	U	1.9		0.86
SK5423-1RE	LFM-99-02B-SPR17	6/22/2017	MA DEP EPH	3510C	PYRENE	1.9	UG/L	U	1.9		1
SK5423-1	LFM-99-02B-SPR17	6/22/2017	MA DEP VPH	METHOD	BENZENE	3	UG/L	U	3		0.31
SK5423-1	LFM-99-02B-SPR17	6/22/2017	MA DEP VPH	METHOD	C5-C8 ALIPHATICS	100	UG/L	U	100		50
SK5423-1	LFM-99-02B-SPR17	6/22/2017	MA DEP VPH	METHOD	C9-C10 AROMATICS	100	UG/L	U	100		50
SK5423-1	LFM-99-02B-SPR17	6/22/2017	MA DEP VPH	METHOD	C9-C12 ALIPHATICS	100	UG/L	U	100		50
SK5423-1	LFM-99-02B-SPR17	6/22/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5	UG/L	U	5		0.42
SK5423-1	LFM-99-02B-SPR17	6/22/2017	MA DEP VPH	METHOD	M-,P-XYLENE	10	UG/L	U	10		0.92
SK5423-1	LFM-99-02B-SPR17	6/22/2017	MA DEP VPH	METHOD	METHYL TERT-BUTYL ETHER	5	UG/L	U	5		0.31
SK5423-1	LFM-99-02B-SPR17	6/22/2017	MA DEP VPH	METHOD	NAPHTHALENE	5	UG/L	U	5		1.6
SK5423-1	LFM-99-02B-SPR17	6/22/2017	MA DEP VPH	METHOD	O-XYLENE	5	UG/L	U	5		0.47
SK5423-1	LFM-99-02B-SPR17	6/22/2017	MA DEP VPH	METHOD	TOLUENE	5	UG/L	U	5		0.34
680-140237-2	LFM-99-05A-SPR17	6/22/2017	353.2	Total/NA	Nitrate Nitrite as N	**2.1**	mg/L		0.1	0.05	0.019
680-140237-2	LFM-99-05A-SPR17	6/22/2017	410.4	Total/NA	Chemical Oxygen Demand	10	mg/L	U	20	10	4.1
680-140237-2	LFM-99-05A-SPR17	6/22/2017	6010C	Total/NA	Barium	**14**	ug/L		10	5	1.7
680-140237-2	LFM-99-05A-SPR17	6/22/2017	6010C	Total/NA	Cadmium	3.0	ug/L	U	5	3	1
680-140237-2	LFM-99-05A-SPR17	6/22/2017	6010C	Total/NA	Calcium	**62,000**	ug/L		500	75	25
680-140237-2	LFM-99-05A-SPR17	6/22/2017	6010C	Total/NA	Chromium	4.0	ug/L	U	10	4	1.6
680-140237-2	LFM-99-05A-SPR17	6/22/2017	6010C	Total/NA	Copper	5.0	ug/L	U	20	5	1.8

DCL LTM-Spring 2017 Validated Analytical Results

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL
680-140237-2	LFM-99-05A-SPR17	6/22/2017	6010C	Total/NA	Iron	50	ug/L	U	50	50	17
680-140237-2	LFM-99-05A-SPR17	6/22/2017	6010C	Total/NA	Lead	10	ug/L	U	10	10	3.9
680-140237-2	LFM-99-05A-SPR17	6/22/2017	6010C	Total/NA	Manganese	3.0	ug/L	U	10	3	1
680-140237-2	LFM-99-05A-SPR17	6/22/2017	6010C	Total/NA	Selenium	20	ug/L	U	20	20	9.9
680-140237-2	LFM-99-05A-SPR17	6/22/2017	6010C	Total/NA	Silver	1.5	ug/L	U	10	1.5	0.6
680-140237-2	LFM-99-05A-SPR17	6/22/2017	6020A	Total/NA	Arsenic	3.0	ug/L	U	3	3	1.5
680-140237-2	LFM-99-05A-SPR17	6/22/2017	7470A	Total/NA	Mercury	0.20	ug/L	U	0.2	0.2	0.08
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	4,4'-DDD	0.0096	ug/L	U	0.048	0.0096	0.006
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	4,4'-DDE	0.0096	ug/L	U	0.048	0.0096	0.0049
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	4,4'-DDT	0.017	ug/L	U	0.048	0.017	0.0067
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	Aldrin	0.017	ug/L	U	0.048	0.017	0.0069
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	alpha-BHC	0.0096	ug/L	U	0.048	0.0096	0.0033
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	beta-BHC	0.017	ug/L	U	0.048	0.017	0.0087
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	Chlordane (technical)	0.29	ug/L	U	0.48	0.29	0.091
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	delta-BHC	0.017	ug/L	U	0.048	0.017	0.0072
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	Dieldrin	0.0096	ug/L	U	0.048	0.0096	0.0036
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	Endosulfan I	0.0096	ug/L	U	0.048	0.0096	0.0034
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	Endosulfan II	0.0096	ug/L	U	0.048	0.0096	0.004
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	Endosulfan sulfate	0.0096	ug/L	U	0.048	0.0096	0.0049
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	Endrin	0.0096	ug/L	U	0.048	0.0096	0.0051
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	Endrin aldehyde	0.0096	ug/L	U	0.048	0.0096	0.0059
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	Endrin ketone	0.0096	ug/L	U	0.048	0.0096	0.0044
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	gamma-BHC (Lindane)	0.0096	ug/L	U	0.048	0.0096	0.0035
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	Heptachlor	0.017	ug/L	U	0.048	0.017	0.0068
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	Heptachlor epoxide	0.0096	ug/L	U	0.048	0.0096	0.0035
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	Methoxychlor	0.017	ug/L	U	0.048	0.017	0.0094
680-140237-2	LFM-99-05A-SPR17	6/22/2017	8081B 8082A	Total/NA	Toxaphene	0.77	ug/L	U	4.8	0.77	0.38
680-140237-2	LFM-99-05A-SPR17	6/22/2017	9012B	Total/NA	Cyanide, Total	0.005	mg/L	U	0.01	0.005	0.0025
680-140237-2	LFM-99-05A-SPR17	6/22/2017	9056A	Total/NA	Chloride	**170**	mg/L		5	5	2
680-140237-2	LFM-99-05A-SPR17	6/22/2017	9056A	Total/NA	Sulfate	**20**	mg/L		1	1	0.4
680-140237-2	LFM-99-05A-SPR17	6/22/2017	SM 2320B	Total/NA	Alkalinity	**82**	mg/L		5	3.2	1.1
680-140237-2	LFM-99-05A-SPR17	6/22/2017	SM 2540C	Total/NA	Total Dissolved Solids (TDS)	**440**	mg/L		10	10	4.7
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	2-METHYLNAPHTHALENE	1.9	UG/L	U	1.9		0.75
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	ACENAPHTHENE	1.9	UG/L	U	1.9		1.7
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	ACENAPHTHYLENE	1.9	UG/L	U	1.9		0.75
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	ANTHRACENE	1.9	UG/L	U	1.9		1.3
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO(A)ANTHRACENE	1.9	UG/L	U	1.9		1.3
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO(A)PYRENE	1.9	UG/L	U	1.9		1.2

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO(B)FLUORANTHENE	1.9	UG/L	U	1.9		0.75
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO(K)FLUORANTHENE	1.9	UG/L	U	1.9		0.94
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO[G,H,I]PERYLENE	1.9	UG/L	U	1.9		1.2
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	C11-C22 AROMATICS	94	UG/L	U	94		47
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	C19-C36 ALIPHATICS	94	UG/L	U	94		47
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	C9-C18 ALIPHATICS	94	UG/L	U	94		47
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	CHRYSENE	1.9	UG/L	U	1.9		0.85
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	DIBENZO(A,H)ANTHRACENE	1.9	UG/L	U	1.9		1.1
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	FLUORANTHENE	1.9	UG/L	U	1.9		0.75
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	FLUORENE	1.9	UG/L	U	1.9		0.85
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	INDENO(1,2,3-CD)PYRENE	1.9	UG/L	U	1.9		1.3
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	NAPHTHALENE	1.9	UG/L	U	1.9		0.85
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	PHENANTHRENE	1.9	UG/L	U	1.9		0.85
SK5423-2RE	LFM-99-05A-SPR17	6/22/2017	MA DEP EPH	3510C	PYRENE	1.9	UG/L	U	1.9		1
SK5423-2	LFM-99-05A-SPR17	6/22/2017	MA DEP VPH	METHOD	BENZENE	3	UG/L	U	3		0.31
SK5423-2	LFM-99-05A-SPR17	6/22/2017	MA DEP VPH	METHOD	C5-C8 ALIPHATICS	100	UG/L	U	100		50
SK5423-2	LFM-99-05A-SPR17	6/22/2017	MA DEP VPH	METHOD	C9-C10 AROMATICS	100	UG/L	U	100		50
SK5423-2	LFM-99-05A-SPR17	6/22/2017	MA DEP VPH	METHOD	C9-C12 ALIPHATICS	100	UG/L	U	100		50
SK5423-2	LFM-99-05A-SPR17	6/22/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5	UG/L	U	5		0.42
SK5423-2	LFM-99-05A-SPR17	6/22/2017	MA DEP VPH	METHOD	M-,P-XYLENE	10	UG/L	U	10		0.92
SK5423-2	LFM-99-05A-SPR17	6/22/2017	MA DEP VPH	METHOD	METHYL TERT-BUTYL ETHER	5	UG/L	U	5		0.31
SK5423-2	LFM-99-05A-SPR17	6/22/2017	MA DEP VPH	METHOD	NAPHTHALENE	5	UG/L	U	5		1.6
SK5423-2	LFM-99-05A-SPR17	6/22/2017	MA DEP VPH	METHOD	O-XYLENE	5	UG/L	U	5		0.47
SK5423-2	LFM-99-05A-SPR17	6/22/2017	MA DEP VPH	METHOD	TOLUENE	5	UG/L	U	5		0.34
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	353.2	Total/NA	Nitrate Nitrite as N	**0.95**	mg/L		0.1	0.05	0.019
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	410.4	Total/NA	Chemical Oxygen Demand	**5.7**	mg/L	J	20	10	4.1
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	6010C	Total/NA	Barium	**9.1**	ug/L	J	10	5	1.7
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	6010C	Total/NA	Cadmium	3.0	ug/L	U	5	3	1
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	6010C	Total/NA	Calcium	**78,000**	ug/L		500	75	25
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	6010C	Total/NA	Chromium	4.0	ug/L	U	10	4	1.6
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	6010C	Total/NA	Copper	5.0	ug/L	U	20	5	1.8
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	6010C	Total/NA	Iron	**82**	ug/L	J	50	50	17
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	6010C	Total/NA	Lead	10	ug/L	U	10	10	3.9
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	6010C	Total/NA	Manganese	**6.9**	ug/L	J	10	3	1
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	6010C	Total/NA	Selenium	20	ug/L	U	20	20	9.9
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	6010C	Total/NA	Silver	1.5	ug/L	U	10	1.5	0.6
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	6020A	Total/NA	Arsenic	3.0	ug/L	U	3	3	1.5
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	7470A	Total/NA	Mercury	0.20	ug/L	U	0.2	0.2	0.08

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	4,4'-DDD	0.0096	ug/L	U	0.048	0.0096	0.0061
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	4,4'-DDE	0.0096	ug/L	U	0.048	0.0096	0.0049
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	4,4'-DDT	0.017	ug/L	U	0.048	0.017	0.0067
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	Aldrin	0.017	ug/L	U	0.048	0.017	0.0069
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	alpha-BHC	0.0096	ug/L	U	0.048	0.0096	0.0033
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	beta-BHC	0.017	ug/L	U	0.048	0.017	0.0088
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	Chlordane (technical)	0.29	ug/L	U	0.48	0.29	0.092
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	delta-BHC	0.017	ug/L	U	0.048	0.017	0.0072
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	Dieldrin	0.0096	ug/L	U	0.048	0.0096	0.0037
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	Endosulfan I	0.0096	ug/L	U	0.048	0.0096	0.0034
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	Endosulfan II	0.0096	ug/L	U	0.048	0.0096	0.004
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	Endosulfan sulfate	0.0096	ug/L	U	0.048	0.0096	0.0049
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	Endrin	0.0096	ug/L	U	0.048	0.0096	0.0051
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	Endrin aldehyde	0.0096	ug/L	U	0.048	0.0096	0.0059
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	Endrin ketone	0.0096	ug/L	U	0.048	0.0096	0.0044
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	gamma-BHC (Lindane)	0.0096	ug/L	U	0.048	0.0096	0.0035
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	Heptachlor	0.017	ug/L	U	0.048	0.017	0.0068
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	Heptachlor epoxide	0.0096	ug/L	U	0.048	0.0096	0.0036
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	Methoxychlor	0.017	ug/L	U	0.048	0.017	0.0094
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	8081B 8082A	Total/NA	Toxaphene	0.77	ug/L	U	4.8	0.77	0.39
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	9012B	Total/NA	Cyanide, Total	0.005	mg/L	U	0.01	0.005	0.0025
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	9056A	Total/NA	Chloride	**420**	mg/L		13	13	5
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	9056A	Total/NA	Sulfate	**24**	mg/L		1	1	0.4
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	SM 2320B	Total/NA	Alkalinity	**74**	mg/L		5	3.2	1.1
680-140237-4	LFM-99-06A RP-SPR17	6/21/2017	SM 2540C	Total/NA	Total Dissolved Solids (TDS)	**880**	mg/L		10	10	4.7
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	2-METHYLNAPHTHALENE	1.9	UG/L	U	1.9		0.75
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	ACENAPHTHENE	1.9	UG/L	U	1.9		1.7
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	ACENAPHTHYLENE	1.9	UG/L	U	1.9		0.75
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	ANTHRACENE	1.9	UG/L	U	1.9		1.3
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	BENZO(A)ANTHRACENE	1.9	UG/L	U	1.9		1.3
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	BENZO(A)PYRENE	1.9	UG/L	U	1.9		1.2
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	BENZO(B)FLUORANTHENE	1.9	UG/L	U	1.9		0.75
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	BENZO(K)FLUORANTHENE	1.9	UG/L	U	1.9		0.94
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	BENZO[G,H,I]PERYLENE	1.9	UG/L	U	1.9		1.2
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	C11-C22 AROMATICS	94	UG/L	U	94		47
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	C19-C36 ALIPHATICS	94	UG/L	U	94		47
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	C9-C18 ALIPHATICS	94	UG/L	U	94		47
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	CHRYSENE	1.9	UG/L	U	1.9		0.85

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	DIBENZO(A,H)ANTHRACENE	1.9	UG/L	U	1.9		1.1
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	FLUORANTHENE	1.9	UG/L	U	1.9		0.75
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	FLUORENE	1.9	UG/L	U	1.9		0.85
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	INDENO(1,2,3-CD)PYRENE	1.9	UG/L	U	1.9		1.3
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	NAPHTHALENE	1.9	UG/L	U	1.9		0.85
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	PHENANTHRENE	1.9	UG/L	U	1.9		0.85
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP EPH	3510C	PYRENE	1.9	UG/L	U	1.9		1
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP VPH	METHOD	BENZENE	3	UG/L	U	3		0.31
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP VPH	METHOD	C5-C8 ALIPHATICS	100	UG/L	U	100		50
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP VPH	METHOD	C9-C10 AROMATICS	100	UG/L	U	100		50
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP VPH	METHOD	C9-C12 ALIPHATICS	100	UG/L	U	100		50
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5	UG/L	U	5		0.42
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP VPH	METHOD	M-,P-XYLENE	10	UG/L	U	10		0.92
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP VPH	METHOD	METHYL TERT-BUTYL ETHER	5	UG/L	U	5		0.31
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP VPH	METHOD	NAPHTHALENE	5	UG/L	U	5		1.6
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP VPH	METHOD	O-XYLENE	5	UG/L	U	5		0.47
SK5423-4	LFM-99-06A RP-SPR17	6/21/2017	MA DEP VPH	METHOD	TOLUENE	5	UG/L	U	5		0.34
680-140237-3	LFM-DUP01-SPR17	6/22/2017	353.2	Total/NA	Nitrate Nitrite as N	**2.1**	mg/L		0.1	0.05	0.019
680-140237-3	LFM-DUP01-SPR17	6/22/2017	410.4	Total/NA	Chemical Oxygen Demand	10	mg/L	U	20	10	4.1
680-140237-3	LFM-DUP01-SPR17	6/22/2017	6010C	Total/NA	Barium	**14**	ug/L		10	5	1.7
680-140237-3	LFM-DUP01-SPR17	6/22/2017	6010C	Total/NA	Cadmium	3.0	ug/L	U	5	3	1
680-140237-3	LFM-DUP01-SPR17	6/22/2017	6010C	Total/NA	Calcium	**63,000**	ug/L		500	75	25
680-140237-3	LFM-DUP01-SPR17	6/22/2017	6010C	Total/NA	Chromium	4.0	ug/L	U	10	4	1.6
680-140237-3	LFM-DUP01-SPR17	6/22/2017	6010C	Total/NA	Copper	5.0	ug/L	U	20	5	1.8
680-140237-3	LFM-DUP01-SPR17	6/22/2017	6010C	Total/NA	Iron	**23**	ug/L	J	50	50	17
680-140237-3	LFM-DUP01-SPR17	6/22/2017	6010C	Total/NA	Lead	10	ug/L	U	10	10	3.9
680-140237-3	LFM-DUP01-SPR17	6/22/2017	6010C	Total/NA	Manganese	3.0	ug/L	U	10	3	1
680-140237-3	LFM-DUP01-SPR17	6/22/2017	6010C	Total/NA	Selenium	20	ug/L	U	20	20	9.9
680-140237-3	LFM-DUP01-SPR17	6/22/2017	6010C	Total/NA	Silver	1.5	ug/L	U	10	1.5	0.6
680-140237-3	LFM-DUP01-SPR17	6/22/2017	6020A	Total/NA	Arsenic	3.0	ug/L	U	3	3	1.5
680-140237-3	LFM-DUP01-SPR17	6/22/2017	7470A	Total/NA	Mercury	0.20	ug/L	U	0.2	0.2	0.08
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	4,4'-DDD	0.0096	ug/L	U	0.048	0.0096	0.006
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	4,4'-DDE	0.0096	ug/L	U	0.048	0.0096	0.0049
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	4,4'-DDT	0.017	ug/L	U	0.048	0.017	0.0067
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	Aldrin	0.017	ug/L	U	0.048	0.017	0.0069
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	alpha-BHC	0.0096	ug/L	U	0.048	0.0096	0.0033
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	beta-BHC	0.017	ug/L	U	0.048	0.017	0.0087
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	Chlordane (technical)	0.29	ug/L	U	0.48	0.29	0.091

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	delta-BHC	0.017	ug/L	U	0.048	0.017	0.0072
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	Dieldrin	0.0096	ug/L	U	0.048	0.0096	0.0036
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	Endosulfan I	0.0096	ug/L	U	0.048	0.0096	0.0033
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	Endosulfan II	0.0096	ug/L	U	0.048	0.0096	0.004
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	Endosulfan sulfate	0.0096	ug/L	U	0.048	0.0096	0.0049
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	Endrin	0.0096	ug/L	U	0.048	0.0096	0.0051
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	Endrin aldehyde	0.0096	ug/L	U	0.048	0.0096	0.0058
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	Endrin ketone	0.0096	ug/L	U	0.048	0.0096	0.0044
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	gamma-BHC (Lindane)	0.0096	ug/L	U	0.048	0.0096	0.0034
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	Heptachlor	0.017	ug/L	U	0.048	0.017	0.0068
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	Heptachlor epoxide	0.0096	ug/L	U	0.048	0.0096	0.0035
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	Methoxychlor	0.017	ug/L	U	0.048	0.017	0.0094
680-140237-3	LFM-DUP01-SPR17	6/22/2017	8081B 8082A	Total/NA	Toxaphene	0.77	ug/L	U	4.8	0.77	0.38
680-140237-3	LFM-DUP01-SPR17	6/22/2017	9012B	Total/NA	Cyanide, Total	0.005	mg/L	U	0.01	0.005	0.0025
680-140237-3	LFM-DUP01-SPR17	6/22/2017	9056A	Total/NA	Chloride	**160**	mg/L		5	5	2
680-140237-3	LFM-DUP01-SPR17	6/22/2017	9056A	Total/NA	Sulfate	**20**	mg/L		1	1	0.4
680-140237-3	LFM-DUP01-SPR17	6/22/2017	SM 2320B	Total/NA	Alkalinity	**82**	mg/L		5	3.2	1.1
680-140237-3	LFM-DUP01-SPR17	6/22/2017	SM 2540C	Total/NA	Total Dissolved Solids (TDS)	**450**	mg/L		10	10	4.7
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	2-METHYLNAPHTHALENE	1.9	UG/L	U	1.9		0.75
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	ACENAPHTHENE	1.9	UG/L	U	1.9		1.7
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	ACENAPHTHYLENE	1.9	UG/L	U	1.9		0.75
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	ANTHRACENE	1.9	UG/L	U	1.9		1.3
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO(A)ANTHRACENE	1.9	UG/L	U	1.9		1.3
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO(A)PYRENE	1.9	UG/L	U	1.9		1.2
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO(B)FLUORANTHENE	1.9	UG/L	U	1.9		0.75
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO(K)FLUORANTHENE	1.9	UG/L	U	1.9		0.94
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	BENZO[G,H,I]PERYLENE	1.9	UG/L	U	1.9		1.2
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	C11-C22 AROMATICS	94	UG/L	U	94		47
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	C19-C36 ALIPHATICS	94	UG/L	U	94		47
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	C9-C18 ALIPHATICS	94	UG/L	U	94		47
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	CHRYSENE	1.9	UG/L	U	1.9		0.85
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	DIBENZO(A,H)ANTHRACENE	1.9	UG/L	U	1.9		1.1
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	FLUORANTHENE	1.9	UG/L	U	1.9		0.75
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	FLUORENE	1.9	UG/L	U	1.9		0.85
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	INDENO(1,2,3-CD)PYRENE	1.9	UG/L	U	1.9		1.3
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	NAPHTHALENE	1.9	UG/L	U	1.9		0.85
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	PHENANTHRENE	1.9	UG/L	U	1.9		0.85
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP EPH	3510C	PYRENE	1.9	UG/L	U	1.9		1

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP VPH	METHOD	BENZENE	3	UG/L	U	3		0.31
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP VPH	METHOD	C5-C8 ALIPHATICS	100	UG/L	U	100		50
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP VPH	METHOD	C9-C10 AROMATICS	100	UG/L	U	100		50
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP VPH	METHOD	C9-C12 ALIPHATICS	100	UG/L	U	100		50
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5	UG/L	U	5		0.42
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP VPH	METHOD	M-,P-XYLENE	10	UG/L	U	10		0.92
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP VPH	METHOD	METHYL TERT-BUTYL ETHER	5	UG/L	U	5		0.31
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP VPH	METHOD	NAPHTHALENE	5	UG/L	U	5		1.6
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP VPH	METHOD	O-XYLENE	5	UG/L	U	5		0.47
SK5423-3	LFM-DUP01-SPR17	6/22/2017	MA DEP VPH	METHOD	TOLUENE	5	UG/L	U	5		0.34
SK5423-5	TRIP BLANK	6/22/2017	MA DEP VPH	METHOD	BENZENE	3	UG/L	U	3		0.31
SK5423-5	TRIP BLANK	6/22/2017	MA DEP VPH	METHOD	C5-C8 ALIPHATICS	100	UG/L	U	100		50
SK5423-5	TRIP BLANK	6/22/2017	MA DEP VPH	METHOD	C9-C10 AROMATICS	100	UG/L	U	100		50
SK5423-5	TRIP BLANK	6/22/2017	MA DEP VPH	METHOD	C9-C12 ALIPHATICS	100	UG/L	U	100		50
SK5423-5	TRIP BLANK	6/22/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5	UG/L	U	5		0.42
SK5423-5	TRIP BLANK	6/22/2017	MA DEP VPH	METHOD	M-,P-XYLENE	10	UG/L	U	10		0.92
SK5423-5	TRIP BLANK	6/22/2017	MA DEP VPH	METHOD	METHYL TERT-BUTYL ETHER	5	UG/L	U	5		0.31
SK5423-5	TRIP BLANK	6/22/2017	MA DEP VPH	METHOD	NAPHTHALENE	5	UG/L	U	5		1.6
SK5423-5	TRIP BLANK	6/22/2017	MA DEP VPH	METHOD	O-XYLENE	5	UG/L	U	5		0.47
SK5423-5	TRIP BLANK	6/22/2017	MA DEP VPH	METHOD	TOLUENE	5	UG/L	U	5		0.34
680-141617-1	LFM-03-07-SPR17	8/1/2017	353.2	Total/NA	Nitrate/Nitrite-N	**1.7**	mg/L		0.1	0.05	0.019
680-141617-1	LFM-03-07-SPR17	8/1/2017	410.4	Total/NA	Chemical Oxygen Demand	**7.5**	mg/L	J	20	10	4.1
680-141617-1	LFM-03-07-SPR17	8/1/2017	6010C	Total/NA	Barium	**77**	ug/L		10	5	1.7
680-141617-1	LFM-03-07-SPR17	8/1/2017	6010C	Total/NA	Cadmium	3	ug/L	U	5	3	1
680-141617-1	LFM-03-07-SPR17	8/1/2017	6010C	Total/NA	Calcium	**2,500**	ug/L		500	75	25
680-141617-1	LFM-03-07-SPR17	8/1/2017	6010C	Total/NA	Chromium	4	ug/L	U	10	4	1.6
680-141617-1	LFM-03-07-SPR17	8/1/2017	6010C	Total/NA	Copper	5	ug/L	U	20	5	1.8
680-141617-1	LFM-03-07-SPR17	8/1/2017	6010C	Total/NA	Iron	**1,900**	ug/L		50	50	17
680-141617-1	LFM-03-07-SPR17	8/1/2017	6010C	Total/NA	Lead	10	ug/L	U	10	10	3.9
680-141617-1	LFM-03-07-SPR17	8/1/2017	6010C	Total/NA	Manganese	**110**	ug/L		10	3	1
680-141617-1	LFM-03-07-SPR17	8/1/2017	6010C	Total/NA	Selenium	20	ug/L	U	20	20	9.9
680-141617-1	LFM-03-07-SPR17	8/1/2017	6010C	Total/NA	Silver	1.5	ug/L	U	10	1.5	0.6
680-141617-1	LFM-03-07-SPR17	8/1/2017	6020A	Total/NA	Arsenic	3	ug/L	U	3	3	1.5
680-141617-1	LFM-03-07-SPR17	8/1/2017	7470A	Total/NA	Mercury	0.2	ug/L	U	0.2	0.2	0.08
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	4,4'-DDD		ug/L	U	0.048	0.0096	0.006
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	4,4'-DDE	0.0096	ug/L	U	0.048	0.0096	0.0049
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	4,4'-DDT	0.017	ug/L	U	0.048	0.017	0.0067
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	Aldrin	0.017	ug/L	U	0.048	0.017	0.0069

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	alpha-BHC	0.0096	ug/L	U	0.048	0.0096	0.0033
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	beta-BHC	0.017	ug/L	U	0.048	0.017	0.0087
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	Chlordane (technical)	0.29	ug/L	U	0.48	0.29	0.091
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	delta-BHC	0.017	ug/L	U	0.048	0.017	0.0072
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	Dieldrin	0.0096	ug/L	U	0.048	0.0096	0.0036
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	Endosulfan I	0.0096	ug/L	U	0.048	0.0096	0.0033
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	Endosulfan II	0.0096	ug/L	U	0.048	0.0096	0.004
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	Endosulfan sulfate	0.0096	ug/L	U	0.048	0.0096	0.0049
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	Endrin	0.0096	ug/L	U	0.048	0.0096	0.0051
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	Endrin aldehyde	0.0096	ug/L	U	0.048	0.0096	0.0058
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	Endrin ketone	0.0096	ug/L	U	0.048	0.0096	0.0044
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	gamma-BHC (Lindane)	0.0096	ug/L	U	0.048	0.0096	0.0034
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	Heptachlor	0.017	ug/L	U	0.048	0.017	0.0068
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	Heptachlor epoxide	0.0096	ug/L	U	0.048	0.0096	0.0035
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	Methoxychlor	0.017	ug/L	U	0.048	0.017	0.0094
680-141617-1	LFM-03-07-SPR17	8/1/2017	8081B 8082A	Total/NA	Toxaphene	0.76	ug/L	U	4.8	0.76	0.38
680-141617-1	LFM-03-07-SPR17	8/1/2017	9012B	Total/NA	Cyanide, Total	**0.0033**	mg/L	J	0.01	0.005	0.0025
680-141617-1	LFM-03-07-SPR17	8/1/2017	9056A	Total/NA	Chloride	**380**	mg/L		5	5	2
680-141617-1	LFM-03-07-SPR17	8/1/2017	9056A	Total/NA	Sulfate	**22**	mg/L		10	10	4
680-141617-1	LFM-03-07-SPR17	8/1/2017	SM 2320B	Total/NA	Alkalinity	**96**	mg/L		5	3.2	1.1
680-141617-1	LFM-03-07-SPR17	8/1/2017	SM 2540C	Total/NA	Total Dissolved Solids (TDS)	**860**	mg/L		10	10	4.7
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	2-METHYLNAPHTHALENE	1.9	UG/L	U	1.9		0.75
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	ACENAPHTHENE	1.9	UG/L	U	1.9		1.7
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	ACENAPHTHYLENE	1.9	UG/L	U	1.9		0.75
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	ANTHRACENE	1.9	UG/L	U	1.9		1.3
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	BENZO(A)ANTHRACENE	1.9	UG/L	U	1.9		1.3
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	BENZO(A)PYRENE	1.9	UG/L	U	1.9		1.2
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	BENZO(B)FLUORANTHENE	1.9	UG/L	U	1.9		0.75
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	BENZO(K)FLUORANTHENE	1.9	UG/L	U	1.9		0.94
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	BENZO[G,H,I]PERYLENE	1.9	UG/L	U	1.9		1.2
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	C11-C22 AROMATICS	94	UG/L	U	94		47
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	C19-C36 ALIPHATICS	94	UG/L	U	94		47
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	C9-C18 ALIPHATICS	94	UG/L	U	94		47
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	CHRYSENE	1.9	UG/L	U	1.9		0.85
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	DIBENZO(A,H)ANTHRACENE	1.9	UG/L	U	1.9		1.1
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	FLUORANTHENE	1.9	UG/L	U	1.9		0.75
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	FLUORENE	1.9	UG/L	U	1.9		0.85
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	INDENO(1,2,3-CD)PYRENE	1.9	UG/L	U	1.9		1.3

DCL LTM-Spring 2017 Validated Analytical Results

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	NAPHTHALENE	1.9	UG/L	U	1.9		0.85
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	PHENANTHRENE	1.9	UG/L	U	1.9		0.85
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP EPH	3510C	PYRENE	1.9	UG/L	U	1.9		1
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP VPH	METHOD	BENZENE	3	UG/L	U	3		0.31
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP VPH	METHOD	C5-C8 ALIPHATICS	100	UG/L	U	100		50
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP VPH	METHOD	C9-C10 AROMATICS	100	UG/L	U	100		50
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP VPH	METHOD	C9-C12 ALIPHATICS	100	UG/L	U	100		50
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5	UG/L	U	5		0.42
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP VPH	METHOD	M-,P-XYLENE	10	UG/L	U	10		0.92
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP VPH	METHOD	METHYL TERT-BUTYL ETHER	5	UG/L	U	5		0.31
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP VPH	METHOD	NAPHTHALENE	5	UG/L	U	5		1.6
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP VPH	METHOD	O-XYLENE	5	UG/L	U	5		0.47
SK6816-1	LFM-03-07-SPR17	8/1/2017	MA DEP VPH	METHOD	TOLUENE	5	UG/L	U	5		0.34
SK6816-2	TRIP BLANK	8/1/2017	MA DEP VPH	METHOD	BENZENE	3	UG/L	U	3		0.31
SK6816-2	TRIP BLANK	8/1/2017	MA DEP VPH	METHOD	C5-C8 ALIPHATICS	100	UG/L	U	100		50
SK6816-2	TRIP BLANK	8/1/2017	MA DEP VPH	METHOD	C9-C10 AROMATICS	100	UG/L	U	100		50
SK6816-2	TRIP BLANK	8/1/2017	MA DEP VPH	METHOD	C9-C12 ALIPHATICS	100	UG/L	U	100		50
SK6816-2	TRIP BLANK	8/1/2017	MA DEP VPH	METHOD	ETHYLBENZENE	5	UG/L	U	5		0.42
SK6816-2	TRIP BLANK	8/1/2017	MA DEP VPH	METHOD	M-,P-XYLENE	10	UG/L	U	10		0.92
SK6816-2	TRIP BLANK	8/1/2017	MA DEP VPH	METHOD	METHYL TERT-BUTYL ETHER	5	UG/L	U	5		0.31
SK6816-2	TRIP BLANK	8/1/2017	MA DEP VPH	METHOD	NAPHTHALENE	5	UG/L	U	5		1.6
SK6816-2	TRIP BLANK	8/1/2017	MA DEP VPH	METHOD	O-XYLENE	5	UG/L	U	5		0.47
SK6816-2	TRIP BLANK	8/1/2017	MA DEP VPH	METHOD	TOLUENE	5	UG/L	U	5		0.34

Notes:

mg/l = milligram per liter

µg/L = microgram per liter

LOQ = Limit of Quantitation

LOD = Limit of Detection

DL = Method Detection Limit

U = non-detect

J = Estimated Result

C.2

Data Validation Reports
Fall 2017 LTM Event

Volatile Petroleum Hydrocarbons
MADEP Method VPH-04-1.1
USEPA Level II Review

Site: Devens Consolidation Landfill (DCL) – Fall 2017	SDG #: 680-144887 and 680-146353-2
Laboratory: Test America-Savannah, GA VPH analyses subcontracted to Katahdin, Scarborough, ME	Date: 12/22/2017
KGS Reviewer: Laurie Ekes	Project: 1024

TAL Lab Sample ID	Katahdin Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Matrix
680-144887-1	TK0122-1	LFM-99-02B-FALL17	10/26/2017	VPH	Groundwater
680-144887-2	TK0122-2	LFM-99-05A-FALL17	10/27/2017	VPH	Groundwater
680-144887-3	TK0122-3	LFM-DUP01-FALL17	10/27/2017	VPH	Groundwater
680-144887-4	TK0122-4	LFM-99-06A RP-FALL17	10/26/2017	VPH	Groundwater
680-144887-5	TK0122-5	Trip Blank	10/26/2017	VPH	Trip Blank
680-146535-4	TK1450-1	LFM-03-07_Fall17	12/04/2017	VPH	Groundwater

Summary – Data validation was performed on the data for four (4) groundwater samples, one (1) field duplicate sample and one (1) trip blank sample submitted for Volatile Petroleum Hydrocarbon (VPH) analyses by MADEP method VPH 04-1.1. Samples for VPH analysis were subcontracted by Test America to Katahdin Analytical Services in Scarborough, Maine and reported in SDG TK0122 and TK1450.

Location LFM-03-07 was dry and could not be sampled during the October sampling event. A sample was collected from this location on 12/4/2017 and was reported in Test America SDG 680-146353-2 and Katahdin SDG TK1450.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/28/2017 and 12/6/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 14-day holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Surrogates – All surrogate recoveries were within the control limits specified in the QAPP.

Qualification: None required

Laboratory Control Sample – The LCS/LCSD pair prepared and analyzed with these samples met the laboratory %R and RPD control limits.

Qualification: None required.

MS/MSD – Matrix spike/matrix spike duplicate analyses were performed for all target VPHs on sample LFM-99-02B-FALL17 (Lab sample ID: TK0122-1). The %R and RPD results were within laboratory control limits for all analytes. MS/MSD samples were not submitted with sample LFM-03-07.

Qualification: None required.

Method Blank – Method blanks prepared and analyzed with these samples were non-detect for all target VPH compounds.

Qualification: None required.

Trip Blanks – One trip blank sample Trip Blank (Lab Sample ID: TK0122-5) was submitted with these samples. The TB sample was non-detect for all target VPH. A trip blank sample was not submitted with sample LFM-03-07_Fall17 reported in SDG TK1450.

Qualification: None required.

Field Blanks – Field blank samples were not collected with this sample set.

Qualification: None required.

Field Duplicate – Sample LFM-DUP01-FALL17 (Lab sample ID: TK0122-3) was a field duplicate of sample LFM-99-05A (Lab sample ID: TK0122-2). Target VPH were non-detect in both samples.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The VPH results are acceptable as reported and the data may be used for its intended purpose.

Lab Sample ID	Katahdin Lab Sample ID	Client Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
680-144887-1	TK0122-1	LFM-99-02B-FALL17	VPH	No qualifications needed.			
680-144887-2	TK0122-2	LFM-99-05A-FALL17	VPH	No qualifications needed.			
680-144887-3	TK0122-3	LFM-DUP01-FALL17	VPH	No qualifications needed.			
680-144887-4	TK0122-4	LFM-99-06A RP-FALL17	VPH	No qualifications needed.			
680-144887-5	TK0122-5	Trip Blank	VPH	No qualifications needed.			
680-146353-4	TK1450-1	LFM-03-07_Fall17	VPH	No qualifications needed.			

Extractable Petroleum Hydrocarbons
MADEP Method EPH-04-1.1
USEPA Level II Review

Site: Devens Consolidation Landfill (DCL) – Fall 2017	SDG #: 680-144887 and 680-146353-2
Laboratory: Test America-Savannah, GA EPH analyses subcontracted to Katahdin, Scarborough, ME	Date: 12/22/2017
KGS Reviewer: Laurie Ekes	Project: 1024

TAL Lab Sample ID	Katahdin Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Matrix
680-144887-1	TK0122-1	LFM-99-02B-FALL17	10/26/2017	EPH	Groundwater
680-144887-2	TK0122-2	LFM-99-05A-FALL17	10/27/2017	EPH	Groundwater
680-144887-3	TK0122-3	LFM-DUP01-FALL17	10/27/2017	EPH	Groundwater
680-144887-4	TK0122-4	LFM-99-06A RP-FALL17	10/26/2017	EPH	Groundwater
680-146353-4	TK1450-1	LFM-03-07_Fall17	12/04/2017	EPH	Groundwater

Summary – Data validation was performed on the data for four (4) groundwater samples and one (1) field duplicate sample collected and submitted for Extractable Petroleum Hydrocarbon (EPH) analyses by MADEP method VPH 04-1.1. Samples for EPH analysis were subcontracted by Test America to Katahdin Analytical Services in Scarborough, Maine and reported in SDG TK0122 and TK1450.

Location LFM-03-07 was dry and could not be sampled during the October sampling event. A sample was collected from this location on 12/4/2017 and was reported in Test America SDG 680-146353-2 and Katahdin SDG TK1450.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/28/2017 and 12/06/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 14-day holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Surrogates – All surrogate recoveries were within the laboratory control limits.

Qualification: None required

Laboratory Control Sample – The LCS/LCSD pair prepared and analyzed with these samples on

11/6/2017 and 12/15/2017 were within the laboratory %R and RPD control limits.

Qualification: None required.

MS/MSD – Matrix spike/matrix spike duplicate analyses were performed for all target EPH on sample LFM-99-02B-FALL17 (Lab sample ID: TK0122-1). The %R and RPD results were within laboratory control limits for all analytes. MS/MSD samples were not submitted with sample LFM-03-07_Fall17 reported in SDG TK1450.

Qualification: None required.

Method Blank – Method blanks prepared and analyzed with the samples reported in SDG TK0122 were non-detect for all target EPH compounds.

The method blank prepared and analyzed with the sample reported in SDG TK1450 had a low-level detection of C11-C22 aromatics just slightly above the reporting limit/at 110 µg/L. The result for C11-C22 aromatics in sample LFM-03-07_FALL17 was non-detect (100U); no qualifications were needed.

Qualification: None required.

Field Blanks – Field blank samples were not collected with these samples.

Qualification: None required.

Field Duplicate – Sample LFM-DUP01-FALL17 (Lab sample ID: TK0122-3) was a field duplicate of sample LFM-99-05A (Lab sample ID: TK0122-2). Target EPH were non-detect in both samples.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The EPH results are acceptable as reported and the data may be used for its intended purpose.

Lab Sample ID	Katahdin Lab Sample ID	Client Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
680-144887-1	TK0122-1	LFM-99-02B-FALL17	EPH	No qualifications needed.			
680-144887-2	TK0122-2	LFM-99-05A-FALL17	EPH	No qualifications needed.			
680-144887-3	TK0122-3	LFM-DUP01-FALL17	EPH	No qualifications needed.			
680-144887-4	TK0122-4	LFM-99-06A RP-FALL17	EPH	No qualifications needed.			
680-146353-4	TK1450-1	LFM-03-07_Fall17	EPH	No qualifications needed.			

Pesticides
SW846/8081B
USEPA Level II Review

Site: Devens Consolidation Landfill (DCL) – Fall 2017	SDG #: 680-144887 and 680-146353-2
Laboratory: Test America-Savannah, GA	Date: 12/22/2017
KGS Reviewer: Laurie Ekes	Project: 1024

Lab Sample ID	Client Sample ID	Collection Date	Analysis	Matrix
680-144887-1	LFM-99-02B-FALL17	10/26/2017	SW8081B/Pesticides	Groundwater
680-144887-2	LFM-99-05A-FALL17	10/27/2017	SW8081B/Pesticides	Groundwater
680-144887-3	LFM-DUP01-FALL17	10/27/2017	SW8081B/Pesticides	Groundwater
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	SW8081B/Pesticides	Groundwater
680-146353-4	LFM-03-07_Fall17	12/4/2017	SW8081B/Pesticides	Groundwater

Summary - Data validation was performed on the data for four (4) groundwater samples and one (1) field duplicate sample submitted for Pesticide analyses by EPA method SW846/8081B.

Location LFM-03-07 was dry and could not be sampled during the October sampling event. A sample was collected from this location on 12/4/2017 and was reported in SDG 680-146353-2.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/28/2017 and 12/6/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 14-day holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Surrogates – Surrogate recoveries were within the control limits specified in the QAPP

Qualification: None required

Laboratory Control Sample – The LCS/LCSD samples prepared and analyzed with these samples met the %R and RPD control limits for all pesticide compounds.

Qualification: None required.

MS/MSD – Sample LFM-99-02B-FALL17 (Lab Sample ID: 680-144887-1) was spiked and analyzed as matrix spike/matrix spike duplicate samples. The %R and RPDs were within the laboratory control limits for all analytes. MS/MSD samples were not submitted with sample LFM-

03-07 in SDG 680-146353-2.

Qualification: None required.

Method Blank – The method blank (680-511854/16A) prepared and analyzed for pesticides with the samples in SDG 144887 on 11/03/2017 was non-detect for all pesticide compounds.

The method blank (680-505685/13A) prepared and analyzed for pesticides with the sample in SDG 146353-2 on 12/11/2017 was non-detect for all pesticide compounds.

Qualification: None required.

Field Blanks – Field blank samples were not collected with this sample set.

Qualification: None required.

Field Duplicate – Sample LFM-DUP1-FALL17 (Lab Sample ID: 680-144887-3) was the field duplicate sample of LFM-99-05A-FALL17 (Lab Sample ID: 680-144887-2). Pesticide compounds were non-detect in both samples.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "LOD U." Analyte detections below the LOD were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The Pesticide results reported in this SDG are acceptable as reported and may be used for their intended purpose.

Lab Sample ID	Client Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
680-144887-1	LFM-99-02B-FALL17	Pesticides	No qualifications needed.			
680-144887-2	LFM-99-05A-FALL17	Pesticides	No qualifications needed.			
680-144887-3	LFM-DUP01-FALL17	Pesticides	No qualifications needed.			
680-144887-4	LFM-99-06A RP-FALL17	Pesticides	No qualifications needed.			
680-146535-4	LFM-03-07_Fall17	Pesticides	No qualifications needed.			

Total Metals
SW 846/6020A/7470A
USEPA Level II Review

Site: Devens Consolidation Landfill (DCL) – Fall 2017	SDG #: 680-144887 and 680-146353-2
Laboratory: Test America-Savannah, GA	Date: 12/22/2017
KGS Reviewer: Laurie Ekes	Project: 1024

Lab Sample ID	Client Sample ID	Collection Date	Analysis	Matrix
680-144887-1	LFM-99-02B-FALL17	10/26/2017	Select Metals	Groundwater
680-144887-2	LFM-99-05A-FALL17	10/27/2017	Select Metals	Groundwater
680-144887-3	LFM-DUP01-FALL17	10/27/2017	Select Metals	Groundwater
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	Select Metals	Groundwater
680-146535-4	LFM-03-07_Fall17	12/04/2017	Select Metals	Groundwater

Summary – Data validation was performed on the data for four (4) groundwater samples and one (1) field duplicate sample submitted for select total metals analyses for the following analytes: Arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium and silver by method SW6020A and mercury by method SW7470A.

Location LFM-03-07 was dry and could not be sampled during the October sampling event. A sample was collected from this location on 12/4/2017 and was reported in SDG 680-146353-2.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/28/2017 and 12/6/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries (%R) for all target analytes met the laboratory %R control limits.

Qualification: None required.

MS/MSD – Sample LFM-99-02B (Lab Sample ID: 680-144887-1) was spiked and analyzed as matrix spike/matrix spike duplicate samples. The %Rs and calculated RPDs for the spiked analytes were within laboratory control limits.

MS/MSD samples were not submitted with sample LFM-03-07 reported in SDG 146353-2.

Qualification: None required.

Method Blank – The method blank (MB500708/1A) associated and analyzed with the samples reported in SDG 144887 on 11/01/2017 was non-detect for all analytes.

The method blank (MB506037/1A) associated and analyzed with the samples reported in SDG 146353-27 on 12/13/2017 had a low-level detection of chromium at 1.82 µg/L. All other target metals were non-detect.

Qualification: None required for samples in SDG 144887. The result for chromium (1.7 µg/L) in sample LFM-03-07_Fall17 (Lab Sample ID: 680146353-4) was qualified as non-detect (4.0 U).

Field Blank – Field blank samples were not collected with this sample set.

Qualification: None required.

Field Duplicate – Sample LFM-DUP01_Fall17 (Lab sample ID: 680-144887-3) was the field duplicate of sample LFM-99-05A (Lab sample ID: 680-144887-2). The results for cadmium, copper, selenium, silver and mercury were non-detect in both samples. There was a large discrepancy between the detected analytes. Arsenic, chromium, and lead were non-detect in the native sample but had low level detections in the FD sample. Percent RPDs could not be calculated for these analyses. Estimated results for iron and manganese were reported in the native sample but were detected at high levels in the FD sample; %RPDs were greater than 150%. Barium results were comparable between the FD sample pair with a %RPD of 25.4%. The reason for this discrepancy is not known; however, it is possible that the groundwater recovery was low due to the volume of analytes and sample bottles required to be collected from this location. The FD sample results are summarized in the table below.

Lab Sample ID	680-144887-2	680-144887-3	
Client Sample ID	LFM-99-05A-FALL17	LFM-DUP01-FALL17	
Collection Date	10/27/2017	10/27/2017	
Analyte	Result (µg/L)	Result (µg/L)	RPD (%)
Arsenic	3.0 U	4.3	
Barium	24	31	25.4
Chromium	4.0 U	3.5 J	
Iron	64 J	1,500	>150%
Lead	2.5 U	3.8	
Manganese	2.7 J	91	>150%

Qualification: The non-detect and detected results for all analytes from the FD sample pair were qualified as estimated (J/UJ). The non-detect mercury results were acceptable and did not require qualification.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "LOD U." Analyte detections below the LOQ were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The results for select total metals reported in this SDG are acceptable with the noted qualifications. The data may be used for its intended purpose.

Lab Sample ID	Client Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
680-144887-1	LFM-99-02B-FALL17	Total metals	No qualification needed.			
680-144887-2	LFM-99-05A-FALL17	Arsenic	3	U	3	UJ
680-144887-2	LFM-99-05A-FALL17	Barium	24		24	J
680-144887-2	LFM-99-05A-FALL17	Cadmium	0.4	U	0.4	UJ
680-144887-2	LFM-99-05A-FALL17	Chromium	4	U	4	UJ
680-144887-2	LFM-99-05A-FALL17	Copper	4	U	4	UJ
680-144887-2	LFM-99-05A-FALL17	Iron	64	J	64	J
680-144887-2	LFM-99-05A-FALL17	Lead	2.5	U	2.5	UJ
680-144887-2	LFM-99-05A-FALL17	Manganese	2.7	J	2.7	J
680-144887-2	LFM-99-05A-FALL17	Selenium	2.5	U	2.5	UJ
680-144887-2	LFM-99-05A-FALL17	Silver	0.3	U	0.3	UJ
680-144887-3	LFM-DUP01-FALL17	Arsenic	4.3		4.3	J
680-144887-3	LFM-DUP01-FALL17	Barium	31		31	J
680-144887-3	LFM-DUP01-FALL17	Cadmium	0.4	U	0.4	UJ
680-144887-3	LFM-DUP01-FALL17	Chromium	3.5	J	3.5	J
680-144887-3	LFM-DUP01-FALL17	Copper	4	U	4	UJ
680-144887-3	LFM-DUP01-FALL17	Iron	1500		1,500	J
680-144887-3	LFM-DUP01-FALL17	Lead	3.8		3.8	J
680-144887-3	LFM-DUP01-FALL17	Manganese	91		91	J
680-144887-3	LFM-DUP01-FALL17	Selenium	2.5	U	2.5	UJ
680-144887-3	LFM-DUP01-FALL17	Silver	0.3	U	0.3	UJ
680-144887-4	LFM-99-06A RP-FALL17	Total metals	No qualification needed.			
680-146353-4	LFM-03-07_Fall17	Chromium	1.7	J	4.0	U

Wet Chemistry

Total Alkalinity (SM2320B), Chloride and Sulfate (SW9056A) Nitrate/Nitrite (E353.2), Total Cyanide (SW9012B), Total Dissolved Solids (TDS) (SM2540C) and Chemical Oxygen Demand (COD) (E410.4)

USEPA Level II Review

Site: Devens Consolidation Landfill (DCL) –Fall 2017	SDG #: 680-144887 and 680-146353-2
Laboratory: Test America-Savannah, GA	Date: 12/19/2017
KGS Reviewer: Laurie Ekes	Project: 1024

Lab Sample ID	Client Sample ID	Collection Date	Analysis	Matrix
680-144887-1	LFM-99-02B-FALL17	10/26/2017	Miscellaneous Parameters	Groundwater
680-144887-2	LFM-99-05A-FALL17	10/27/2017	Miscellaneous Parameters	Groundwater
680-144887-3	LFM-DUP01-FALL17	10/27/2017	Miscellaneous Parameters	Groundwater
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	Miscellaneous Parameters	Groundwater
680-146535-4	LFM-03-07_Fall17	12/04/2017	Miscellaneous Parameters	Groundwater

Summary - Data validation was performed on the data for four (4) groundwater samples and one (1) field duplicate sample submitted for the miscellaneous wet chemistry analyses listed above. The samples submitted for alkalinity, TDS, nitrate/nitrite and COD analyses were shipped to Test America-Denver for analysis. The samples submitted for chloride, sulfate and total cyanide were analyzed at Test America-Savannah.

Location LFM-03-07 was dry and could not be sampled during the October sampling event. A sample was collected from this location on 12/4/2017 and was reported in SDG 680-146353-2.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory on 10/28/2017 and 12/6/2017 in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the respective holding times required by the QAPP for preserved aqueous samples.

Qualification: None required.

Method Blank – A low level of alkalinity (2.64J mg/L) was reported in the method blank analyzed with the samples reported in SDG 144887. Sample results for alkalinity were greater than 10 times the blank levels; qualifications were not needed. COD was reported in the method blank prepared and analyzed with these samples at 6.16 J mg/L. The MBs for nitrate/nitrite, chloride, sulfate and TDS parameters were free from contamination.

A low level of alkalinity (3.36J mg/L) was reported in the method blank analyzed with the sample reported in SDG 145353-2. Sample results for alkalinity were greater than 10 times the blank levels; qualifications were not needed. The MBs for COD, nitrate/nitrite, chloride, sulfate and TDS parameters reported in SDG 146353-2 were free from contamination.

Qualification: The estimated results for COD in all native samples reported in SDG 144887 were qualified as non-detect at the reporting limit (10 U).

Field Blanks – Field blank samples were not collected with these sample sets.

Qualification: None required.

Laboratory Control Sample – The LCS and/or LCSD %R results reported in both SDGs for all parameters were within control limits.

Qualification: None required.

MS/Duplicate – Sample LFM-99-02B-Fall17 (Lab Sample ID: 680-144887-1) was spiked and analyzed as matrix spike/duplicate samples for nitrate/nitrite, cyanide, COD, chloride and sulfate. The %R and RPD results were within the laboratory control limits for all spiked analytes.

Qualification: None required.

Field Duplicate – Sample LFM-DUP-1-Fall17 (Lab sample ID: 680-144887-3) was a field duplicate of sample LFM-99-05A-Fall17 (Lab sample ID: 680-144887-2). The results for COD were non-detect. Detected results for nitrate/nitrite, chloride, sulfate, alkalinity and TDS were comparable with %RPDs less than 20%. The FD results are summarized below.

Lab Sample ID	680-144887-2	680-144887-3	
Client Sample ID	LFM-99-05A-FALL17	LFM-DUP01-FALL17	
Collection Date	10/27/2017	10/27/2017	
Analyte	**Result (mg/L)**	**Result (mg/L)**	**RPD (%)**
Nitrate/Nitrite-N	3.3	3.3	0
Cyanide, Total	0.005 U	0.0038 J	
Chloride	270	270	0
Sulfate	23	23	0
Alkalinity	78	79	1.3
TDS	550	550	0

Qualification: None required.

Compound Quantitation – The results for chloride were reported from dilutions due to high levels detected in the samples. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "LOD U." Analyte detections below the LOQ were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table: The results for the miscellaneous parameters reported in this are acceptable with the noted qualifications. The data may be used for its intended purpose.

Lab Sample ID	Client Sample ID	Analysis	Lab Value (mg/L)	Lab Qualifier	Validated Value (mg/L)	Validation Qualifier
680-144887-1	LFM-99-02B-FALL17	COD	8.1	J	10	U
680-144887-2	LFM-99-05A-FALL17	COD	6.8	J	10	U
680-144887-3	LFM-DUP01-FALL17	COD	5.2	J	10	U
680-144887-4	LFM-99-06A RP-FALL17	COD	8.5	J	10	U
680-144343-4	LFM-03-07_Fall17	Miscellaneous Parameters	No qualifications needed.			

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Lab ID
680-144887-1	LFM-99-02B-FALL17	10/26/2017	353.2	Total/NA	Nitrate/Nitrite-N	0.78	mg/L		0.1	0.05	0.019	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	410.4	Total/NA	Chemical Oxygen Demand	10	mg/L	U	20	10	4.1	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	6020A	Total/NA	Arsenic	3	ug/L	U	3	3	1.5	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	6020A	Total/NA	Barium	19	ug/L		5	1.5	0.61	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	6020A	Total/NA	Cadmium	0.4	ug/L	U	0.5	0.4	0.15	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	6020A	Total/NA	Chromium	4	ug/L	U	5	4	1.6	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	6020A	Total/NA	Copper	4	ug/L	U	5	4	1.7	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	6020A	Total/NA	Iron	75	ug/L	U	100	75	25	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	6020A	Total/NA	Lead	2.5	ug/L	U	2.5	2.5	0.98	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	6020A	Total/NA	Manganese	5	ug/L	U	5	5	1.8	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	6020A	Total/NA	Selenium	2.5	ug/L	U	2.5	2.5	1	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	6020A	Total/NA	Silver	0.56	ug/L	J	1	0.3	0.1	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	7470A	Total/NA	Mercury	0.2	ug/L	U	0.2	0.2	0.08	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	4,4'-DDD	0.0096	ug/L	U	0.048	0.0096	0.006	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	4,4'-DDT	0.017	ug/L	U	0.048	0.017	0.0067	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	Aldrin	0.017	ug/L	U	0.048	0.017	0.0069	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	beta-BHC	0.017	ug/L	U	0.048	0.017	0.0087	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	Chlordane (technical)	0.29	ug/L	U	0.48	0.29	0.091	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	delta-BHC	0.017	ug/L	U	0.048	0.017	0.0072	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	Dieldrin	0.0096	ug/L	U	0.048	0.0096	0.0036	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	Endosulfan II	0.0096	ug/L	U	0.048	0.0096	0.004	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	Endosulfan sulfate	0.0096	ug/L	U	0.048	0.0096	0.0049	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	Endrin	0.0096	ug/L	U	0.048	0.0096	0.0051	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	Endrin aldehyde	0.0096	ug/L	U	0.048	0.0096	0.0058	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	Endrin ketone	0.0096	ug/L	U	0.048	0.0096	0.0044	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	gamma-BHC (Lindane)	0.0096	ug/L	U	0.048	0.0096	0.0034	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	Heptachlor	0.017	ug/L	U	0.048	0.017	0.0068	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	Heptachlor epoxide	0.0096	ug/L	U	0.048	0.0096	0.0035	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	Methoxychlor	0.017	ug/L	U	0.048	0.017	0.0094	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	Toxaphene	0.77	ug/L	U	4.8	0.77	0.38	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	4,4'-DDE	0.0096	ug/L	U	0.048	0.0096	0.0049	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	alpha-BHC	0.0096	ug/L	U	0.048	0.0096	0.0033	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	8081B 8082A	Total/NA	Endosulfan I	0.0096	ug/L	U	0.048	0.0096	0.0034	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	9012B	Total/NA	Cyanide, Total	0.005	mg/L	U	0.01	0.005	0.0025	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	9056A	Total/NA	Chloride	440	mg/L		5	5	2	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	9056A	Total/NA	Sulfate	21	mg/L		1	1	0.4	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	2-METHYLNAPHTHALENE	1.9	UG/L	U	1.9	1.9	0.77	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	ACENAPHTHENE	1.9	UG/L	U	1.9	1.9	1.7	TK0122-1

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Lab ID
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	ACENAPHTHYLENE	1.9	UG/L	U	1.9	1.9	0.77	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	ANTHRACENE	1.9	UG/L	U	1.9	1.9	1.3	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	BENZO(A)ANTHRACENE	1.9	UG/L	U	1.9	1.9	1.3	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	BENZO(A)PYRENE	1.9	UG/L	U	1.9	1.9	1.2	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	BENZO(B)FLUORANTHENE	1.9	UG/L	U	1.9	1.9	0.77	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	BENZO(K)FLUORANTHENE	1.9	UG/L	U	1.9	1.9	0.96	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	BENZO[G,H,I]PERYLENE	1.9	UG/L	U	1.9	1.9	1.2	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	C11-C22 AROMATICS	96	UG/L	U	96.	96.	48.	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	C19-C36 ALIPHATICS	96	UG/L	U	96.	96.	48.	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	C9-C18 ALIPHATICS	96	UG/L	U	96.	96.	48.	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	CHRYSENE	1.9	UG/L	U	1.9	1.9	0.86	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	DIBENZO(A,H)ANTHRACEN	1.9	UG/L	U	1.9	1.9	1.2	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	FLUORANTHENE	1.9	UG/L	U	1.9	1.9	0.77	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	FLUORENE	1.9	UG/L	U	1.9	1.9	0.86	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	INDENO(1,2,3-CD)PYRENE	1.9	UG/L	U	1.9	1.9	1.3	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	NAPHTHALENE	1.9	UG/L	U	1.9	1.9	0.86	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	PHENANTHRENE	1.9	UG/L	U	1.9	1.9	0.86	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPEPH	T	PYRENE	1.9	UG/L	U	1.9	1.9	1.0	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPVPH	T	BENZENE	3.0	UG/L	U	3.0	3.0	0.31	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPVPH	T	C5-C8 ALIPHATICS	100	UG/L	U	100	100	50.	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPVPH	T	C9-C10 AROMATICS	100	UG/L	U	100	100	50.	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPVPH	T	C9-C12 ALIPHATICS	100	UG/L	U	100	100	50.	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPVPH	T	ETHYLBENZENE	5.0	UG/L	U	5.0	5.0	0.42	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPVPH	T	M-,P-XYLENE	10	UG/L	U	10.	10.	0.92	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPVPH	T	METHYL TERT-BUTYL ETH	5.0	UG/L	U	5.0	5.0	0.31	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPVPH	T	NAPHTHALENE	5.0	UG/L	U	5.0	5.0	1.6	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPVPH	T	O-XYLENE	5.0	UG/L	U	5.0	5.0	0.47	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	MADEPVPH	T	TOLUENE	5.0	UG/L	U	5.0	5.0	0.34	TK0122-1
680-144887-1	LFM-99-02B-FALL17	10/26/2017	SM 2320B	Total/NA	Alkalinity	87	mg/L		5	3.2	1.1	
680-144887-1	LFM-99-02B-FALL17	10/26/2017	SM 2540C	Total/NA	Total Dissolved Solids (TDS)	790	mg/L		10	10	4.7	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	353.2	Total/NA	Nitrate/Nitrite-N	3.3	mg/L		0.1	0.05	0.019	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	410.4	Total/NA	Chemical Oxygen Demand	10	mg/L	U	20	10	4.1	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	6020A	Total/NA	Arsenic	3	ug/L	UJ	3	3	1.5	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	6020A	Total/NA	Barium	24	ug/L	J	5	1.5	0.61	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	6020A	Total/NA	Cadmium	0.4	ug/L	UJ	0.5	0.4	0.15	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	6020A	Total/NA	Chromium	4	ug/L	UJ	5	4	1.6	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	6020A	Total/NA	Copper	4	ug/L	UJ	5	4	1.7	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	6020A	Total/NA	Iron	64	ug/L	J	100	75	25	

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Lab ID
680-144887-2	LFM-99-05A-FALL17	10/27/2017	6020A	Total/NA	Lead	2.5	ug/L	UJ	2.5	2.5	0.98	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	6020A	Total/NA	Manganese	2.7	ug/L	J	5	5	1.8	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	6020A	Total/NA	Selenium	2.5	ug/L	UJ	2.5	2.5	1	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	6020A	Total/NA	Silver	0.3	ug/L	UJ	1	0.3	0.1	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	7470A	Total/NA	Mercury	0.2	ug/L	U	0.2	0.2	0.08	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	4,4'-DDD	0.01	ug/L	U	0.05	0.01	0.0063	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	4,4'-DDT	0.018	ug/L	U	0.05	0.018	0.007	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	Aldrin	0.018	ug/L	U	0.05	0.018	0.0072	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	beta-BHC	0.018	ug/L	U	0.05	0.018	0.0091	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	Chlordane (technical)	0.3	ug/L	U	0.5	0.3	0.095	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	delta-BHC	0.018	ug/L	U	0.05	0.018	0.0075	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	Dieldrin	0.01	ug/L	U	0.05	0.01	0.0038	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	Endosulfan II	0.01	ug/L	U	0.05	0.01	0.0042	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	Endosulfan sulfate	0.01	ug/L	U	0.05	0.01	0.0051	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	Endrin	0.01	ug/L	U	0.05	0.01	0.0053	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	Endrin aldehyde	0.01	ug/L	U	0.05	0.01	0.0061	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	Endrin ketone	0.01	ug/L	U	0.05	0.01	0.0046	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	gamma-BHC (Lindane)	0.01	ug/L	U	0.05	0.01	0.0036	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	Heptachlor	0.018	ug/L	U	0.05	0.018	0.0071	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	Heptachlor epoxide	0.01	ug/L	U	0.05	0.01	0.0037	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	Methoxychlor	0.018	ug/L	U	0.05	0.018	0.0098	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	Toxaphene	0.8	ug/L	U	5	0.8	0.4	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	4,4'-DDE	0.01	ug/L	U	0.05	0.01	0.0051	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	alpha-BHC	0.01	ug/L	U	0.05	0.01	0.0034	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	8081B 8082A	Total/NA	Endosulfan I	0.01	ug/L	U	0.05	0.01	0.0035	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	9012B	Total/NA	Cyanide, Total	0.005	mg/L	U	0.01	0.005	0.0025	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	9056A	Total/NA	Chloride	270	mg/L		5	5	2	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	9056A	Total/NA	Sulfate	23	mg/L		1	1	0.4	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	2-METHYLNAPHTHALENE	2.1	UG/L	U	2.1	2.1	0.82	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	ACENAPHTHENE	2.1	UG/L	U	2.1	2.1	1.8	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	ACENAPHTHYLENE	2.1	UG/L	U	2.1	2.1	0.82	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	ANTHRACENE	2.1	UG/L	U	2.1	2.1	1.4	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	BENZO(A)ANTHRACENE	2.1	UG/L	U	2.1	2.1	1.4	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	BENZO(A)PYRENE	2.1	UG/L	U	2.1	2.1	1.3	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	BENZO(B)FLUORANTHENE	2.1	UG/L	U	2.1	2.1	0.82	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	BENZO(K)FLUORANTHENE	2.1	UG/L	U	2.1	2.1	1.0	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	BENZO[G,H,I]PERYLENE	2.1	UG/L	U	2.1	2.1	1.3	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	C11-C22 AROMATICS	100	UG/L	U	100	100	52.	TK0122-2

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Lab ID
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	C19-C36 ALIPHATICS	100	UG/L	U	100	100	52.	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	C9-C18 ALIPHATICS	100	UG/L	U	100	100	52.	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	CHRYSENE	2.1	UG/L	U	2.1	2.1	0.93	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	DIBENZO(A,H)ANTHRACEN	2.1	UG/L	U	2.1	2.1	1.2	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	FLUORANTHENE	2.1	UG/L	U	2.1	2.1	0.82	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	FLUORENE	2.1	UG/L	U	2.1	2.1	0.93	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	INDENO(1,2,3-CD)PYRENE	2.1	UG/L	U	2.1	2.1	1.4	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	NAPHTHALENE	2.1	UG/L	U	2.1	2.1	0.93	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	PHENANTHRENE	2.1	UG/L	U	2.1	2.1	0.93	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPEPH	T	PYRENE	2.1	UG/L	U	2.1	2.1	1.1	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPVPH	T	BENZENE	3.0	UG/L	U	3.0	3.0	0.31	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPVPH	T	C5-C8 ALIPHATICS	100	UG/L	U	100	100	50.	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPVPH	T	C9-C10 AROMATICS	100	UG/L	U	100	100	50.	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPVPH	T	C9-C12 ALIPHATICS	100	UG/L	U	100	100	50.	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPVPH	T	ETHYLBENZENE	5.0	UG/L	U	5.0	5.0	0.42	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPVPH	T	M-,P-XYLENE	10	UG/L	U	10.	10.	0.92	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPVPH	T	METHYL TERT-BUTYL ETH	5.0	UG/L	U	5.0	5.0	0.31	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPVPH	T	NAPHTHALENE	5.0	UG/L	U	5.0	5.0	1.6	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPVPH	T	O-XYLENE	5.0	UG/L	U	5.0	5.0	0.47	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	MADEPVPH	T	TOLUENE	5.0	UG/L	U	5.0	5.0	0.34	TK0122-2
680-144887-2	LFM-99-05A-FALL17	10/27/2017	SM 2320B	Total/NA	Alkalinity	78	mg/L		5	3.2	1.1	
680-144887-2	LFM-99-05A-FALL17	10/27/2017	SM 2540C	Total/NA	Total Dissolved Solids (TDS)	550	mg/L		10	10	4.7	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	353.2	Total/NA	Nitrate/Nitrite-N	3.3	mg/L		0.1	0.05	0.019	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	410.4	Total/NA	Chemical Oxygen Demand	10	mg/L	U	20	10	4.1	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	6020A	Total/NA	Arsenic	4.3	ug/L	J	3	3	1.5	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	6020A	Total/NA	Barium	31	ug/L	J	5	1.5	0.61	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	6020A	Total/NA	Cadmium	0.4	ug/L	UJ	0.5	0.4	0.15	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	6020A	Total/NA	Chromium	3.5	ug/L	J	5	4	1.6	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	6020A	Total/NA	Copper	4	ug/L	UJ	5	4	1.7	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	6020A	Total/NA	Iron	1500	ug/L	J	100	75	25	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	6020A	Total/NA	Lead	3.8	ug/L	J	2.5	2.5	0.98	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	6020A	Total/NA	Manganese	91	ug/L	J	5	5	1.8	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	6020A	Total/NA	Selenium	2.5	ug/L	UJ	2.5	2.5	1	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	6020A	Total/NA	Silver	0.3	ug/L	UJ	1	0.3	0.1	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	7470A	Total/NA	Mercury	0.2	ug/L	U	0.2	0.2	0.08	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	4,4'-DDD	0.0096	ug/L	U	0.048	0.0096	0.006	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	4,4'-DDT	0.017	ug/L	U	0.048	0.017	0.0067	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	Aldrin	0.017	ug/L	U	0.048	0.017	0.0069	

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Lab ID
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	beta-BHC	0.017	ug/L	U	0.048	0.017	0.0087	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	Chlordane (technical)	0.29	ug/L	U	0.48	0.29	0.091	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	delta-BHC	0.017	ug/L	U	0.048	0.017	0.0072	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	Dieldrin	0.0096	ug/L	U	0.048	0.0096	0.0036	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	Endosulfan II	0.0096	ug/L	U	0.048	0.0096	0.004	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	Endosulfan sulfate	0.0096	ug/L	U	0.048	0.0096	0.0049	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	Endrin	0.0096	ug/L	U	0.048	0.0096	0.0051	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	Endrin aldehyde	0.0096	ug/L	U	0.048	0.0096	0.0059	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	Endrin ketone	0.0096	ug/L	U	0.048	0.0096	0.0044	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	gamma-BHC (Lindane)	0.0096	ug/L	U	0.048	0.0096	0.0035	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	Heptachlor	0.017	ug/L	U	0.048	0.017	0.0068	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	Heptachlor epoxide	0.0096	ug/L	U	0.048	0.0096	0.0036	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	Methoxychlor	0.017	ug/L	U	0.048	0.017	0.0094	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	Toxaphene	0.77	ug/L	U	4.8	0.77	0.38	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	4,4'-DDE	0.0096	ug/L	U	0.048	0.0096	0.0049	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	alpha-BHC	0.0096	ug/L	U	0.048	0.0096	0.0033	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	8081B 8082A	Total/NA	Endosulfan I	0.0096	ug/L	U	0.048	0.0096	0.0034	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	9012B	Total/NA	Cyanide, Total	0.0038	mg/L	J	0.01	0.005	0.0025	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	9056A	Total/NA	Chloride	270	mg/L		5	5	2	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	9056A	Total/NA	Sulfate	23	mg/L		1	1	0.4	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	2-METHYLNAPHTHALENE	2.2	UG/L	U	2.2	2.2	0.86	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	ACENAPHTHENE	2.2	UG/L	U	2.2	2.2	1.9	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	ACENAPHTHYLENE	2.2	UG/L	U	2.2	2.2	0.86	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	ANTHRACENE	2.2	UG/L	U	2.2	2.2	1.5	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	BENZO(A)ANTHRACENE	2.2	UG/L	U	2.2	2.2	1.5	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	BENZO(A)PYRENE	2.2	UG/L	U	2.2	2.2	1.4	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	BENZO(B)FLUORANTHENE	2.2	UG/L	U	2.2	2.2	0.86	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	BENZO(K)FLUORANTHENE	2.2	UG/L	U	2.2	2.2	1.1	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	BENZO[G,H,I]PERYLENE	2.2	UG/L	U	2.2	2.2	1.4	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	C11-C22 AROMATICS	110	UG/L	U	110	110	54.	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	C19-C36 ALIPHATICS	110	UG/L	U	110	110	54.	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	C9-C18 ALIPHATICS	110	UG/L	U	110	110	54.	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	CHRYSENE	2.2	UG/L	U	2.2	2.2	0.97	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	DIBENZO(A,H)ANTHRACEN	2.2	UG/L	U	2.2	2.2	1.3	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	FLUORANTHENE	2.2	UG/L	U	2.2	2.2	0.86	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	FLUORENE	2.2	UG/L	U	2.2	2.2	0.97	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	INDENO(1,2,3-CD)PYRENE	2.2	UG/L	U	2.2	2.2	1.5	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	NAPHTHALENE	2.2	UG/L	U	2.2	2.2	0.97	TK0122-3

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680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	PHENANTHRENE	2.2	UG/L	U	2.2	2.2	0.97	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPEPH	T	PYRENE	2.2	UG/L	U	2.2	2.2	1.2	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPVPH	T	BENZENE	3.0	UG/L	U	3.0	3.0	0.31	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPVPH	T	C5-C8 ALIPHATICS	100	UG/L	U	100	100	50.	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPVPH	T	C9-C10 AROMATICS	100	UG/L	U	100	100	50.	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPVPH	T	C9-C12 ALIPHATICS	100	UG/L	U	100	100	50.	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPVPH	T	ETHYLBENZENE	5.0	UG/L	U	5.0	5.0	0.42	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPVPH	T	M-,P-XYLENE	10	UG/L	U	10.	10.	0.92	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPVPH	T	METHYL TERT-BUTYL ETH	5.0	UG/L	U	5.0	5.0	0.31	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPVPH	T	NAPHTHALENE	5.0	UG/L	U	5.0	5.0	1.6	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPVPH	T	O-XYLENE	5.0	UG/L	U	5.0	5.0	0.47	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	MADEPVPH	T	TOLUENE	5.0	UG/L	U	5.0	5.0	0.34	TK0122-3
680-144887-3	LFM-DUP01-FALL17	10/27/2017	SM 2320B	Total/NA	Alkalinity	79	mg/L		5	3.2	1.1	
680-144887-3	LFM-DUP01-FALL17	10/27/2017	SM 2540C	Total/NA	Total Dissolved Solids (TDS)	550	mg/L		10	10	4.7	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	353.2	Total/NA	Nitrate/Nitrite-N	1.7	mg/L		0.1	0.05	0.019	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	410.4	Total/NA	Chemical Oxygen Demand	10	mg/L	U	20	10	4.1	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	6020A	Total/NA	Arsenic	3	ug/L	U	3	3	1.5	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	6020A	Total/NA	Barium	10	ug/L		5	1.5	0.61	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	6020A	Total/NA	Cadmium	0.4	ug/L	U	0.5	0.4	0.15	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	6020A	Total/NA	Chromium	4	ug/L	U	5	4	1.6	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	6020A	Total/NA	Copper	4	ug/L	U	5	4	1.7	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	6020A	Total/NA	Iron	75	ug/L	U	100	75	25	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	6020A	Total/NA	Lead	2.5	ug/L	U	2.5	2.5	0.98	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	6020A	Total/NA	Manganese	7.7	ug/L		5	5	1.8	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	6020A	Total/NA	Selenium	2.5	ug/L	U	2.5	2.5	1	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	6020A	Total/NA	Silver	0.3	ug/L	U	1	0.3	0.1	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	7470A	Total/NA	Mercury	0.2	ug/L	U	0.2	0.2	0.08	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	4,4'-DDD	0.0096	ug/L	U	0.048	0.0096	0.006	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	4,4'-DDT	0.017	ug/L	U	0.048	0.017	0.0067	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	Aldrin	0.017	ug/L	U	0.048	0.017	0.0069	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	beta-BHC	0.017	ug/L	U	0.048	0.017	0.0087	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	Chlordane (technical)	0.29	ug/L	U	0.48	0.29	0.091	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	delta-BHC	0.017	ug/L	U	0.048	0.017	0.0072	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	Dieldrin	0.0096	ug/L	U	0.048	0.0096	0.0036	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	Endosulfan II	0.0096	ug/L	U	0.048	0.0096	0.004	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	Endosulfan sulfate	0.0096	ug/L	U	0.048	0.0096	0.0049	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	Endrin	0.0096	ug/L	U	0.048	0.0096	0.0051	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	Endrin aldehyde	0.0096	ug/L	U	0.048	0.0096	0.0058	

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Lab ID
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	Endrin ketone	0.0096	ug/L	U	0.048	0.0096	0.0044	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	gamma-BHC (Lindane)	0.0096	ug/L	U	0.048	0.0096	0.0034	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	Heptachlor	0.017	ug/L	U	0.048	0.017	0.0068	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	Heptachlor epoxide	0.0096	ug/L	U	0.048	0.0096	0.0035	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	Methoxychlor	0.017	ug/L	U	0.048	0.017	0.0094	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	Toxaphene	0.76	ug/L	U	4.8	0.76	0.38	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	4,4'-DDE	0.0096	ug/L	U	0.048	0.0096	0.0049	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	alpha-BHC	0.0096	ug/L	U	0.048	0.0096	0.0033	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	8081B 8082A	Total/NA	Endosulfan I	0.0096	ug/L	U	0.048	0.0096	0.0033	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	9012B	Total/NA	Cyanide, Total	0.005	mg/L	U	0.01	0.005	0.0025	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	9056A	Total/NA	Chloride	390	mg/L		13	13	5	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	9056A	Total/NA	Sulfate	34	mg/L		1	1	0.4	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	2-METHYLNAPHTHALENE	1.9	UG/L	U	1.9	1.9	0.76	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	ACENAPHTHENE	1.9	UG/L	U	1.9	1.9	1.7	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	ACENAPHTHYLENE	1.9	UG/L	U	1.9	1.9	0.76	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	ANTHRACENE	1.9	UG/L	U	1.9	1.9	1.3	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	BENZO(A)ANTHRACENE	1.9	UG/L	U	1.9	1.9	1.3	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	BENZO(A)PYRENE	1.9	UG/L	U	1.9	1.9	1.2	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	BENZO(B)FLUORANTHENE	1.9	UG/L	U	1.9	1.9	0.76	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	BENZO(K)FLUORANTHENE	1.9	UG/L	U	1.9	1.9	0.95	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	BENZO[G,H,I]PERYLENE	1.9	UG/L	U	1.9	1.9	1.2	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	C11-C22 AROMATICS	95	UG/L	U	95.	95.	48.	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	C19-C36 ALIPHATICS	95	UG/L	U	95.	95.	48.	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	C9-C18 ALIPHATICS	95	UG/L	U	95.	95.	48.	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	CHRYSENE	1.9	UG/L	U	1.9	1.9	0.86	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	DIBENZO(A,H)ANTHRACEN	1.9	UG/L	U	1.9	1.9	1.1	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	FLUORANTHENE	1.9	UG/L	U	1.9	1.9	0.76	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	FLUORENE	1.9	UG/L	U	1.9	1.9	0.86	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	INDENO(1,2,3-CD)PYRENE	1.9	UG/L	U	1.9	1.9	1.3	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	NAPHTHALENE	1.9	UG/L	U	1.9	1.9	0.86	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	PHENANTHRENE	1.9	UG/L	U	1.9	1.9	0.86	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPEPH	T	PYRENE	1.9	UG/L	U	1.9	1.9	1.0	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPVPH	T	BENZENE	3.0	UG/L	U	3.0	3.0	0.31	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPVPH	T	C5-C8 ALIPHATICS	100	UG/L	U	100	100	50.	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPVPH	T	C9-C10 AROMATICS	100	UG/L	U	100	100	50.	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPVPH	T	C9-C12 ALIPHATICS	100	UG/L	U	100	100	50.	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPVPH	T	ETHYLBENZENE	5.0	UG/L	U	5.0	5.0	0.42	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPVPH	T	M-,P-XYLENE	10	UG/L	U	10.	10.	0.92	TK0122-4

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Lab ID
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPVPH	T	METHYL TERT-BUTYL ETH	5.0	UG/L	U	5.0	5.0	0.31	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPVPH	T	NAPHTHALENE	5.0	UG/L	U	5.0	5.0	1.6	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPVPH	T	O-XYLENE	5.0	UG/L	U	5.0	5.0	0.47	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	MADEPVPH	T	TOLUENE	5.0	UG/L	U	5.0	5.0	0.34	TK0122-4
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	SM 2320B	Total/NA	Alkalinity	140	mg/L		5	3.2	1.1	
680-144887-4	LFM-99-06A RP-FALL17	10/26/2017	SM 2540C	Total/NA	Total Dissolved Solids (TDS)	810	mg/L		10	10	4.7	
	TRIP BLANK	10/26/2017	MADEPVPH	T	BENZENE	3.0	UG/L	U	3.0	3.0	0.31	TK0122-5
	TRIP BLANK	10/26/2017	MADEPVPH	T	C5-C8 ALIPHATICS	100	UG/L	U	100	100	50.	TK0122-5
	TRIP BLANK	10/26/2017	MADEPVPH	T	C9-C10 AROMATICS	100	UG/L	U	100	100	50.	TK0122-5
	TRIP BLANK	10/26/2017	MADEPVPH	T	C9-C12 ALIPHATICS	100	UG/L	U	100	100	50.	TK0122-5
	TRIP BLANK	10/26/2017	MADEPVPH	T	ETHYLBENZENE	5.0	UG/L	U	5.0	5.0	0.42	TK0122-5
	TRIP BLANK	10/26/2017	MADEPVPH	T	M-,P-XYLENE	10	UG/L	U	10.	10.	0.92	TK0122-5
	TRIP BLANK	10/26/2017	MADEPVPH	T	METHYL TERT-BUTYL ETH	5.0	UG/L	U	5.0	5.0	0.31	TK0122-5
	TRIP BLANK	10/26/2017	MADEPVPH	T	NAPHTHALENE	5.0	UG/L	U	5.0	5.0	1.6	TK0122-5
	TRIP BLANK	10/26/2017	MADEPVPH	T	O-XYLENE	5.0	UG/L	U	5.0	5.0	0.47	TK0122-5
	TRIP BLANK	10/26/2017	MADEPVPH	T	TOLUENE	5.0	UG/L	U	5.0	5.0	0.34	TK0122-5
680-146353-4	LFM-93-07_Fall17	12/4/2017	353.2	Total/NA	Nitrate/Nitrite-N	2.7	mg/L		0.1	0.05	0.019	
680-146353-4	LFM-93-07_Fall17	12/4/2017	410.4	Total/NA	Chemical Oxygen Demand	6.2	mg/L	J	20	10	4.1	
680-146353-4	LFM-93-07_Fall17	12/4/2017	6020A	Total/NA	Arsenic	3	ug/L	U	3	3	1.5	
680-146353-4	LFM-93-07_Fall17	12/4/2017	6020A	Total/NA	Barium	18	ug/L		5	1.5	0.61	
680-146353-4	LFM-93-07_Fall17	12/4/2017	6020A	Total/NA	Cadmium	0.4	ug/L	U	0.5	0.4	0.15	
680-146353-4	LFM-93-07_Fall17	12/4/2017	6020A	Total/NA	Chromium	4	ug/L	U	5	4	1.6	
680-146353-4	LFM-93-07_Fall17	12/4/2017	6020A	Total/NA	Copper	4	ug/L	U	5	4	1.7	
680-146353-4	LFM-93-07_Fall17	12/4/2017	6020A	Total/NA	Iron	75	ug/L	U	100	75	25	
680-146353-4	LFM-93-07_Fall17	12/4/2017	6020A	Total/NA	Lead	2.5	ug/L	U	2.5	2.5	0.98	
680-146353-4	LFM-93-07_Fall17	12/4/2017	6020A	Total/NA	Manganese	2.3	ug/L	J	5	5	1.8	
680-146353-4	LFM-93-07_Fall17	12/4/2017	6020A	Total/NA	Selenium	2.5	ug/L	U	2.5	2.5	1	
680-146353-4	LFM-93-07_Fall17	12/4/2017	6020A	Total/NA	Silver	0.3	ug/L	U	1	0.3	0.1	
680-146353-4	LFM-93-07_Fall17	12/4/2017	7470A	Total/NA	Mercury	0.2	ug/L	U	0.2	0.2	0.08	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	4,4'-DDD	0.0096	ug/L	U	0.048	0.0096	0.006	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	4,4'-DDE	0.0096	ug/L	U	0.048	0.0096	0.0049	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	4,4'-DDT	0.017	ug/L	U	0.048	0.017	0.0067	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	Aldrin	0.017	ug/L	U	0.048	0.017	0.0069	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	alpha-BHC	0.0096	ug/L	U	0.048	0.0096	0.0032	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	beta-BHC	0.017	ug/L	U	0.048	0.017	0.0087	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	Chlordane (technical)	0.29	ug/L	U	0.48	0.29	0.091	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	delta-BHC	0.017	ug/L	U	0.048	0.017	0.0072	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	Dieldrin	0.0096	ug/L	U	0.048	0.0096	0.0036	

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Lab ID
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	Endosulfan I	0.0096	ug/L	U	0.048	0.0096	0.0033	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	Endosulfan II	0.0096	ug/L	U	0.048	0.0096	0.004	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	Endosulfan sulfate	0.0096	ug/L	U	0.048	0.0096	0.0049	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	Endrin	0.0096	ug/L	U	0.048	0.0096	0.0051	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	Endrin aldehyde	0.0096	ug/L	U	0.048	0.0096	0.0058	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	Endrin ketone	0.0096	ug/L	U	0.048	0.0096	0.0044	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	gamma-BHC (Lindane)	0.0096	ug/L	U	0.048	0.0096	0.0034	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	Heptachlor	0.017	ug/L	U	0.048	0.017	0.0068	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	Heptachlor epoxide	0.0096	ug/L	U	0.048	0.0096	0.0035	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	Methoxychlor	0.017	ug/L	U	0.048	0.017	0.0094	
680-146353-4	LFM-93-07_Fall17	12/4/2017	8081B 8082A	Total/NA	Toxaphene	0.76	ug/L	U	4.8	0.76	0.38	
680-146353-4	LFM-93-07_Fall17	12/4/2017	9012B	Total/NA	Cyanide, Total	0.005	mg/L	U	0.01	0.005	0.0025	
680-146353-4	LFM-93-07_Fall17	12/4/2017	9056A	Total/NA	Chloride	250	mg/L		5	5	2	
680-146353-4	LFM-93-07_Fall17	12/4/2017	9056A	Total/NA	Sulfate	36	mg/L		1	1	0.4	
680-146353-4	LFM-93-07_Fall17	12/4/2017	SM 2320B	Total/NA	Alkalinity	130	mg/L		5	3.2	1.1	
680-146353-4	LFM-93-07_Fall17	12/4/2017	SM 2540C	Total/NA	Total Dissolved Solids (TDS)	600	mg/L		10	10	4.7	
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	2-METHYLNAPHTHALENE	1.9	UG/L	U	1.9	1.9	0.77	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	ACENAPHTHENE	1.9	UG/L	U	1.9	1.9	1.7	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	ACENAPHTHYLENE	1.9	UG/L	U	1.9	1.9	0.77	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	ANTHRACENE	1.9	UG/L	U	1.9	1.9	1.3	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	BENZO(A)ANTHRACENE	1.9	UG/L	U	1.9	1.9	1.3	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	BENZO(A)PYRENE	1.9	UG/L	U	1.9	1.9	1.2	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	BENZO(B)FLUORANTHENE	1.9	UG/L	U	1.9	1.9	0.77	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	BENZO(K)FLUORANTHENE	1.9	UG/L	U	1.9	1.9	0.96	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	BENZO[G,H,I]PERYLENE	1.9	UG/L	U	1.9	1.9	1.2	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	C11-C22 AROMATICS	95	UG/L	U	96.	96.	48.	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	C19-C36 ALIPHATICS	95	UG/L	U	96.	96.	48.	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	C9-C18 ALIPHATICS	95	UG/L	U	96.	96.	48.	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	CHRYSENE	1.9	UG/L	U	1.9	1.9	0.86	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	DIBENZO(A,H)ANTHRACEN	1.9	UG/L	U	1.9	1.9	1.2	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	FLUORANTHENE	1.9	UG/L	U	1.9	1.9	0.77	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	FLUORENE	1.9	UG/L	U	1.9	1.9	0.86	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	INDENO(1,2,3-CD)PYRENE	1.9	UG/L	U	1.9	1.9	1.3	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	NAPHTHALENE	1.9	UG/L	U	1.9	1.9	0.86	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	PHENANTHRENE	1.9	UG/L	U	1.9	1.9	0.86	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPEPH	T	PYRENE	1.9	UG/L	U	1.9	1.9	1.0	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPVPH	T	BENZENE	3.0	UG/L	U	3.0	3.0	0.31	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPVPH	T	C5-C8 ALIPHATICS	100	UG/L	U	100	100	50.	TK1450-1

DCL LTM Fall 2017 - Validated Data

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Lab ID
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPVPH	T	C9-C10 AROMATICS	100	UG/L	U	100	100	50.	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPVPH	T	C9-C12 ALIPHATICS	100	UG/L	U	100	100	50.	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPVPH	T	ETHYLBENZENE	5.0	UG/L	U	5.0	5.0	0.42	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPVPH	T	M-,P-XYLENE	10	UG/L	U	10.	10.	0.92	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPVPH	T	METHYL TERT-BUTYL ETH	5.0	UG/L	U	5.0	5.0	0.31	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPVPH	T	NAPHTHALENE	5.0	UG/L	U	5.0	5.0	1.6	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPVPH	T	O-XYLENE	5.0	UG/L	U	5.0	5.0	0.47	TK1450-1
680-146353-4	LFM-93-07_Fall17	12/4/2017	MADEPVPH	T	TOLUENE	5.0	UG/L	U	5.0	5.0	0.34	TK1450-1

Notes:
mg/l = milligram per liter
µg/L = microgram per liter
LOQ = Limit of Quantitation
LOD = Limit of Detection
DL = Method Detection Limit

Qualified Data
U = Non-detect
J = Estimated result
UJ = Estimated non-detect

Volatile Organic Compounds
Method EPA624
USEPA Level II Review

Site: DCL Leachate Sample – Fall 2017	SDG #: 680-144883
Laboratory: Test America-Savannah, GA VOC/624 analyses subcontracted to Katahdin, Scarborough, ME	Date: 12/07/2017
KGS Reviewer: Laurie Ekes	Project: 1024

Client Sample ID	Lab Sample ID	Katahdin Sample ID	Date Sampled	Analysis	Matrix
DCL Leachate-FAL17	680-144883-1	TK0161-1	10/27/2017	VOCs	Leachate
Trip Blank	680-144883-2	TK0161-2	10/27/2017	VOCs	Trip Blank

Summary - Data validation was performed on the data for one (1) leachate sample and one (1) trip blank sample collected and submitted for VOCs by EPA Method 624. Samples for VOCs by EPA method 624 analysis were subcontracted by Test America to Katahdin Analytical Services in Scarborough, Maine and reported under Katahdin SDG TK0161.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/28/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the 14-day holding time required by the QAPP for preserved aqueous samples.

Qualification: None required.

Surrogates – Surrogate recoveries were within the control limits.

Qualification: None required.

Laboratory Control Sample – Percent recoveries for the LCS in (WG217360-1) analyzed on 11/08/2017 were within %R control limits.

Qualification: None required.

MS/MSD – Matrix spike/matrix spike duplicate samples were not submitted.

Qualification: None required.

Method Blank – The method blank (WG217360-2) analyzed on 11/08/2017 with this sample had bromomethane reported at 2.5 µg/L. All other VOCs were non-detect.

Qualification: The result for bromomethane (3.6 µg/L) in the DCL Leachate sample was

qualified as non-detect at the reporting limit (5.0 U).

Field Blanks – One trip blank, Trip Blank (Lab Sample ID: 680-144883-2/TK0161-2) was submitted with this sample. All VOCs were non-detect in the TB sample.

Qualification: None required.

Field Duplicate – A field duplicate sample was not submitted.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The VOC results reported in this SDG are acceptable as reported with the indicated qualifications. The data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
DCL Leachate-FAL17	TK0161-1	Bromomethane	3.6	JB	5.0	U
Trip Blank	TK0161-2	VOCs	No qualification needed.			

Pesticides/PCBs
SW-846 Method 8081B/8082A
USEPA Level II Review

Site: DCL Leachate Sample – Fall 2017	SDG #: 680-144883
Laboratory: Test America-Savannah, GA	Date: 12/7/2017
KGS. Reviewer: Laurie Ekes	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analysis	Matrix
DCL Leachate -FAL17	680-144883-1	10/27/2017	Pesticides/PCBs	Leachate

Summary - Data validation was performed on the data for one sample collected and submitted for Pesticides and PCBs by Methods SW846/8081B/8082A.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/28/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – The sample was extracted within the 7-day holding time and analyzed within 40 days of extraction.

Qualification: None required.

Surrogates – Surrogate recoveries were within the control limits.

Qualification: None required.

Laboratory Control Sample – Percent recoveries for the LCS prepared and analyzed with this sample were within %R control limits.

Qualification: None required.

MS/MSD – The laboratory spiked and analyzed the native sample as MS/MSD for PCBs. The MS %Rs were within control limits, however, the MSD %R for PCB-1260 was below control limits. The MS/MSD RPDs were outside control limits for both spiked PCBs 1016 and 1260.

Qualification: The non-detect results for PCB-1016 and 1260 in the leachate sample were qualified as estimated (UJ).

Method Blank – The method blank prepared and analyzed with this sample was free of contamination.

Qualification: None required.

Field Blank – A field blank sample was not required to be collected with this sample.

Qualification: None required.

Field Duplicate – A field duplicate sample was not submitted.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The non-detect pesticide/PCBs results reported for the DCL leachate are acceptable as reported with the noted qualifications. The data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analysis/Compound	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
DCL Leachate-FAL17	680-144883-1	PCB-1016	0.39	U	0.39	UJ
DCL Leachate-FAL17	680-144883-1	PCB-1260	0.39	U	0.39	UJ

Semi-Volatile Organic Compounds
Method EPA 625
USEPA Level II Review

Site: DCL Leachate Sample – Fall 2017	SDG #: 680-144883
Laboratory: Test America-Savannah, GA SVOC/625 analyses subcontracted to Katahdin, Scarborough, ME	Date: 12/19/2017
KGS Reviewer: Laurie Ekes	Project: 1024

Client Sample ID	Lab Sample ID	Katahdin Sample ID	Date Sampled	Analysis	Matrix
DCL Leachate-FAL17	680-144883-1	TK0161-1	10/27/2017	SVOCs	Leachate

Summary - Data validation was performed on the data for one sample collected and submitted for SVOCs by EPA Method 625. Samples for SVOCs by EPA method 625 analysis were subcontracted by Test America to Katahdin Analytical Services in Scarborough, Maine and reported under Katahdin SDG TK0161.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/28/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the 14-day holding time required by the QAPP for preserved aqueous samples.

Qualification: None required.

Surrogates – Surrogate recoveries were within the control limits.

Qualification: None required.

Laboratory Control Sample – Percent recoveries for the LCS in (WG216991-2) analyzed on 11/07/2017 were within %R control limits.

Qualification: None required.

MS/MSD – Matrix spike/matrix spike duplicate samples were not submitted.

Qualification: None required.

Method Blank – The method blank (WG216991-1) analyzed on 11/07/2017 with this sample was free of contamination.

Qualification: None required.

Field Blanks – A field blank sample was not required to be collected with this sample.

Qualification: None required.

Field Duplicate – A field duplicate sample was not submitted.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The SVOC results reported in this SDG are acceptable as reported. The data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
DCL Leachate-FAL17	TK0161-2	SVOCs	No qualification needed.			

Total Metals
SW-846 Method 6020A/7470A (Total Metals/Mercury)
USEPA Level II Review

Site: DCL Leachate Sample – Fall 2017	SDG #: 680-144883
Laboratory: Test America-Savannah, GA	Date: 12/7/2017
KGS. Reviewer: Laurie Ekes	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analysis	Matrix
DCL Leachate -FAL17	680-144883-1	10/27/2017	Total Metals/Mercury	Leachate

Summary - Data validation was performed on the data for one sample collected and submitted for total select metals analyses by Method SW846/6020A and 7470A for mercury. The select metals analyte list included: aluminum, arsenic, cadmium, chromium, copper, lead, nickel, silver and zinc.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/28/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time (28 days for mercury) required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS prepared and analyzed with this sample met the %R control limits for all target analytes.

Qualification: None required.

MS/MSD – MS/MSD samples were not submitted with this sample.

Qualification: None required.

Method Blanks – The method blank associated and analyzed with this sample was non-detect for all target analytes.

Qualification: None required.

Field Blanks – A field blank sample was not required to be collected with this sample.

Qualification: None required.

Field Duplicate – A field duplicate sample was not submitted.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The total metals and mercury results reported in the SDG are acceptable as reported and the data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
DCL Leachate -FAL17	680-144883-1	Total Metals/ Mercury	No qualifications needed.			

Wet Chemistry

Total Petroleum Hydrocarbons/TPH (SW8015C-DRO)
Total Suspended Solids/TSS (SM2540D), Total Cyanide (SW9012B)
pH (SW9040C) and Total Phenolics (SW9065)
USEPA Level II Review

Site: DCL Leachate Sample – Fall 2017	SDG #: 680-144883
Laboratory: Test America-Savannah, GA	Date: 12/7/2017
KGS. Reviewer: Laurie Ekes	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analysis	Matrix
DCL Leachate-FAL17	680-144883-1	10/27/2017	Miscellaneous Parameters	Leachate

Summary - Data validation was performed on the data for one sample collected and submitted for the miscellaneous parameters listed above.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory on 10/28/2017 in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – The pH analysis was performed past the recommended field holding time of 15 minutes. The cyanide analysis was performed past the holding time of 14 days due to laboratory error. All other analyses were performed within the respective holding times required by the QAPP for preserved aqueous samples.

Qualification: The non-detect result for total cyanide was qualified as estimated (UJ). The pH results are acceptable.

Laboratory Control Sample – The LCS %R results were within control limits for all parameters.

Qualification: None required.

Matrix Spike – Matrix spike/matrix spike duplicate samples were not submitted.

Qualification: None required.

Method Blank – The method blanks for all parameters were free from contamination.

Qualification: None required.

Field Blank – A field blank sample was not required to be collected with this sample.

Qualification: None required.

Field Duplicate – A field duplicate sample was not submitted.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The results for the miscellaneous parameters reported in this SDG are acceptable with the noted qualification. The data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analysis/Compound	Lab Value (mg/L)	Lab Qualifier	Validated Value (mg/L)	Validation Qualifier
DCL Leachate-FAL17	680-144883-1	Total Cyanide	0.005	UH	0.005	UJ

DCL Leachate - Fall 2017 Validated Data

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Analyte	Result	Flag	Unit	LOQ	LOD	DL
680-144883-1	DCL Leachate-FALL17	10/27/2017	6020A	Aluminum	50	U	ug/L	100	50	18
680-144883-1	DCL Leachate-FALL17	10/27/2017	6020A	Arsenic	3	U	ug/L	3	3	1.5
680-144883-1	DCL Leachate-FALL17	10/27/2017	6020A	Cadmium	0.4	U	ug/L	0.5	0.4	0.15
680-144883-1	DCL Leachate-FALL17	10/27/2017	6020A	Chromium	4	U	ug/L	5	4	1.6
680-144883-1	DCL Leachate-FALL17	10/27/2017	6020A	Copper	2.1	J	ug/L	5	4	1.7
680-144883-1	DCL Leachate-FALL17	10/27/2017	6020A	Lead	2.5	U	ug/L	2.5	2.5	0.98
680-144883-1	DCL Leachate-FALL17	10/27/2017	6020A	Nickel	2.8	J	ug/L	5	5	1.9
680-144883-1	DCL Leachate-FALL17	10/27/2017	6020A	Silver	0.3	U	ug/L	1	0.3	0.1
680-144883-1	DCL Leachate-FALL17	10/27/2017	6020A	Zinc	20	U	ug/L	20	20	9.6
680-144883-1	DCL Leachate-FALL17	10/27/2017	7470A	Mercury	0.2	U	ug/L	0.2	0.2	0.08
680-144883-1	DCL Leachate-FALL17	10/27/2017	8015C DRO	Diesel Range Organics [C10-C28]	2.8		mg/L	0.1	0.085	0.05
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	4,4'-DDD	0.011	U	ug/L	0.054	0.011	0.0068
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	4,4'-DDT	0.019	U	ug/L	0.054	0.019	0.0075
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	Aldrin	0.019	U	ug/L	0.054	0.019	0.0077
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	beta-BHC	0.019	U	ug/L	0.054	0.019	0.0098
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	Chlordane (technical)	0.32	U	ug/L	0.54	0.32	0.1
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	delta-BHC	0.019	U	ug/L	0.054	0.019	0.0081
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	Dieldrin	0.011	U	ug/L	0.054	0.011	0.0041
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	Endosulfan II	0.011	U	ug/L	0.054	0.011	0.0045
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	Endosulfan sulfate	0.011	U	ug/L	0.054	0.011	0.0055
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	Endrin	0.011	U	ug/L	0.054	0.011	0.0057
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	Endrin aldehyde	0.011	U	ug/L	0.054	0.011	0.0066
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	Endrin ketone	0.011	U	ug/L	0.054	0.011	0.0049
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	gamma-BHC (Lindane)	0.011	U	ug/L	0.054	0.011	0.0039
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	Heptachlor	0.019	U	ug/L	0.054	0.019	0.0076
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	Heptachlor epoxide	0.011	U	ug/L	0.054	0.011	0.004
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	Methoxychlor	0.019	U	ug/L	0.054	0.019	0.011
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	PCB-1016	0.39	UJ	ug/L	1.1	0.39	0.19
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	PCB-1221	0.35	U	ug/L	1.1	0.35	0.2
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	PCB-1232	0.48	U	ug/L	1.1	0.48	0.27
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	PCB-1242	0.48	U	ug/L	1.1	0.48	0.2
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	PCB-1248	0.48	U	ug/L	1.1	0.48	0.23
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	PCB-1254	0.35	U	ug/L	1.1	0.35	0.12
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	PCB-1260	0.39	UJ	ug/L	1.1	0.39	0.13
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	Toxaphene	0.86	U	ug/L	5.4	0.86	0.43
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	4,4'-DDE	0.011	U	ug/L	0.054	0.011	0.0055
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	alpha-BHC	0.011	U	ug/L	0.054	0.011	0.0037
680-144883-1	DCL Leachate-FALL17	10/27/2017	8081B 8082A	Endosulfan I	0.011	U	ug/L	0.054	0.011	0.0038

DCL Leachate - Fall 2017 Validated Data

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Analyte	Result	Flag	Unit	LOQ	LOD	DL
680-144883-1	DCL Leachate-FALL17	10/27/2017	9012B	Cyanide, Total	0.005	UJ	mg/L	0.01	0.005	0.0025
680-144883-1	DCL Leachate-FALL17	10/27/2017	9040C	pH	7.7		SU			
680-144883-1	DCL Leachate-FALL17	10/27/2017	9065	Phenolics, Total Recoverable	0.05	U	mg/L	0.05	0.05	0.025
680-144883-1	DCL Leachate-FALL17	10/27/2017	SM 2540D	Total Suspended Solids	5.2		mg/L	4	2.8	1.1
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,1,1-TRICHLOROETHANE	5.0	U	UG/L	5	5	0.2
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,1,2,2-TETRACHLOROETHANE	5.0	U	UG/L	5	5	0.38
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,1,2-TRICHLORO-1,2,2-TRIFLUOR	5.0	U	UG/L	5	5	0.31
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,1,2-TRICHLOROETHANE	5.0	U	UG/L	5	5	0.33
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,1-DICHLOROETHANE	5.0	U	UG/L	5	5	0.21
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,1-DICHLOROETHENE	5.0	U	UG/L	5	5	0.35
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,2,4-TRICHLOROBENZENE	5.0	U	UG/L	5	5	0.37
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,2-DIBROMO-3-CHLOROPROPAN	5.0	U	UG/L	5	5	0.5
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,2-DIBROMOETHANE	5.0	U	UG/L	5	5	0.22
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,2-DICHLOROBENZENE	5.0	U	UG/L	5	5	0.15
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,2-DICHLOROETHANE	5.0	U	UG/L	5	5	0.2
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,2-DICHLOROETHYLENE	10	U	UG/L	10	10	0.21
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,2-DICHLOROPROPANE	5.0	U	UG/L	5	5	0.25
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,3-DICHLOROBENZENE	5.0	U	UG/L	5	5	0.26
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	1,4-DICHLOROBENZENE	5.0	U	UG/L	5	5	0.24
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	2-BUTANONE	10	U	UG/L	10	10	1.3
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	2-HEXANONE	5.0	U	UG/L	5	5	1.7
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	4-METHYL-2-PENTANONE	5.0	U	UG/L	5	5	1.3
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	ACETONE	10	U	UG/L	10	10	2.2
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	BENZENE	5.0	U	UG/L	5	5	0.26
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	BROMODICHLOROMETHANE	5.0	U	UG/L	5	5	0.33
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	BROMOFORM	5.0	U	UG/L	5	5	0.23
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	BROMOMETHANE	5.0	U	UG/L	5	5	0.49
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	CARBON DISULFIDE	5.0	U	UG/L	5	5	0.25
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	CARBON TETRACHLORIDE	5.0	U	UG/L	5	5	0.22
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	CHLOROBENZENE	5.0	U	UG/L	5	5	0.22
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	CHLOROETHANE	5.0	U	UG/L	5	5	0.55
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	CHLOROFORM	5.0	U	UG/L	5	5	0.32
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	CHLOROMETHANE	5.0	U	UG/L	5	5	0.36
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	CIS-1,2-DICHLOROETHENE	5.0	U	UG/L	5	5	0.21
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	CIS-1,3-DICHLOROPROPENE	5.0	U	UG/L	5	5	0.19
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	CYCLOHEXANE	5.0	U	UG/L	5	5	0.31
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	DIBROMOCHLOROMETHANE	5.0	U	UG/L	5	5	0.3
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	DICHLORODIFLUOROMETHANE	5.0	U	UG/L	5	5	0.24

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Analyte	Result	Flag	Unit	LOQ	LOD	DL
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	ETHYLBENZENE	5.0	U	UG/L	5	5	0.21
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	ISOPROPYLBENZENE	5.0	U	UG/L	5	5	0.23
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	M-,P-XYLENE	10	U	UG/L	10	10	0.59
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	METHYL ACETATE	5.0	U	UG/L	5	5	0.53
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	METHYL TERT-BUTYL ETHER	5.0	U	UG/L	5	5	0.36
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	METHYLCYCLOHEXANE	5.0	U	UG/L	5	5	0.3
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	METHYLENE CHLORIDE	10	U	UG/L	10	10	1.1
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	O-XYLENE	5.0	U	UG/L	5	5	0.25
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	STYRENE	5.0	U	UG/L	5	5	0.23
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	TETRACHLOROETHENE	5.0	U	UG/L	5	5	0.4
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	TOLUENE	5.0	U	UG/L	5	5	0.27
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	TRANS-1,2-DICHLOROETHENE	5.0	U	UG/L	5	5	0.25
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	TRANS-1,3-DICHLOROPROPENE	5.0	U	UG/L	5	5	0.2
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	TRICHLOROETHENE	5.0	U	UG/L	5	5	0.28
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	TRICHLOROFLUOROMETHANE	5.0	U	UG/L	5	5	0.24
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	VINYL CHLORIDE	5.0	U	UG/L	5	5	0.25
680-144883-1	DCL Leachate-FALL17	10/27/2017	624	XYLENES (TOTAL)	15	U	UG/L	15	15	0.25
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	1,2,4-TRICHLOROBENZENE	4.7	U	UG/L	4.7	4.7	1.7
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	1,2-DICHLOROBENZENE	4.7	U	UG/L	4.7	4.7	1.7
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	1,3-DICHLOROBENZENE	4.7	U	UG/L	4.7	4.7	1.6
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	1,4-DICHLOROBENZENE	4.7	U	UG/L	4.7	4.7	1.8
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	2,4,6-TRICHLOROPHENOL	4.7	U	UG/L	4.7	4.7	2.4
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	2,4-DICHLOROPHENOL	4.7	U	UG/L	4.7	4.7	2.9
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	2,4-DIMETHYLPHENOL	4.7	U	UG/L	4.7	4.7	2.5
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	2,4-DINITROPHENOL	24	U	UG/L	24	24	17
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	2,4-DINITROTOLUENE	4.7	U	UG/L	4.7	4.7	0.43
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	2,6-DINITROTOLUENE	4.7	U	UG/L	4.7	4.7	0.58
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	2-CHLORONAPHTHALENE	4.7	U	UG/L	4.7	4.7	1.6
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	2-CHLOROPHENOL	4.7	U	UG/L	4.7	4.7	2.2
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	2-NITROPHENOL	4.7	U	UG/L	4.7	4.7	2.5
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	3,3'-DICHLOROBENZIDINE	4.7	U	UG/L	4.7	4.7	1.7
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	4,6-DINITRO-2-METHYLPHENOL	24	U	UG/L	24	24	1.1
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	4-BROMOPHENYL PHENYL ETHE	4.7	U	UG/L	4.7	4.7	1
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	4-CHLORO-3-METHYLPHENOL	4.7	U	UG/L	4.7	4.7	2.1
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	4-CHLOROPHENYL PHENYL ETH	4.7	U	UG/L	4.7	4.7	1.1
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	4-NITROPHENOL	19	U	UG/L	19	19	4.3
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	ACENAPHTHENE	4.7	U	UG/L	4.7	4.7	1.2
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	ACENAPHTHYLENE	4.7	U	UG/L	4.7	4.7	1

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680-144883-1	DCL Leachate-FALL17	10/27/2017	625	ANTHRACENE	4.7	U	UG/L	4.7	4.7	0.71
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	BENZIDINE	24	U	UG/L	24	24	11
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	BENZO(A)ANTHRACENE	4.7	U	UG/L	4.7	4.7	0.63
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	BENZO(A)PYRENE	4.7	U	UG/L	4.7	4.7	2
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	BENZO(B)FLUORANTHENE	4.7	U	UG/L	4.7	4.7	2.1
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	BENZO(K)FLUORANTHENE	4.7	U	UG/L	4.7	4.7	2.3
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	BENZO[G,H,I]PERYLENE	4.7	U	UG/L	4.7	4.7	1.2
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	BIS(2-CHLOROETHOXY) METHAN	4.7	U	UG/L	4.7	4.7	0.83
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	BIS(2-CHLOROETHYL) ETHER	4.7	U	UG/L	4.7	4.7	0.93
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	BIS(2-CHLOROISOPROPYL) ETHE	4.7	U	UG/L	4.7	4.7	1.1
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	BIS(2-ETHYLHEXYL) PHTHALAT	4.7	U	UG/L	4.7	4.7	0.53
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	BUTYL BENZYL PHTHALATE	4.7	U	UG/L	4.7	4.7	0.51
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	CHRYSENE	4.7	U	UG/L	4.7	4.7	0.85
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	DIBENZO(A,H)ANTHRACENE	4.7	U	UG/L	4.7	4.7	1.2
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	DIETHYL PHTHALATE	4.7	U	UG/L	4.7	4.7	0.71
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	DIMETHYL PHTHALATE	4.7	U	UG/L	4.7	4.7	0.85
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	DI-N-BUTYL PHTHALATE	4.7	U	UG/L	4.7	4.7	0.72
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	DI-N-OCTYLPHTHALATE	4.7	U	UG/L	4.7	4.7	0.63
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	FLUORANTHENE	4.7	U	UG/L	4.7	4.7	0.66
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	FLUORENE	4.7	U	UG/L	4.7	4.7	0.92
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	HEXACHLOROBENZENE	4.7	U	UG/L	4.7	4.7	0.86
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	HEXACHLOROBUTADIENE	4.7	U	UG/L	4.7	4.7	1.5
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	HEXACHLOROCYCLOPENTADIEN	4.7	U	UG/L	4.7	4.7	0.69
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	HEXACHLOROETHANE	4.7	U	UG/L	4.7	4.7	1.6
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	INDENO(1,2,3-CD)PYRENE	4.7	U	UG/L	4.7	4.7	1.2
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	ISOPHORONE	4.7	U	UG/L	4.7	4.7	0.78
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	NAPHTHALENE	4.7	U	UG/L	4.7	4.7	1.7
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	NITROBENZENE	4.7	U	UG/L	4.7	4.7	0.98
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	N-NITROSODIMETHYLAMINE	4.7	U	UG/L	4.7	4.7	0.99
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	N-NITROSO-DI-N-PROPYLAMINE	4.7	U	UG/L	4.7	4.7	0.73
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	N-NITROSODIPHENYLAMINE	4.7	U	UG/L	4.7	4.7	0.51
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	PENTACHLOROPHENOL	19	U	UG/L	19	19	1.6
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	PHENANTHRENE	4.7	U	UG/L	4.7	4.7	2.6
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	PHENOL	4.7	U	UG/L	4.7	4.7	1.2
680-144883-1	DCL Leachate-FALL17	10/27/2017	625	PYRENE	4.7	U	UG/L	4.7	4.7	0.58
680-144883-2	TRIP BLANK	10/27/2017	624	1,1,1-TRICHLOROETHANE	5	U	UG/L	5	5	0.2
680-144883-2	TRIP BLANK	10/27/2017	624	1,1,2,2-TETRACHLOROETHANE	5	U	UG/L	5	5	0.38
680-144883-2	TRIP BLANK	10/27/2017	624	1,1,2-TRICHLORO-1,2,2-TRIFLUOR	5	U	UG/L	5	5	0.31

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680-144883-2	TRIP BLANK	10/27/2017	624	1,1,2-TRICHLOROETHANE	5	U	UG/L	5	5	0.33
680-144883-2	TRIP BLANK	10/27/2017	624	1,1-DICHLOROETHANE	5	U	UG/L	5	5	0.21
680-144883-2	TRIP BLANK	10/27/2017	624	1,1-DICHLOROETHENE	5	U	UG/L	5	5	0.35
680-144883-2	TRIP BLANK	10/27/2017	624	1,2,4-TRICHLOROBENZENE	5	U	UG/L	5	5	0.37
680-144883-2	TRIP BLANK	10/27/2017	624	1,2-DIBROMO-3-CHLOROPROPAN	5	U	UG/L	5	5	0.5
680-144883-2	TRIP BLANK	10/27/2017	624	1,2-DIBROMOETHANE	5	U	UG/L	5	5	0.22
680-144883-2	TRIP BLANK	10/27/2017	624	1,2-DICHLOROBENZENE	5	U	UG/L	5	5	0.15
680-144883-2	TRIP BLANK	10/27/2017	624	1,2-DICHLOROETHANE	5	U	UG/L	5	5	0.2
680-144883-2	TRIP BLANK	10/27/2017	624	1,2-DICHLOROETHYLENE	10	U	UG/L	10	10	0.21
680-144883-2	TRIP BLANK	10/27/2017	624	1,2-DICHLOROPROPANE	5	U	UG/L	5	5	0.25
680-144883-2	TRIP BLANK	10/27/2017	624	1,3-DICHLOROBENZENE	5	U	UG/L	5	5	0.26
680-144883-2	TRIP BLANK	10/27/2017	624	1,4-DICHLOROBENZENE	5	U	UG/L	5	5	0.24
680-144883-2	TRIP BLANK	10/27/2017	624	2-BUTANONE	10	U	UG/L	10	10	1.3
680-144883-2	TRIP BLANK	10/27/2017	624	2-HEXANONE	5	U	UG/L	5	5	1.7
680-144883-2	TRIP BLANK	10/27/2017	624	4-METHYL-2-PENTANONE	5	U	UG/L	5	5	1.3
680-144883-2	TRIP BLANK	10/27/2017	624	ACETONE	10	U	UG/L	10	10	2.2
680-144883-2	TRIP BLANK	10/27/2017	624	BENZENE	5	U	UG/L	5	5	0.26
680-144883-2	TRIP BLANK	10/27/2017	624	BROMODICHLOROMETHANE	5	U	UG/L	5	5	0.33
680-144883-2	TRIP BLANK	10/27/2017	624	BROMOFORM	5	U	UG/L	5	5	0.23
680-144883-2	TRIP BLANK	10/27/2017	624	BROMOMETHANE	5	U	UG/L	5	5	0.49
680-144883-2	TRIP BLANK	10/27/2017	624	CARBON DISULFIDE	5	U	UG/L	5	5	0.25
680-144883-2	TRIP BLANK	10/27/2017	624	CARBON TETRACHLORIDE	5	U	UG/L	5	5	0.22
680-144883-2	TRIP BLANK	10/27/2017	624	CHLOROBENZENE	5	U	UG/L	5	5	0.22
680-144883-2	TRIP BLANK	10/27/2017	624	CHLOROETHANE	5	U	UG/L	5	5	0.55
680-144883-2	TRIP BLANK	10/27/2017	624	CHLOROFORM	5	U	UG/L	5	5	0.32
680-144883-2	TRIP BLANK	10/27/2017	624	CHLOROMETHANE	5	U	UG/L	5	5	0.36
680-144883-2	TRIP BLANK	10/27/2017	624	CIS-1,2-DICHLOROETHENE	5	U	UG/L	5	5	0.21
680-144883-2	TRIP BLANK	10/27/2017	624	CIS-1,3-DICHLOROPROPENE	5	U	UG/L	5	5	0.19
680-144883-2	TRIP BLANK	10/27/2017	624	CYCLOHEXANE	5	U	UG/L	5	5	0.31
680-144883-2	TRIP BLANK	10/27/2017	624	DIBROMOCHLOROMETHANE	5	U	UG/L	5	5	0.3
680-144883-2	TRIP BLANK	10/27/2017	624	DICHLORODIFLUOROMETHANE	5	U	UG/L	5	5	0.24
680-144883-2	TRIP BLANK	10/27/2017	624	ETHYLBENZENE	5	U	UG/L	5	5	0.21
680-144883-2	TRIP BLANK	10/27/2017	624	ISOPROPYLBENZENE	5	U	UG/L	5	5	0.23
680-144883-2	TRIP BLANK	10/27/2017	624	M-,P-XYLENE	10	U	UG/L	10	10	0.59
680-144883-2	TRIP BLANK	10/27/2017	624	METHYL ACETATE	5	U	UG/L	5	5	0.53
680-144883-2	TRIP BLANK	10/27/2017	624	METHYL TERT-BUTYL ETHER	5	U	UG/L	5	5	0.36
680-144883-2	TRIP BLANK	10/27/2017	624	METHYLCYCLOHEXANE	5	U	UG/L	5	5	0.3
680-144883-2	TRIP BLANK	10/27/2017	624	METHYLENE CHLORIDE	10	U	UG/L	10	10	1.1

DCL Leachate - Fall 2017 Validated Data

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Analyte	Result	Flag	Unit	LOQ	LOD	DL
680-144883-2	TRIP BLANK	10/27/2017	624	O-XYLENE	5	U	UG/L	5	5	0.25
680-144883-2	TRIP BLANK	10/27/2017	624	STYRENE	5	U	UG/L	5	5	0.23
680-144883-2	TRIP BLANK	10/27/2017	624	TETRACHLOROETHENE	5	U	UG/L	5	5	0.4
680-144883-2	TRIP BLANK	10/27/2017	624	TOLUENE	5	U	UG/L	5	5	0.27
680-144883-2	TRIP BLANK	10/27/2017	624	TRANS-1,2-DICHLOROETHENE	5	U	UG/L	5	5	0.25
680-144883-2	TRIP BLANK	10/27/2017	624	TRANS-1,3-DICHLOROPROPENE	5	U	UG/L	5	5	0.2
680-144883-2	TRIP BLANK	10/27/2017	624	TRICHLOROETHENE	5	U	UG/L	5	5	0.28
680-144883-2	TRIP BLANK	10/27/2017	624	TRICHLOROFLUOROMETHANE	5	U	UG/L	5	5	0.24
680-144883-2	TRIP BLANK	10/27/2017	624	VINYL CHLORIDE	5	U	UG/L	5	5	0.25
680-144883-2	TRIP BLANK	10/27/2017	624	XYLENES (TOTAL)	15	U	UG/L	15	15	0.25

Notes:
mg/l = milligram per liter
µg/L = microgram per liter
LOQ = Limit of Quantitation
LOD = Limit of Detection
DL = Method Detection Limit

Qualified Data
U = Non-detect
J = Estiamted result
UJ = Estiamted non-detect

Dissolved Metals
SW 846/6020A
USEPA Level II Review

Site: AOC 69W Fall 2017 LTM	SDG #: 680-144989
Laboratory: Test America-Savannah, GA	Date: 12/20/2017
KGS Reviewer: Laurie Ekes	Project: 1024-011

Lab Sample ID	Client Sample ID	Collection Date	Analysis	Matrix
680-144989-1	69W-94-13_FALL17	10/31/2017	Dissolved As, Fe, Mn	Groundwater
680-144989-2	69W-94-14_FALL17	10/30/2017	Dissolved As, Fe, Mn	Groundwater
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	Dissolved As, Fe, Mn	Groundwater
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	Dissolved As, Fe, Mn	Groundwater
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	Dissolved As, Fe, Mn	Groundwater
680-144989-6	69W-DUP1_FALL17	10/30/2017	Dissolved As, Fe, Mn	Groundwater
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	Dissolved As, Fe, Mn	Groundwater
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	Dissolved As, Fe, Mn	Groundwater
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	Dissolved As, Fe, Mn	Groundwater
680-144989-10	69WP-08-01_FALL17	11/1/2017	Dissolved As, Fe, Mn	Groundwater
680-144989-11	69WP-13-01_FALL17	11/1/2017	Dissolved Mn only	Groundwater

Summary – Data validation was performed on the data for ten (10) groundwater samples and one (1) field duplicate sample collected and submitted for dissolved arsenic, iron and manganese analyses. Sample 69WP-13-01-Fall17 was submitted for dissolved manganese analysis only. All samples were analyzed by method SW6020A due to laboratory instrumentation problems and backlog for method SW6010B.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 11/02/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries (%R) for the reported target analytes met the control limits established in the QAPP.

Qualification: None required.

MS/MSD – Sample ZWM-95-18X-Fall17 (Lab Sample ID: 680-144989-4) was spiked and

analyzed as matrix spike/matrix spike duplicate samples. The MS/MSD %Rs and RPDs were within control limits.

Qualification: None required.

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Blank – Field blank samples were not required to be collected with these samples.

Qualification: None required.

Field Duplicate – Sample 69W-DUP1-Fall17 (Lab Sample ID: 680-144989-6) was the field duplicate sample of ZWM-99-22X-Fall17 (Lab Sample ID: 680-144989-5). FD sample results were comparable with %RPDs less than 20%; the FD results are summarized in the table below.

Lab Sample ID	680-144989-5	680-144989-6	
Client Sample ID	ZWM-99-22X_FALL17	69W-DUP1_FALL17	
Collection Date	10/30/2017	10/30/2017	
Analyte	**Result (µg/L)**	**Result (µg/L)**	**RPD (%)**
Arsenic	190	170	11.1
Iron	24,000	23,000	4.2
Manganese	1,200	1,100	8.7

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The dissolved metals results reported in this SDG are acceptable as reported and the data may be used for its intended purpose.

Lab Sample ID	Client Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
680-144989-1	69W-94-13_FALL17	Dissolved As, Fe, Mn	No qualifications needed.			
680-144989-2	69W-94-14_FALL17	Dissolved As, Fe, Mn	No qualifications needed.			
680-144989-3	ZWM-95-15X_FALL17	Dissolved As, Fe, Mn	No qualifications needed.			
680-144989-4	ZWM-95-18X_FALL17	Dissolved As, Fe, Mn	No qualifications needed.			
680-144989-5	ZWM-99-22X_FALL17	Dissolved As, Fe, Mn	No qualifications needed.			
680-144989-6	69W-DUP1_FALL17	Dissolved As, Fe, Mn	No qualifications needed.			
680-144989-7	ZWM-99-23X_FALL17	Dissolved As, Fe, Mn	No qualifications needed.			
680-144989-8	ZWM-99-24X_FALL17	Dissolved As, Fe, Mn	No qualifications needed.			
680-144989-9	ZWM-01-25X_FALL17	Dissolved As, Fe, Mn	No qualifications needed.			
680-144989-10	69WP-08-01_FALL17	Dissolved As, Fe, Mn	No qualifications needed.			
680-144989-11	69WP-13-01_FALL17	Dissolved Mn	No qualifications needed.			

Extractable Petroleum Hydrocarbons
MADEP Method EPH-04-1.1
USEPA Level II Review

Site: AOC 69W – Fall 2017	SDG #: 680-144989
Laboratory: Test America-Savannah, GA EPH analyses subcontracted to Katahdin, Scarborough, ME	Date: 12/20/2017
KGS Reviewer: Laurie Ekes	Project: 1024

TAL Lab Sample ID	Katahdin Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Matrix
680-144989-1	TK0258-1	69W-94-13_FALL17	10/31/2017	EPH	Groundwater
680-144989-2	TK0258-2	69W-94-14_FALL17	10/30/2017	EPH	Groundwater
680-144989-3	TK0258-3	ZWM-95-15X_FALL17	10/31/2017	EPH	Groundwater
680-144989-4	TK0258-4	ZWM-95-18X_FALL17	11/1/2017	EPH	Groundwater
680-144989-5	TK0258-5	ZWM-99-22X_FALL17	10/30/2017	EPH	Groundwater
680-144989-6	TK0258-6	69W-DUP1_FALL17	10/30/2017	EPH	Groundwater
680-144989-7	TK0258-7	ZWM-99-23X_FALL17	10/30/2017	EPH	Groundwater
680-144989-8	TK0258-8	ZWM-99-24X_FALL17	10/31/2017	EPH	Groundwater
680-144989-9	TK0258-9	ZWM-01-25X_FALL17	10/30/2017	EPH	Groundwater

Summary – Data validation was performed on the data for eight (8) groundwater samples and one (1) field duplicate sample and submitted for Extractable Petroleum Hydrocarbon (EPH) analyses by MADEP method VPH 04-1.1. Samples for EPH analysis were subcontracted by Test America to Katahdin Analytical Services in Scarborough, Maine and reported in SDG TK0258.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 11/02/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 14-day holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Surrogates – All surrogate recoveries were within the laboratory control limits.

Qualification: None required

Laboratory Control Sample – The LCS/LCSD pair prepared and analyzed with these samples on 11/6/2017 were within the laboratory %R and RPD control limits.

Qualification: None required.

MS/MSD – Sample ZWM-95-18X-Fall17 (Lab Sample ID: 680-144989-4) was spiked and analyzed as matrix spike/matrix spike duplicate samples. The MS/MSD %Rs were within control limits for all spiked EPH compounds. However, the RPDs were above control limits for most of the EPH, the native sample results were all non-detect.

Qualification: None required.

Method Blank – Method blanks prepared and analyzed with these samples were non-detect for all target EPH compounds.

Qualification: None required.

Field Blanks – Field blank samples were not collected with this sample set.

Qualification: None required.

Field Duplicate – Sample 69W-DUP1-Fall17 (Lab Sample ID: 680-144989-6) was the field duplicate sample of ZWM-99-22X-Fall17 (Lab Sample ID: 680-144989-5). Detected EPH were comparable with %RPDs less than 20%. FD sample results are summarized in the table below.

LABSAMPNO	TK0258-5	TK0258-6	
FIELD_ID	ZWM-99-22X_FALL17	69W-DUP1_FALL17	
SAMP_DATE	10/30/17	10/30/17	
ANALYTE	**RESULT (µg/L)**	**RESULT (µg/L)**	**RPD (%)**
C11-C22 AROMATICS	170	140	19.3
NAPHTHALENE	1.5	1.8	18.2

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The EPH results are acceptable as reported and the data may be used for its intended purpose.

TAL Lab Sample ID	Katahdin Lab Sample ID	Client Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
680-144989-1	TK0258-1	69W-94-13_FALL17	EPH	No qualifications needed.			
680-144989-2	TK0258-2	69W-94-14_FALL17	EPH	No qualifications needed.			
680-144989-3	TK0258-3	ZWM-95-15X_FALL17	EPH	No qualifications needed.			
680-144989-4	TK0258-4	ZWM-95-18X_FALL17	EPH	No qualifications needed.			
680-144989-5	TK0258-5	ZWM-99-22X_FALL17	EPH	No qualifications needed.			
680-144989-6	TK0258-6	69W-DUP1_FALL17	EPH	No qualifications needed.			
680-144989-7	TK0258-7	ZWM-99-23X_FALL17	EPH	No qualifications needed.			
680-144989-8	TK0258-8	ZWM-99-24X_FALL17	EPH	No qualifications needed.			
680-144989-9	TK0258-9	ZWM-01-25X_FALL17	EPH	No qualifications needed.			

AOC 69W - Fall 2017 Validated Data

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Lab ID
680-144989-1	69W-94-13_FALL17	10/31/2017	6020A	Dissolved	Arsenic	24	ug/L		3	3	1.5	
680-144989-1	69W-94-13_FALL17	10/31/2017	6020A	Dissolved	Iron	1,000	ug/L		100	75	25	
680-144989-1	69W-94-13_FALL17	10/31/2017	6020A	Dissolved	Manganese	320	ug/L		5	5	1.8	
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	2-METHYLNAPHTHALENE	2	ug/L	U	2.0	2.0	0.80	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	ACENAPHTHENE	2	ug/L	U	2.0	2.0	1.8	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	ACENAPHTHYLENE	2	ug/L	U	2.0	2.0	0.80	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	ANTHRACENE	2	ug/L	U	2.0	2.0	1.4	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	BENZO(A)ANTHRACENE	2	ug/L	U	2.0	2.0	1.4	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	BENZO(A)PYRENE	2	ug/L	U	2.0	2.0	1.3	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	BENZO(B)FLUORANTHENE	2	ug/L	U	2.0	2.0	0.80	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	BENZO(K)FLUORANTHENE	2	ug/L	U	2.0	2.0	1.0	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	BENZO[G,H,I]PERYLENE	2	ug/L	U	2.0	2.0	1.3	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	C11-C22 AROMATICS	100	ug/L	U	100	100	50.	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	C19-C36 ALIPHATICS	100	ug/L	U	100	100	50.	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	C9-C18 ALIPHATICS	100	ug/L	U	100	100	50.	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	CHRYSENE	2	ug/L	U	2.0	2.0	0.90	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	DIBENZO(A,H)ANTHRACENE	2	ug/L	U	2.0	2.0	1.2	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	FLUORANTHENE	2	ug/L	U	2.0	2.0	0.80	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	FLUORENE	2	ug/L	U	2.0	2.0	0.90	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	INDENO(1,2,3-CD)PYRENE	2	ug/L	U	2.0	2.0	1.4	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	NAPHTHALENE	2	ug/L	U	2.0	2.0	0.90	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	PHENANTHRENE	2	ug/L	U	2.0	2.0	0.90	TK0258-1
680-144989-1	69W-94-13_FALL17	10/31/2017	MADEPEPH	3510C	PYRENE	2	ug/L	U	2.0	2.0	1.1	TK0258-1
680-144989-2	69W-94-14_FALL17	10/30/2017	6020A	Dissolved	Arsenic	3.0	ug/L	U	3	3	1.5	
680-144989-2	69W-94-14_FALL17	10/30/2017	6020A	Dissolved	Iron	75	ug/L	U	100	75	25	
680-144989-2	69W-94-14_FALL17	10/30/2017	6020A	Dissolved	Manganese	270	ug/L		5	5	1.8	
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	2-METHYLNAPHTHALENE	1.9	ug/L	U	1.9	1.9	0.75	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	ACENAPHTHENE	1.9	ug/L	U	1.9	1.9	1.7	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	ACENAPHTHYLENE	1.9	ug/L	U	1.9	1.9	0.75	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	ANTHRACENE	1.9	ug/L	U	1.9	1.9	1.3	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(A)ANTHRACENE	1.9	ug/L	U	1.9	1.9	1.3	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(A)PYRENE	1.9	ug/L	U	1.9	1.9	1.2	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(B)FLUORANTHENE	1.9	ug/L	U	1.9	1.9	0.75	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(K)FLUORANTHENE	1.9	ug/L	U	1.9	1.9	0.94	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	BENZO[G,H,I]PERYLENE	1.9	ug/L	U	1.9	1.9	1.2	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	C11-C22 AROMATICS	94	ug/L	U	94.	94.	47.	TK0258-2

AOC 69W - Fall 2017 Validated Data

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Lab ID
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	C19-C36 ALIPHATICS	94	ug/L	U	94.	94.	47.	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	C9-C18 ALIPHATICS	94	ug/L	U	94.	94.	47.	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	CHRYSENE	1.9	ug/L	U	1.9	1.9	0.85	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	DIBENZO(A,H)ANTHRACENE	1.9	ug/L	U	1.9	1.9	1.1	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	FLUORANTHENE	1.9	ug/L	U	1.9	1.9	0.75	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	FLUORENE	1.9	ug/L	U	1.9	1.9	0.85	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	INDENO(1,2,3-CD)PYRENE	1.9	ug/L	U	1.9	1.9	1.3	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	NAPHTHALENE	1.9	ug/L	U	1.9	1.9	0.85	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	PHENANTHRENE	1.9	ug/L	U	1.9	1.9	0.85	TK0258-2
680-144989-2	69W-94-14_FALL17	10/30/2017	MADEPEPH	3510C	PYRENE	1.9	ug/L	U	1.9	1.9	1.0	TK0258-2
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	6020A	Dissolved	Arsenic	10	ug/L		3	3	1.5	
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	6020A	Dissolved	Iron	550	ug/L		100	75	25	
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	6020A	Dissolved	Manganese	220	ug/L		5	5	1.8	
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	2-METHYLNAPHTHALENE	1.9	ug/L	U	1.9	1.9	0.75	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	ACENAPHTHENE	1.9	ug/L	U	1.9	1.9	1.7	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	ACENAPHTHYLENE	1.9	ug/L	U	1.9	1.9	0.75	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	ANTHRACENE	1.9	ug/L	U	1.9	1.9	1.3	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	BENZO(A)ANTHRACENE	1.9	ug/L	U	1.9	1.9	1.3	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	BENZO(A)PYRENE	1.9	ug/L	U	1.9	1.9	1.2	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	BENZO(B)FLUORANTHENE	1.9	ug/L	U	1.9	1.9	0.75	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	BENZO(K)FLUORANTHENE	1.9	ug/L	U	1.9	1.9	0.94	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	BENZO[G,H,I]PERYLENE	1.9	ug/L	U	1.9	1.9	1.2	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	C11-C22 AROMATICS	94	ug/L	U	94.	94.	47.	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	C19-C36 ALIPHATICS	94	ug/L	U	94.	94.	47.	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	C9-C18 ALIPHATICS	94	ug/L	U	94.	94.	47.	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	CHRYSENE	1.9	ug/L	U	1.9	1.9	0.85	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	DIBENZO(A,H)ANTHRACENE	1.9	ug/L	U	1.9	1.9	1.1	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	FLUORANTHENE	1.9	ug/L	U	1.9	1.9	0.75	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	FLUORENE	1.9	ug/L	U	1.9	1.9	0.85	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	INDENO(1,2,3-CD)PYRENE	1.9	ug/L	U	1.9	1.9	1.3	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	NAPHTHALENE	1.9	ug/L	U	1.9	1.9	0.85	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	PHENANTHRENE	1.9	ug/L	U	1.9	1.9	0.85	TK0258-3
680-144989-3	ZWM-95-15X_FALL17	10/31/2017	MADEPEPH	3510C	PYRENE	1.9	ug/L	U	1.9	1.9	1.0	TK0258-3
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	6020A	Dissolved	Arsenic	3.0	ug/L	U	3	3	1.5	
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	6020A	Dissolved	Iron	75	ug/L	U	100	75	25	
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	6020A	Dissolved	Manganese	29	ug/L		5	5	1.8	

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Lab ID
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	2-METHYLNAPHTHALENE	1.9	ug/L	U	1.9	1.9	0.75	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	ACENAPHTHENE	1.9	ug/L	U	1.9	1.9	1.7	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	ACENAPHTHYLENE	1.9	ug/L	U	1.9	1.9	0.75	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	ANTHRACENE	1.9	ug/L	U	1.9	1.9	1.3	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	BENZO(A)ANTHRACENE	1.9	ug/L	U	1.9	1.9	1.3	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	BENZO(A)PYRENE	1.9	ug/L	U	1.9	1.9	1.2	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	BENZO(B)FLUORANTHENE	1.9	ug/L	U	1.9	1.9	0.75	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	BENZO(K)FLUORANTHENE	1.9	ug/L	U	1.9	1.9	0.94	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	BENZO[G,H,I]PERYLENE	1.9	ug/L	U	1.9	1.9	1.2	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	C11-C22 AROMATICS	94	ug/L	U	94.	94.	47.	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	C19-C36 ALIPHATICS	94	ug/L	U	94.	94.	47.	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	C9-C18 ALIPHATICS	94	ug/L	U	94.	94.	47.	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	CHRYSENE	1.9	ug/L	U	1.9	1.9	0.85	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	DIBENZO(A,H)ANTHRACENE	1.9	ug/L	U	1.9	1.9	1.1	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	FLUORANTHENE	1.9	ug/L	U	1.9	1.9	0.75	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	FLUORENE	1.9	ug/L	U	1.9	1.9	0.85	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	INDENO(1,2,3-CD)PYRENE	1.9	ug/L	U	1.9	1.9	1.3	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	NAPHTHALENE	1.9	ug/L	U	1.9	1.9	0.85	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	PHENANTHRENE	1.9	ug/L	U	1.9	1.9	0.85	TK0258-4
680-144989-4	ZWM-95-18X_FALL17	11/1/2017	MADEPEPH	3510C	PYRENE	1.9	ug/L	U	1.9	1.9	1.0	TK0258-4
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	6020A	Dissolved	Arsenic	190	ug/L		3	3	1.5	
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	6020A	Dissolved	Iron	24,000	ug/L		100	75	25	
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	6020A	Dissolved	Manganese	1,200	ug/L		5	5	1.8	
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	2-METHYLNAPHTHALENE	2	ug/L	U	2.0	2.0	0.79	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	ACENAPHTHENE	2	ug/L	U	2.0	2.0	1.8	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	ACENAPHTHYLENE	2	ug/L	U	2.0	2.0	0.79	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	ANTHRACENE	2	ug/L	U	2.0	2.0	1.4	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(A)ANTHRACENE	2	ug/L	U	2.0	2.0	1.4	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(A)PYRENE	2	ug/L	U	2.0	2.0	1.3	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(B)FLUORANTHENE	2	ug/L	U	2.0	2.0	0.79	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(K)FLUORANTHENE	2	ug/L	U	2.0	2.0	0.99	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO[G,H,I]PERYLENE	2	ug/L	U	2.0	2.0	1.3	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	C11-C22 AROMATICS	170	ug/L		99.	99.	50.	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	C19-C36 ALIPHATICS	99	ug/L	U	99.	99.	50.	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	C9-C18 ALIPHATICS	99	ug/L	U	99.	99.	50.	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	CHRYSENE	2	ug/L	U	2.0	2.0	0.89	TK0258-5

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680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	DIBENZO(A,H)ANTHRACENE	2	ug/L	U	2.0	2.0	1.2	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	FLUORANTHENE	2	ug/L	U	2.0	2.0	0.79	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	FLUORENE	2	ug/L	U	2.0	2.0	0.89	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	INDENO(1,2,3-CD)PYRENE	2	ug/L	U	2.0	2.0	1.4	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	NAPHTHALENE	1.5	ug/L	J	2.0	2.0	0.89	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	PHENANTHRENE	2	ug/L	U	2.0	2.0	0.89	TK0258-5
680-144989-5	ZWM-99-22X_FALL17	10/30/2017	MADEPEPH	3510C	PYRENE	2	ug/L	U	2.0	2.0	1.1	TK0258-5
680-144989-6	69W-DUP1_FALL17	10/30/2017	6020A	Dissolved	Arsenic	170	ug/L		3	3	1.5	
680-144989-6	69W-DUP1_FALL17	10/30/2017	6020A	Dissolved	Iron	23,000	ug/L		100	75	25	
680-144989-6	69W-DUP1_FALL17	10/30/2017	6020A	Dissolved	Manganese	1,100	ug/L		5	5	1.8	
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	2-METHYLNAPHTHALENE	2	ug/L	U	2.0	2.0	0.78	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	ACENAPHTHENE	2	ug/L	U	2.0	2.0	1.8	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	ACENAPHTHYLENE	2	ug/L	U	2.0	2.0	0.78	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	ANTHRACENE	2	ug/L	U	2.0	2.0	1.4	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(A)ANTHRACENE	2	ug/L	U	2.0	2.0	1.4	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(A)PYRENE	2	ug/L	U	2.0	2.0	1.3	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(B)FLUORANTHENE	2	ug/L	U	2.0	2.0	0.78	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(K)FLUORANTHENE	2	ug/L	U	2.0	2.0	0.98	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	BENZO[G,H,I]PERYLENE	2	ug/L	U	2.0	2.0	1.3	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	C11-C22 AROMATICS	140	ug/L		98.	98	49.	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	C19-C36 ALIPHATICS	98	ug/L	U	98.	98	49.	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	C9-C18 ALIPHATICS	98	ug/L	U	98.	98	49.	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	CHRYSENE	2	ug/L	U	2.0	2.0	0.88	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	DIBENZO(A,H)ANTHRACENE	2	ug/L	U	2.0	2.0	1.2	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	FLUORANTHENE	2	ug/L	U	2.0	2.0	0.78	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	FLUORENE	2	ug/L	U	2.0	2.0	0.88	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	INDENO(1,2,3-CD)PYRENE	2	ug/L	U	2.0	2.0	1.4	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	NAPHTHALENE	1.8	ug/L	J	2.0	2.0	0.88	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	PHENANTHRENE	2	ug/L	U	2.0	2.0	0.88	TK0258-6
680-144989-6	69W-DUP1_FALL17	10/30/2017	MADEPEPH	3510C	PYRENE	2	ug/L	U	2.0	2.0	1.1	TK0258-6
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	6020A	Dissolved	Arsenic	17	ug/L		3	3	1.5	
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	6020A	Dissolved	Iron	2,600	ug/L		100	75	25	
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	6020A	Dissolved	Manganese	1,800	ug/L		5	5	1.8	
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	2-METHYLNAPHTHALENE	1.9	ug/L	U	1.9	1.9	0.77	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	ACENAPHTHENE	1.9	ug/L	U	1.9	1.9	1.7	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	ACENAPHTHYLENE	1.9	ug/L	U	1.9	1.9	0.77	TK0258-7

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680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	ANTHRACENE	1.9	ug/L	U	1.9	1.9	1.3	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(A)ANTHRACENE	1.9	ug/L	U	1.9	1.9	1.3	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(A)PYRENE	1.9	ug/L	U	1.9	1.9	1.2	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(B)FLUORANTHENE	1.9	ug/L	U	1.9	1.9	0.77	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(K)FLUORANTHENE	1.9	ug/L	U	1.9	1.9	0.96	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO[G,H,I]PERYLENE	1.9	ug/L	U	1.9	1.9	1.2	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	C11-C22 AROMATICS	96	ug/L	U	96.	96.	48.	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	C19-C36 ALIPHATICS	96	ug/L	U	96.	96.	48.	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	C9-C18 ALIPHATICS	96	ug/L	U	96.	96.	48.	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	CHRYSENE	1.9	ug/L	U	1.9	1.9	0.86	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	DIBENZO(A,H)ANTHRACENE	1.9	ug/L	U	1.9	1.9	1.2	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	FLUORANTHENE	1.9	ug/L	U	1.9	1.9	0.77	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	FLUORENE	1.9	ug/L	U	1.9	1.9	0.86	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	INDENO(1,2,3-CD)PYRENE	1.9	ug/L	U	1.9	1.9	1.3	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	NAPHTHALENE	1.9	ug/L	U	1.9	1.9	0.86	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	PHENANTHRENE	1.9	ug/L	U	1.9	1.9	0.86	TK0258-7
680-144989-7	ZWM-99-23X_FALL17	10/30/2017	MADEPEPH	3510C	PYRENE	1.9	ug/L	U	1.9	1.9	1.0	TK0258-7
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	6020A	Dissolved	Arsenic	3.0	ug/L	U	3	3	1.5	
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	6020A	Dissolved	Iron	370	ug/L		100	75	25	
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	6020A	Dissolved	Manganese	100	ug/L		5	5	1.8	
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	2-METHYLNAPHTHALENE	2.1	ug/L	U	2.1	2.1	0.83	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	ACENAPHTHENE	2.1	ug/L	U	2.1	2.1	1.9	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	ACENAPHTHYLENE	2.1	ug/L	U	2.1	2.1	0.83	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	ANTHRACENE	2.1	ug/L	U	2.1	2.1	1.4	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	BENZO(A)ANTHRACENE	2.1	ug/L	U	2.1	2.1	1.4	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	BENZO(A)PYRENE	2.1	ug/L	U	2.1	2.1	1.4	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	BENZO(B)FLUORANTHENE	2.1	ug/L	U	2.1	2.1	0.83	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	BENZO(K)FLUORANTHENE	2.1	ug/L	U	2.1	2.1	1.0	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	BENZO[G,H,I]PERYLENE	2.1	ug/L	U	2.1	2.1	1.4	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	C11-C22 AROMATICS	100	ug/L	U	100	100	52.	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	C19-C36 ALIPHATICS	100	ug/L	U	100	100	52.	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	C9-C18 ALIPHATICS	100	ug/L	U	100	100	52.	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	CHRYSENE	2.1	ug/L	U	2.1	2.1	0.94	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	DIBENZO(A,H)ANTHRACENE	2.1	ug/L	U	2.1	2.1	1.2	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	FLUORANTHENE	2.1	ug/L	U	2.1	2.1	0.83	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	FLUORENE	2.1	ug/L	U	2.1	2.1	0.94	TK0258-8

AOC 69W - Fall 2017 Validated Data

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Lab ID
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	INDENO(1,2,3-CD)PYRENE	2.1	ug/L	U	2.1	2.1	1.4	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	NAPHTHALENE	2.1	ug/L	U	2.1	2.1	0.94	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	PHENANTHRENE	2.1	ug/L	U	2.1	2.1	0.94	TK0258-8
680-144989-8	ZWM-99-24X_FALL17	10/31/2017	MADEPEPH	3510C	PYRENE	2.1	ug/L	U	2.1	2.1	1.1	TK0258-8
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	6020A	Dissolved	Arsenic	4.5	ug/L		3	3	1.5	
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	6020A	Dissolved	Iron	510	ug/L		100	75	25	
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	6020A	Dissolved	Manganese	590	ug/L		5	5	1.8	
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	2-METHYLNAPHTHALENE	2	ug/L	U	2.0	2.0	0.80	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	ACENAPHTHENE	2	ug/L	U	2.0	2.0	1.8	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	ACENAPHTHYLENE	2	ug/L	U	2.0	2.0	0.80	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	ANTHRACENE	2	ug/L	U	2.0	2.0	1.4	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(A)ANTHRACENE	2	ug/L	U	2.0	2.0	1.4	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(A)PYRENE	2	ug/L	U	2.0	2.0	1.3	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(B)FLUORANTHENE	2	ug/L	U	2.0	2.0	0.80	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO(K)FLUORANTHENE	2	ug/L	U	2.0	2.0	1.0	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	BENZO[G,H,I]PERYLENE	2	ug/L	U	2.0	2.0	1.3	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	C11-C22 AROMATICS	100	ug/L	U	100	100	50.	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	C19-C36 ALIPHATICS	100	ug/L	U	100	100	50.	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	C9-C18 ALIPHATICS	100	ug/L	U	100	100	50.	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	CHRYSENE	2	ug/L	U	2.0	2.0	0.90	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	DIBENZO(A,H)ANTHRACENE	2	ug/L	U	2.0	2.0	1.2	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	FLUORANTHENE	2	ug/L	U	2.0	2.0	0.80	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	FLUORENE	2	ug/L	U	2.0	2.0	0.90	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	INDENO(1,2,3-CD)PYRENE	2	ug/L	U	2.0	2.0	1.4	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	NAPHTHALENE	2	ug/L	U	2.0	2.0	0.90	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	PHENANTHRENE	2	ug/L	U	2.0	2.0	0.90	TK0258-9
680-144989-9	ZWM-01-25X_FALL17	10/30/2017	MADEPEPH	3510C	PYRENE	2	ug/L	U	2.0	2.0	1.1	TK0258-9
680-144989-10	69WP-08-01_FALL17	11/1/2017	6020A	Dissolved	Arsenic	3.0	ug/L	U	3	3	1.5	
680-144989-10	69WP-08-01_FALL17	11/1/2017	6020A	Dissolved	Iron	4,900	ug/L		100	75	25	
680-144989-10	69WP-08-01_FALL17	11/1/2017	6020A	Dissolved	Manganese	33	ug/L		5	5	1.8	
680-144989-11	69WP-13-01_FALL17	11/1/2017	6020A	Dissolved	Manganese	62	ug/L		5	5	1.8	

Notes:
mg/l = milligram per liter
µg/L = microgram per liter
LOQ = Limit of Quantitation
LOD = Limit of Detection
DL = Method Detection Limit

U = Non-detect

Volatile Petroleum Hydrocarbons
MADEP Method VPH-04-1.1
USEPA Level II Review

Site: AOC43G – Fall LTM 2017	SDG #: 680-144777-2
Laboratory: Test America-Savannah, GA VPH analyses subcontracted to Katahdin, Scarborough, ME	Date: 12/01/2017
KGS Reviewer: Laurie Ekes	Project: 1024

TAL Sample ID	Katahdin Sample ID	Client Sample ID	Date Sampled	Analysis	Matrix
680-144777-8	SK9990-1	AAFES-2_Fall17	10/25/17	MassDEP VPH	Groundwater
680-144777-9	SK9990-2	XGM-93-02X_Fall17	10/24/17	MassDEP VPH	Groundwater
680-144777-10	SK9990-3	XGM-94-04X_Fall17	10/25/17	MassDEP VPH	Groundwater
680-144777-11	SK9990-4	XGM-97-12X_Fall17	10/24/17	MassDEP VPH	Groundwater
680-144777-12	SK9990-5	XGM-DUP1_Fall17	10/24/17	MassDEP VPH	Groundwater
680-144777-15	SK9990-6	EB-01_Fall17	10/24/17	MassDEP VPH	Rinsate Blank
	SK9990-7	TRIP BLANK	10/24/17	MassDEP VPH	Trip Blank

Summary – Samples for VPH analysis were subcontracted by Test America to Katahdin Analytical Services in Scarborough, Maine and reported under Katahdin SDG SK9990. Data validation was performed on the data for four (4) groundwater samples, one (1) field duplicate sample, one (1) equipment rinsate blank sample and one (1) trip blank sample submitted for Volatile Petroleum Hydrocarbon (VPH) analyses by MADEP method VPH 04-1.1.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – Sample XGM-94-04X_Fall17 was listed as XGM-93-04X_Fall17 on the chain of custody. This error was noticed during data validation; the correction was made to the reported data and a note included in the laboratory data package. All samples arrived at the laboratory on 10/26/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 14-day holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Surrogates – All surrogate recoveries were within the laboratory control limits.

Qualification: None required

Laboratory Control Sample – The LCS/LCSD pair prepared and analyzed with these samples met

all %R and RPD control limits.

Qualification: None required.

MS/MSD – Matrix spike/matrix spike duplicate analyses were performed for all target VPHs on sample XGM-94-04X_Fall17 (Lab sample ID: SK9990-3). The MS/MSD %Rs for the VPH range, C9-C12 aliphatics were above the control limit. This non-compliance is likely due to high concentrations and sample matrix interferences. The %Rs for the remaining VPH were within control limits. All RPD results were within laboratory control limits.

Qualification: None required.

Method Blank – Method blanks analyzed with these samples were non-detect for all target VPH compounds.

Qualification: None required.

Trip Blanks – One trip blank sample, TRIP BLANK (Lab Sample ID: SK9990-7), was submitted with these samples. The TB sample was non-detect for all target VPH.

Qualification: None required.

Field Blanks – One field equipment blank sample, EB-01_Fall17 (Lab Sample ID: SK9990-6), was submitted with these samples. The EB sample was non-detect for all target VPH.

Qualification: None required.

Field Duplicate – Sample XGM-DUP1_Fall17 (Lab sample ID: SK9990-5) was a field duplicate of sample XGM-97-12X_Fall17 (Lab sample ID: SK9990-4). The results for the detected VPH compounds were comparable with RPDs less than 20%. The FD sample results are summarized in the table below.

LABSAMPNO	SK9990-4	SK9990-5	
FIELD_ID	XGM-97-12X_FALL17	XGM-DUP1_FALL17	
SAMP_DATE	10/24/2017	10/24/2017	
ANALYTE	**RESULT (µg/L)**	**RESULT (µg/L)**	**RPD (%)**
C5-C8 ALIPHATICS	350	370	5.6
C9-C10 AROMATICS	430	440	2.3
C9-C12 ALIPHATICS	170	200	16.2
ETHYLBENZENE	18	18	0
M-,P-XYLENE	1.6	1.6	0
NAPHTHALENE	5.1	5.0	2.0

Qualification: None required.

Compound Quantitation – Four samples required reanalysis at dilutions due to high levels of C9-C10 aromatics and C9-C12 aliphatics exceeding the upper limit of the calibration curves. Both the diluted and undiluted results were reported by the laboratory for these samples with comparable results.

Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: After review of the reported results. The undiluted results for samples AAFES-2_Fall17, XGM-94-04X_Fall 17, XGM-97-12X and XGM-DUP1-Fall17 were reported; the undiluted results for the C9-C10 aromatics and C9-C12 aliphatics in these samples were qualified as estimated (J) with a potentially low bias.

Qualification Summary Table - The VPH results are acceptable with the noted qualifications. The data may be used for its intended purpose.

Katahdin Sample ID	Client Sample ID	Analysis	Lab Value (µg/L)	Lab Qualifier	Validated Value (µg/L)	Validation Qualifier
SK9990-1	AAFES-2_Fall17	C9-C10 AROMATICS	1,100	E	1,100	J
SK9990-1	AAFES-2_Fall17	C9-C12 ALIPHATICS	530	E	530	J
SK9990-2	XGM-93-02X_Fall17	MassDEP VPH	No qualifications needed.			
SK9990-3	XGM-94-04X_Fall17	C9-C10 AROMATICS	410	E	410	J
SK9990-4	XGM-97-12X_Fall17	C9-C10 AROMATICS	430	E	410	J
SK9990-4	XGM-97-12X_Fall17	C9-C12 ALIPHATICS	170	E	170	J
SK9990-5	XGM-DUP1_Fall17	C9-C10 AROMATICS	440	E	440	J
SK9990-5	XGM-DUP1_Fall17	C9-C12 ALIPHATICS	200	E	200	J
SK9990-6	EB-01_Fall17	MassDEP VPH	No qualifications needed.			
SK9990-7	TRIP BLANK	MassDEP VPH	No qualifications needed.			

Total Metals and Alkalinity
SW 846/6020A and SM2320B
USEPA Level II Review

Site: AOC 43G -Fall LTM 2017	SDG #: 680-144777-2
Laboratory: Test America-Savannah, GA	Date: 12/01/2017
KGS Reviewer: Laurie Ekes	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analysis	Matrix
680-144777-8	AAFES-2_Fall17	10/25/17	Total As, Fe, Mn and alkalinity	Groundwater
680-144777-9	XGM-93-02X_Fall17	10/24/17	Total As, Fe, Mn and alkalinity	Groundwater
680-144777-10	XGM-94-04X_Fall17	10/25/17	Total As, Fe, Mn and alkalinity	Groundwater
680-144777-11	XGM-97-12X_Fall17	10/24/17	Total As, Fe, Mn and alkalinity	Groundwater
680-144777-12	XGM-DUP1_Fall17	10/24/17	Total As, Fe, Mn and alkalinity	Groundwater
680-144777-13	AAFES-7_Fall17	10/25/17	Total As, Mn	Groundwater
680-144777-15	EB-01_Fall17	10/24/17	Total As, Fe, Mn and alkalinity	Rinsate Blank

Summary – Data validation was performed on the data for a total of five (5) groundwater samples, one (1) equipment rinsate blank sample and one (1) field duplicate sample collected and submitted for total metals and alkalinity. Sample AAFES-7_Fall17 (Lab Sample ID: 680-144777-13) was submitted for total arsenic and manganese analysis only.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – Sample XGM-94-04X_Fall17 was listed as XGM-93-04X_Fall17 on the chain of custody. This error was noticed during data validation; the correction was made to the reported data and a note included in the laboratory data package. All samples arrived at the laboratory on 10/26/2017 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries (%R) for the all target analytes met the %R control limits.

Qualification: None required.

MS/MSD – Sample XGM-94-04X_Fall17 (Lab Sample ID: 680-144777-10) was spiked and analyzed as matrix spike/matrix spike duplicate samples for total metals. The MS/MSD %Rs for manganese were above control limits likely due to the elevated manganese result (1,700 µg/L) in the native sample. The %Rs and calculated RPDs for arsenic and iron were within the laboratory control limits.

Qualification: The result for manganese in sample XGM-94-04X_Fall17 was qualified as estimated (J).

Method Blank – The method blanks associated and analyzed with these samples were non-detect for total metals. Low levels of alkalinity (3.09 and 3.34 mg/L) were reported in methods blanks; the results for alkalinity in all AOC43G samples were greater than ten (10) times these blank levels.

Qualification: None required.

Field Blanks – One field equipment blank sample, EB-01_Fall17 (Lab Sample ID: 680-144777-15), was submitted with these samples. The EB sample was non-detect for total metals and alkalinity.

Qualification: None required.

Field Duplicate – Sample XGM-DUP1_Fall17 (Lab sample ID: 680-144777-12) was the field duplicate of sample XGM-97-12X_Fall17 (Lab sample ID: 680-144777-11). The FD sample results are summarized in the table below. Calculated RPDs were less than 10% for all detected analytes.

Lab Sample ID	680-144777-11	680-144777-12	
Client Sample ID	XGM-97-12X_Fall17	XGM-DUP1_Fall17	
Collection Date	10/24/17	10/24/17	
Analyte	**Result (µg/L)**	**Result (µg/L)**	**RPD (%)**
Arsenic	14	13	7.4
Iron	18,000	17,000	5.7
Manganese	1200	1200	0
Analyte	**Result (mg/L)**	**Result (mg/L)**	**RPD (%)**
Alkalinity	140	140	0

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The total metals and alkalinity results reported in this SDG are acceptable as reported with the noted qualifications and the data may be used for its intended purpose.

Client Sample ID	**Lab Sample ID**	**Analysis**	**Lab Value**	**Lab Qualifier**	**Validated Value**	**Validation Qualifier**
680-144777-8	AAFES-2_Fall17	Total As, Fe, Mn and alkalinity	No qualifications needed.			
680-144777-9	XGM-93-02X_Fall17	Total As, Fe, Mn and alkalinity	No qualifications needed.			
680-144777-10	XGM-94-04X_Fall17	Total manganese	1,700	J	1,700	J
680-144777-11	XGM-97-12X_Fall17	Total As, Fe, Mn and alkalinity	No qualifications needed.			
680-144777-12	XGM-DUP1_Fall17	Total As, Fe, Mn and alkalinity	No qualifications needed.			
680-144777-13	AAFES-7_Fall17	Total As, Fe, Mn	No qualifications needed.			
680-144777-15	EB-01_Fall17	Total As, Fe, Mn and alkalinity	No qualifications needed.			

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Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Sample ID
680-144777-8	AAFES-2_Fall17	10/25/2017	6020A	Total/NA	Arsenic	13	ug/L		3	3	1.5	
680-144777-8	AAFES-2_Fall17	10/25/2017	6020A	Total/NA	Iron	10,000	ug/L		100	75	25	
680-144777-8	AAFES-2_Fall17	10/25/2017	6020A	Total/NA	Manganese	2,800	ug/L		5	5	1.8	
680-144777-8	AAFES-2_Fall17	10/25/2017	MA-VPH	Total/NA	BENZENE	3.0	UG/L	U	3	3	0.31	SK9990-1
680-144777-8	AAFES-2_Fall17	10/25/2017	MA-VPH	Total/NA	C5-C8 ALIPHATICS	890	UG/L		100	100	50	SK9990-1
680-144777-8	AAFES-2_Fall17	10/25/2017	MA-VPH	Total/NA	C9-C10 AROMATICS	1,100	UG/L	J	100	100	50	SK9990-1
680-144777-8	AAFES-2_Fall17	10/25/2017	MA-VPH	Total/NA	C9-C12 ALIPHATICS	530	UG/L	J	100	100	50	SK9990-1
680-144777-8	AAFES-2_Fall17	10/25/2017	MA-VPH	Total/NA	ETHYLBENZENE	23	UG/L		5	5	0.42	SK9990-1
680-144777-8	AAFES-2_Fall17	10/25/2017	MA-VPH	Total/NA	M-,P-XYLENE	6.6	UG/L	J	10	10	0.92	SK9990-1
680-144777-8	AAFES-2_Fall17	10/25/2017	MA-VPH	Total/NA	METHYL TERT-BUTYL ETHER	5.9	UG/L		5	5	0.31	SK9990-1
680-144777-8	AAFES-2_Fall17	10/25/2017	MA-VPH	Total/NA	NAPHTHALENE	20	UG/L		5	5	1.6	SK9990-1
680-144777-8	AAFES-2_Fall17	10/25/2017	MA-VPH	Total/NA	O-XYLENE	2.1	UG/L	J	5	5	0.47	SK9990-1
680-144777-8	AAFES-2_Fall17	10/25/2017	MA-VPH	Total/NA	TOLUENE	5.0	UG/L	U	5	5	0.34	SK9990-1
680-144777-8	AAFES-2_Fall17	10/25/2017	SM 2320B	Total/NA	Alkalinity	140	mg/L		5	3.2	1.1	
680-144777-9	XGM-93-02X_Fall17	10/24/2017	6020A	Total/NA	Arsenic	4.3	ug/L		3	3	1.5	
680-144777-9	XGM-93-02X_Fall17	10/24/2017	6020A	Total/NA	Iron	6,500	ug/L		100	75	25	
680-144777-9	XGM-93-02X_Fall17	10/24/2017	6020A	Total/NA	Manganese	1,400	ug/L		5	5	1.8	
680-144777-9	XGM-93-02X_Fall17	10/24/2017	MA-VPH	Total/NA	BENZENE	0.38	UG/L	J	3	3	0.31	SK9990-2
680-144777-9	XGM-93-02X_Fall17	10/24/2017	MA-VPH	Total/NA	C5-C8 ALIPHATICS	79	UG/L	J	100	100	50	SK9990-2
680-144777-9	XGM-93-02X_Fall17	10/24/2017	MA-VPH	Total/NA	C9-C10 AROMATICS	100	UG/L	U	100	100	50	SK9990-2
680-144777-9	XGM-93-02X_Fall17	10/24/2017	MA-VPH	Total/NA	C9-C12 ALIPHATICS	78	UG/L	J	100	100	50	SK9990-2
680-144777-9	XGM-93-02X_Fall17	10/24/2017	MA-VPH	Total/NA	ETHYLBENZENE	5.0	UG/L	U	5	5	0.42	SK9990-2
680-144777-9	XGM-93-02X_Fall17	10/24/2017	MA-VPH	Total/NA	M-,P-XYLENE	10	UG/L	U	10	10	0.92	SK9990-2
680-144777-9	XGM-93-02X_Fall17	10/24/2017	MA-VPH	Total/NA	METHYL TERT-BUTYL ETHER	7.8	UG/L		5	5	0.31	SK9990-2
680-144777-9	XGM-93-02X_Fall17	10/24/2017	MA-VPH	Total/NA	NAPHTHALENE	5.0	UG/L	U	5	5	1.6	SK9990-2
680-144777-9	XGM-93-02X_Fall17	10/24/2017	MA-VPH	Total/NA	O-XYLENE	5.0	UG/L	U	5	5	0.47	SK9990-2
680-144777-9	XGM-93-02X_Fall17	10/24/2017	MA-VPH	Total/NA	TOLUENE	5.0	UG/L	U	5	5	0.34	SK9990-2
680-144777-9	XGM-93-02X_Fall17	10/24/2017	SM 2320B	Total/NA	Alkalinity	160	mg/L		5	3.2	1.1	
680-144777-10	XGM-94-04X_Fall17	10/25/2017	6020A	Total/NA	Arsenic	3.5	ug/L		3	3	1.5	
680-144777-10	XGM-94-04X_Fall17	10/25/2017	6020A	Total/NA	Iron	1,400	ug/L		100	75	25	
680-144777-10	XGM-94-04X_Fall17	10/25/2017	6020A	Total/NA	Manganese	1,700	ug/L	J	5	5	1.8	
680-144777-10	XGM-94-04X_Fall17	10/25/2017	MA-VPH	Total/NA	BENZENE	3.0	UG/L	U	3	3	0.31	SK9990-3
680-144777-10	XGM-94-04X_Fall17	10/25/2017	MA-VPH	Total/NA	C5-C8 ALIPHATICS	360	UG/L		100	100	50	SK9990-3
680-144777-10	XGM-94-04X_Fall17	10/25/2017	MA-VPH	Total/NA	C9-C10 AROMATICS	410	UG/L	J	100	100	50	SK9990-3

AOC43G - Fall 2017 LTM Validated Data

Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Sample ID
680-144777-10	XGM-94-04X_Fall17	10/25/2017	MA-VPH	Total/NA	C9-C12 ALIPHATICS	58	UG/L	J	100	100	50	SK9990-3
680-144777-10	XGM-94-04X_Fall17	10/25/2017	MA-VPH	Total/NA	ETHYLBENZENE	25	UG/L		5	5	0.42	SK9990-3
680-144777-10	XGM-94-04X_Fall17	10/25/2017	MA-VPH	Total/NA	M-,P-XYLENE	3.6	UG/L	J	10	10	0.92	SK9990-3
680-144777-10	XGM-94-04X_Fall17	10/25/2017	MA-VPH	Total/NA	METHYL TERT-BUTYL ETHER	5.0	UG/L	U	5	5	0.31	SK9990-3
680-144777-10	XGM-94-04X_Fall17	10/25/2017	MA-VPH	Total/NA	NAPHTHALENE	4.6	UG/L	J	5	5	1.6	SK9990-3
680-144777-10	XGM-94-04X_Fall17	10/25/2017	MA-VPH	Total/NA	O-XYLENE	2.1	UG/L	J	5	5	0.47	SK9990-3
680-144777-10	XGM-94-04X_Fall17	10/25/2017	MA-VPH	Total/NA	TOLUENE	5.0	UG/L	U	5	5	0.34	SK9990-3
680-144777-10	XGM-94-04X_Fall17	10/25/2017	SM 2320B	Total/NA	Alkalinity	150	mg/L		5	3.2	1.1	
680-144777-11	XGM-97-12X_Fall17	10/24/2017	6020A	Total/NA	Arsenic	14	ug/L		3	3	1.5	
680-144777-11	XGM-97-12X_Fall17	10/24/2017	6020A	Total/NA	Iron	18,000	ug/L		100	75	25	
680-144777-11	XGM-97-12X_Fall17	10/24/2017	6020A	Total/NA	Manganese	1,200	ug/L		5	5	1.8	
680-144777-11	XGM-97-12X_Fall17	10/24/2017	MA-VPH	Total/NA	BENZENE	3.0	UG/L	U	3	3	0.31	SK9990-4
680-144777-11	XGM-97-12X_Fall17	10/24/2017	MA-VPH	Total/NA	C5-C8 ALIPHATICS	350	UG/L		100	100	50	SK9990-4
680-144777-11	XGM-97-12X_Fall17	10/24/2017	MA-VPH	Total/NA	C9-C10 AROMATICS	430	UG/L	J	100	100	50	SK9990-4
680-144777-11	XGM-97-12X_Fall17	10/24/2017	MA-VPH	Total/NA	C9-C12 ALIPHATICS	170	UG/L	J	100	100	50	SK9990-4
680-144777-11	XGM-97-12X_Fall17	10/24/2017	MA-VPH	Total/NA	ETHYLBENZENE	18	UG/L		5	5	0.42	SK9990-4
680-144777-11	XGM-97-12X_Fall17	10/24/2017	MA-VPH	Total/NA	M-,P-XYLENE	1.6	UG/L	J	10	10	0.92	SK9990-4
680-144777-11	XGM-97-12X_Fall17	10/24/2017	MA-VPH	Total/NA	METHYL TERT-BUTYL ETHER	5.0	UG/L	U	5	5	0.31	SK9990-4
680-144777-11	XGM-97-12X_Fall17	10/24/2017	MA-VPH	Total/NA	NAPHTHALENE	5.1	UG/L		5	5	1.6	SK9990-4
680-144777-11	XGM-97-12X_Fall17	10/24/2017	MA-VPH	Total/NA	O-XYLENE	5.0	UG/L	U	5	5	0.47	SK9990-4
680-144777-11	XGM-97-12X_Fall17	10/24/2017	MA-VPH	Total/NA	TOLUENE	5.0	UG/L	U	5	5	0.34	SK9990-4
680-144777-11	XGM-97-12X_Fall17	10/24/2017	SM 2320B	Total/NA	Alkalinity	140	mg/L		5	3.2	1.1	
680-144777-12	XGM-DUP1_Fall17	10/24/2017	6020A	Total/NA	Arsenic	13	ug/L		3	3	1.5	
680-144777-12	XGM-DUP1_Fall17	10/24/2017	6020A	Total/NA	Iron	17,000	ug/L		100	75	25	
680-144777-12	XGM-DUP1_Fall17	10/24/2017	6020A	Total/NA	Manganese	1,200	ug/L		5	5	1.8	
680-144777-12	XGM-DUP1_Fall17	10/24/2017	MA-VPH	Total/NA	BENZENE	3.0	UG/L	U	3	3	0.31	SK9990-5
680-144777-12	XGM-DUP1_Fall17	10/24/2017	MA-VPH	Total/NA	C5-C8 ALIPHATICS	370	UG/L		100	100	50	SK9990-5
680-144777-12	XGM-DUP1_Fall17	10/24/2017	MA-VPH	Total/NA	C9-C10 AROMATICS	440	UG/L	J	100	100	50	SK9990-5
680-144777-12	XGM-DUP1_Fall17	10/24/2017	MA-VPH	Total/NA	C9-C12 ALIPHATICS	200	UG/L	J	100	100	50	SK9990-5
680-144777-12	XGM-DUP1_Fall17	10/24/2017	MA-VPH	Total/NA	ETHYLBENZENE	18	UG/L		5	5	0.42	SK9990-5
680-144777-12	XGM-DUP1_Fall17	10/24/2017	MA-VPH	Total/NA	M-,P-XYLENE	1.6	UG/L	J	10	10	0.92	SK9990-5
680-144777-12	XGM-DUP1_Fall17	10/24/2017	MA-VPH	Total/NA	METHYL TERT-BUTYL ETHER	5.0	UG/L	U	5	5	0.31	SK9990-5
680-144777-12	XGM-DUP1_Fall17	10/24/2017	MA-VPH	Total/NA	NAPHTHALENE	5	UG/L		5	5	1.6	SK9990-5
680-144777-12	XGM-DUP1_Fall17	10/24/2017	MA-VPH	Total/NA	O-XYLENE	5.0	UG/L	U	5	5	0.47	SK9990-5

AOC43G - Fall 2017 LTM Validated Data

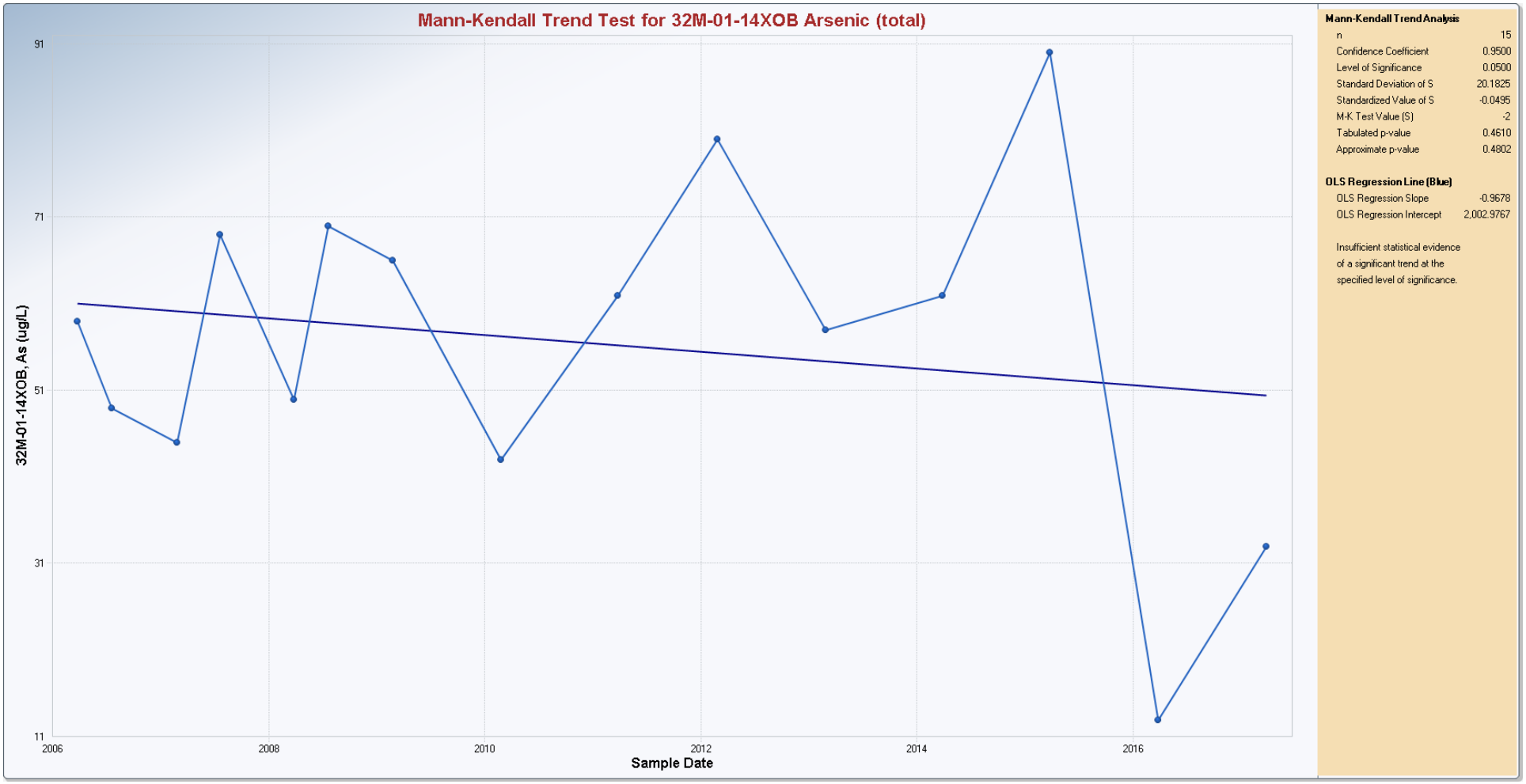
Lab Sample ID	Client Sample ID	Collection Date	Analysis Method	Prep Type	Analyte	Result	Unit	Flag	LOQ	LOD	DL	Katahdin Sample ID
680-144777-12	XGM-DUP1_Fall17	10/24/2017	MA-VPH	Total/NA	TOLUENE	5.0	UG/L	U	5	5	0.34	SK9990-5
680-144777-12	XGM-DUP1_Fall17	10/24/2017	SM 2320B	Total/NA	Alkalinity	140	mg/L		5	3.2	1.1	
680-144777-13	AAFES-7_Fall17	10/25/2017	6020A	Total/NA	Arsenic	3.0	ug/L	U	3	3	1.5	
680-144777-13	AAFES-7_Fall17	10/25/2017	6020A	Total/NA	Manganese	330	ug/L		5	5	1.8	
680-144777-15	EB-01_Fall17	10/24/2017	6020A	Total/NA	Arsenic	3.0	ug/L	U	3	3	1.5	
680-144777-15	EB-01_Fall17	10/24/2017	6020A	Total/NA	Iron	75	ug/L	U	100	75	25	
680-144777-15	EB-01_Fall17	10/24/2017	6020A	Total/NA	Manganese	5.0	ug/L	U	5	5	1.8	
680-144777-15	EB-01_Fall17	10/24/2017	SM 2320B	Total/NA	Alkalinity	3.2	mg/L	U	5	3.2	1.1	
680-144777-15	EB-01_Fall17	10/24/2017	MA-VPH	Total/NA	BENZENE	3.0	UG/L	U	3	3	0.31	SK9990-6
680-144777-15	EB-01_Fall17	10/24/2017	MA-VPH	Total/NA	C5-C8 ALIPHATICS	100	UG/L	U	100	100	50	SK9990-6
680-144777-15	EB-01_Fall17	10/24/2017	MA-VPH	Total/NA	C9-C10 AROMATICS	100	UG/L	U	100	100	50	SK9990-6
680-144777-15	EB-01_Fall17	10/24/2017	MA-VPH	Total/NA	C9-C12 ALIPHATICS	100	UG/L	U	100	100	50	SK9990-6
680-144777-15	EB-01_Fall17	10/24/2017	MA-VPH	Total/NA	ETHYLBENZENE	5.0	UG/L	U	5	5	0.42	SK9990-6
680-144777-15	EB-01_Fall17	10/24/2017	MA-VPH	Total/NA	M-,P-XYLENE	10	UG/L	U	10	10	0.92	SK9990-6
680-144777-15	EB-01_Fall17	10/24/2017	MA-VPH	Total/NA	METHYL TERT-BUTYL ETHER	5.0	UG/L	U	5	5	0.31	SK9990-6
680-144777-15	EB-01_Fall17	10/24/2017	MA-VPH	Total/NA	NAPHTHALENE	5.0	UG/L	U	5	5	1.6	SK9990-6
680-144777-15	EB-01_Fall17	10/24/2017	MA-VPH	Total/NA	O-XYLENE	5.0	UG/L	U	5	5	0.47	SK9990-6
680-144777-15	EB-01_Fall17	10/24/2017	MA-VPH	Total/NA	TOLUENE	5.0	UG/L	U	5	5	0.34	SK9990-6
	TRIP BLANK	10/24/2017	MA-VPH	Total/NA	BENZENE	3.0	UG/L	U	3	3	0.31	SK9990-7
	TRIP BLANK	10/24/2017	MA-VPH	Total/NA	C5-C8 ALIPHATICS	100	UG/L	U	100	100	50	SK9990-7
	TRIP BLANK	10/24/2017	MA-VPH	Total/NA	C9-C10 AROMATICS	100	UG/L	U	100	100	50	SK9990-7
	TRIP BLANK	10/24/2017	MA-VPH	Total/NA	C9-C12 ALIPHATICS	100	UG/L	U	100	100	50	SK9990-7
	TRIP BLANK	10/24/2017	MA-VPH	Total/NA	ETHYLBENZENE	5.0	UG/L	U	5	5	0.42	SK9990-7
	TRIP BLANK	10/24/2017	MA-VPH	Total/NA	M-,P-XYLENE	10	UG/L	U	10	10	0.92	SK9990-7
	TRIP BLANK	10/24/2017	MA-VPH	Total/NA	METHYL TERT-BUTYL ETHER	5.0	UG/L	U	5	5	0.31	SK9990-7
	TRIP BLANK	10/24/2017	MA-VPH	Total/NA	NAPHTHALENE	5.0	UG/L	U	5	5	1.6	SK9990-7
	TRIP BLANK	10/24/2017	MA-VPH	Total/NA	O-XYLENE	5.0	UG/L	U	5	5	0.47	SK9990-7
	TRIP BLANK	10/24/2017	MA-VPH	Total/NA	TOLUENE	5.0	UG/L	U	5	5	0.34	SK9990-7

Notes:
mg/l = milligram per liter
µg/L = microgram per liter
LOQ = Limit of Quantitation
LOD = Limit of Detection
DL = Method Detection Limit

Qualified Data
U = Non-detect
J = Estimated result

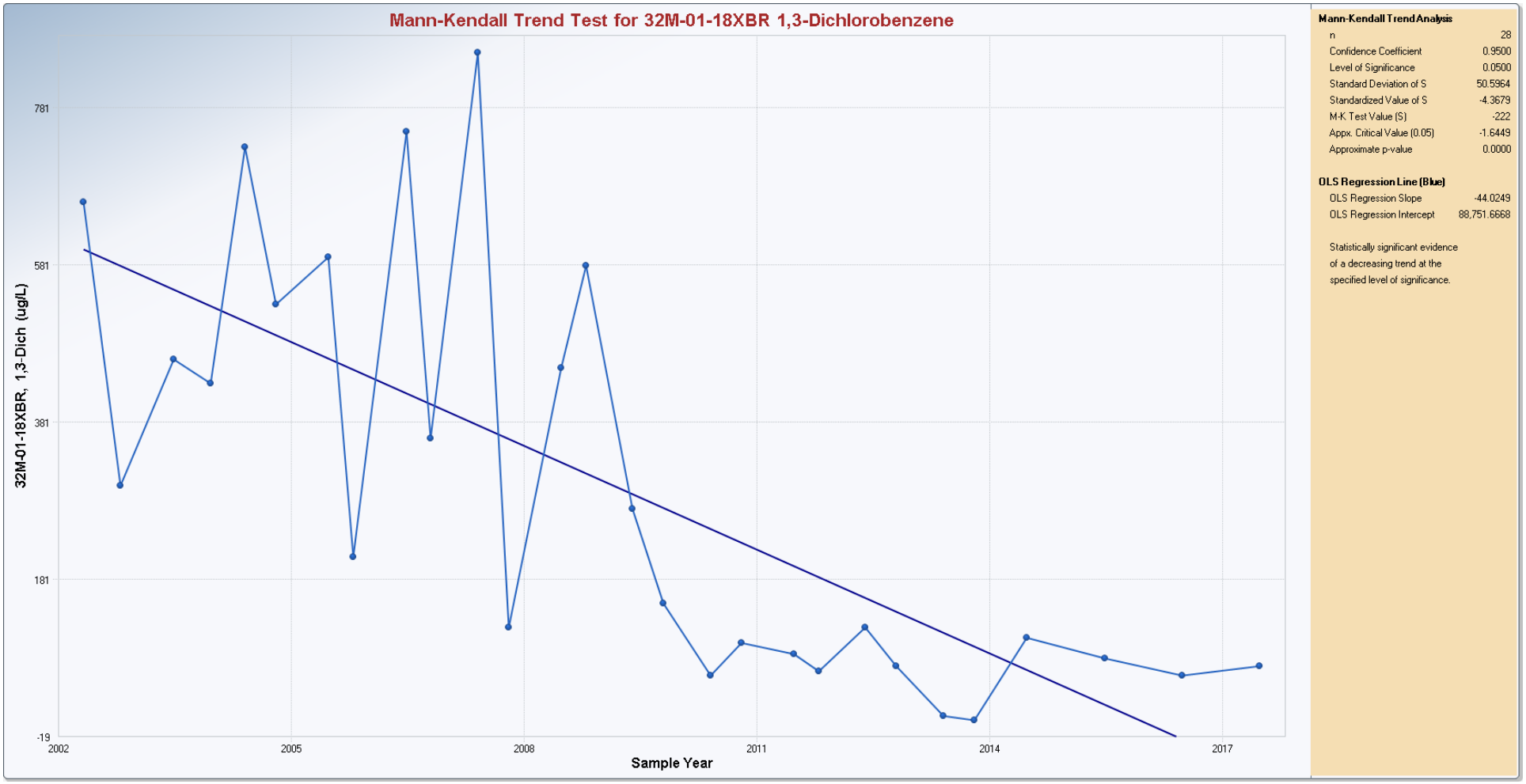
APPENDIX D
DATA TREND ANALYSES

AOC 32 and 43A



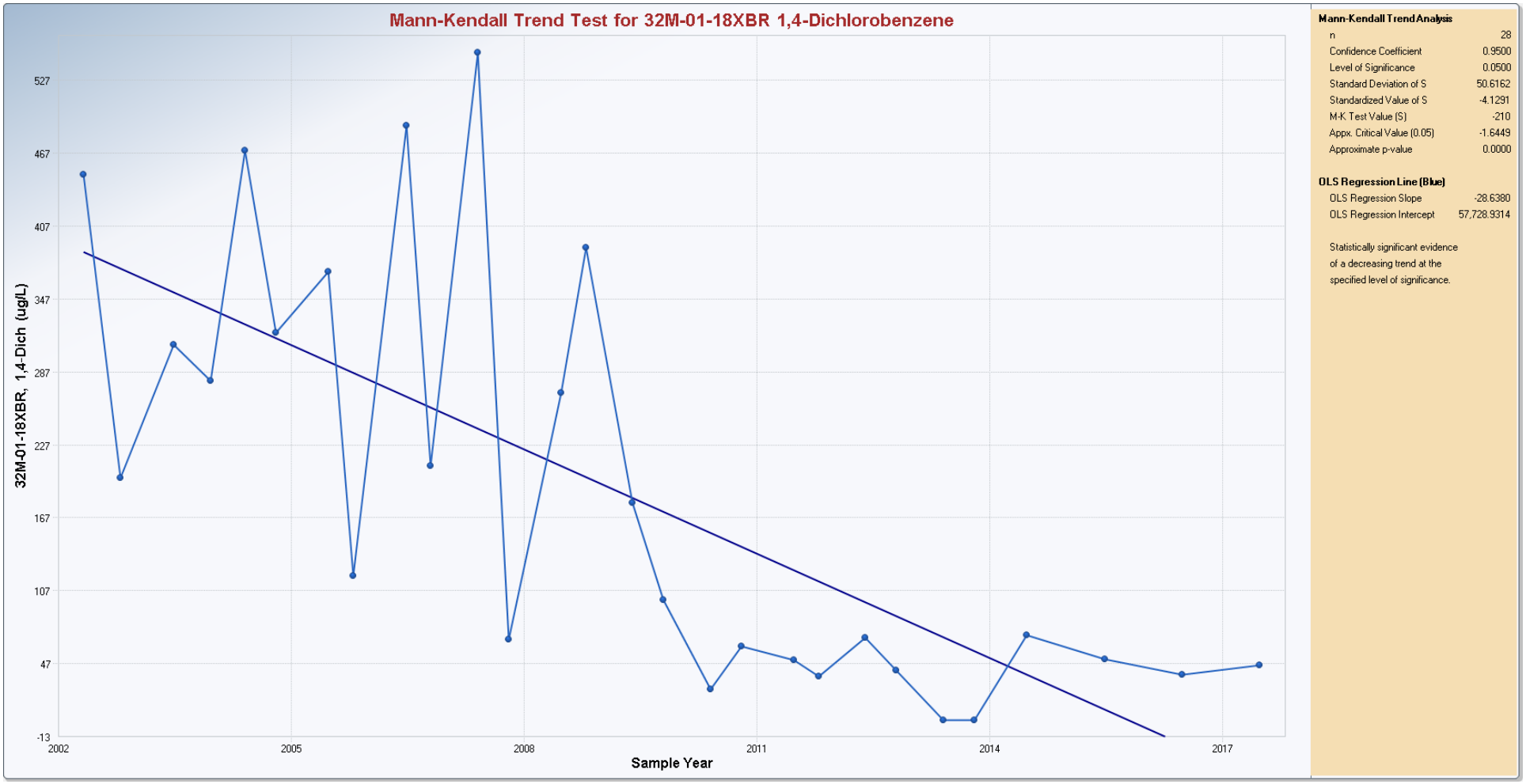
Appendix D

AOC 32 and 43A



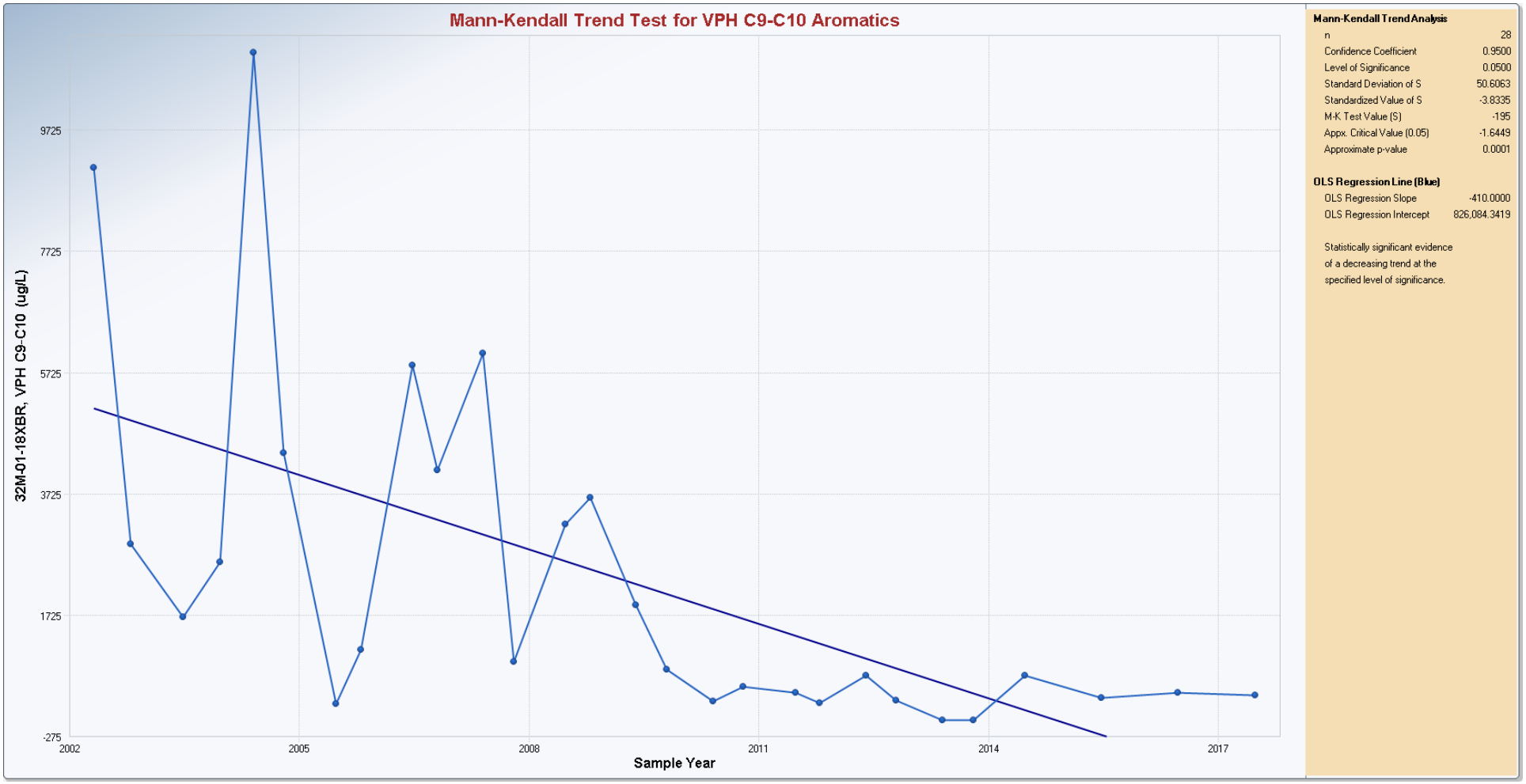
Appendix D

AOC 32 and 43A



Appendix D

AOC 32 and 43A



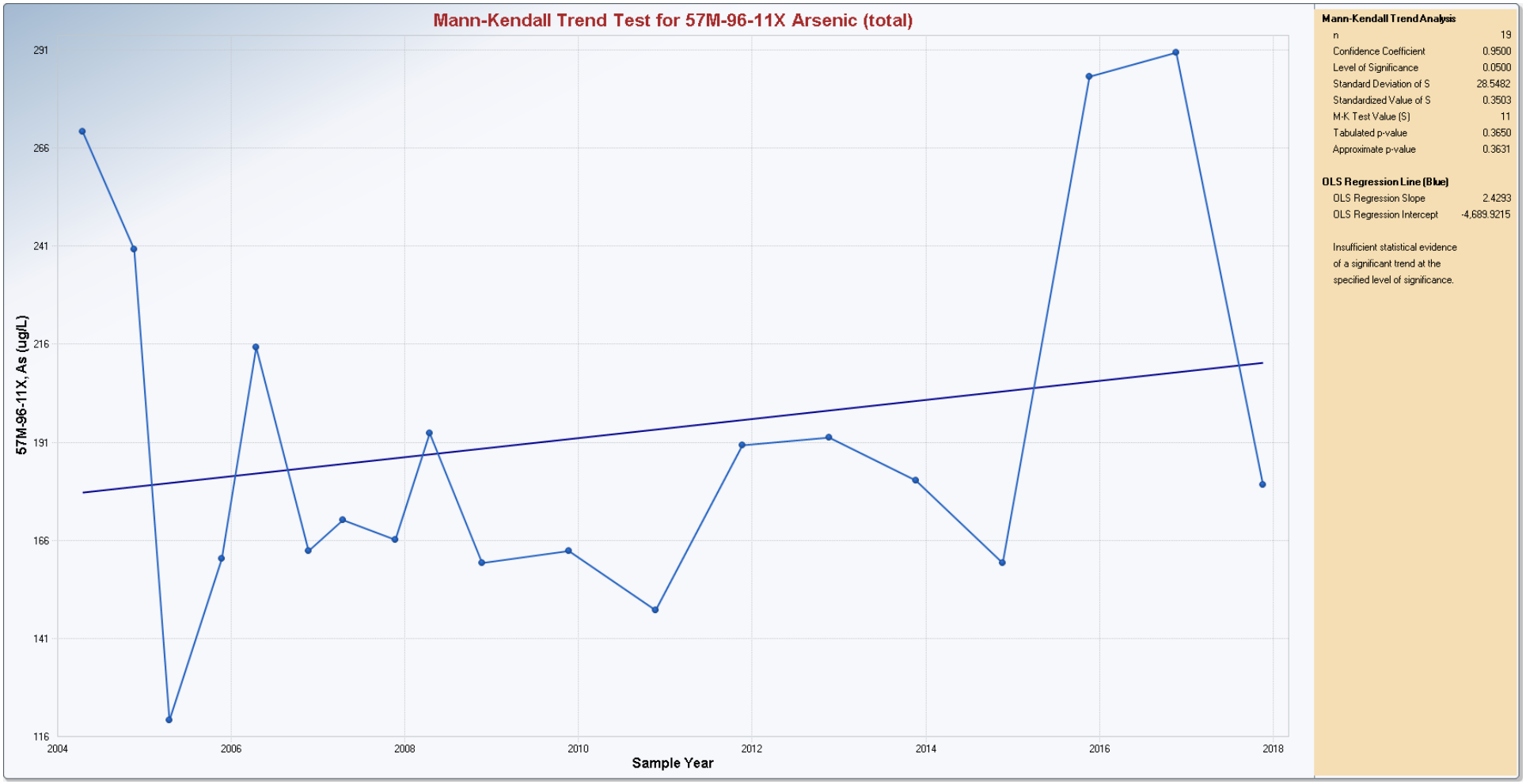
Appendix D

AOC 57



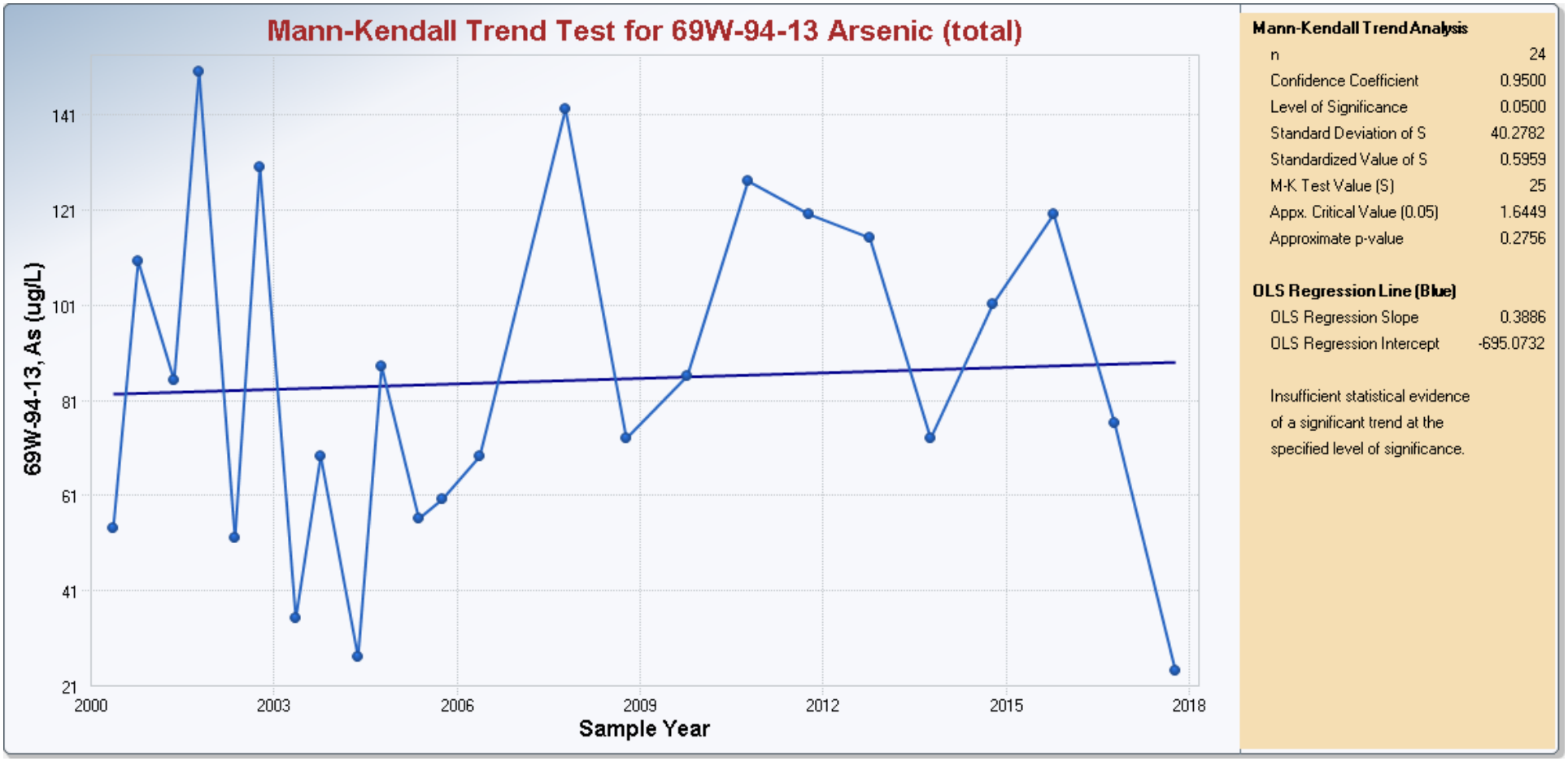
Appendix D

AOC 57



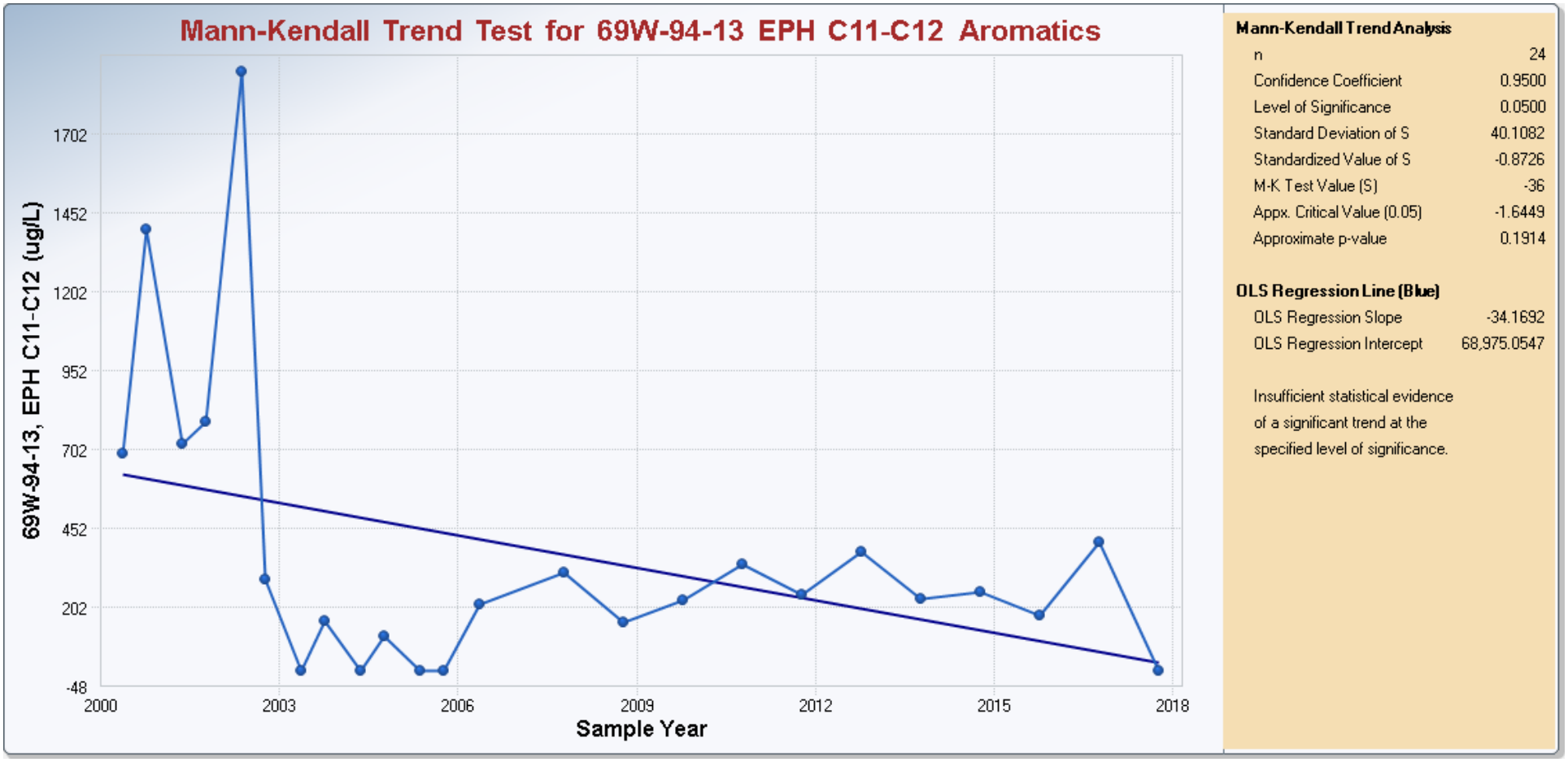
Appendix D

AOC 69W



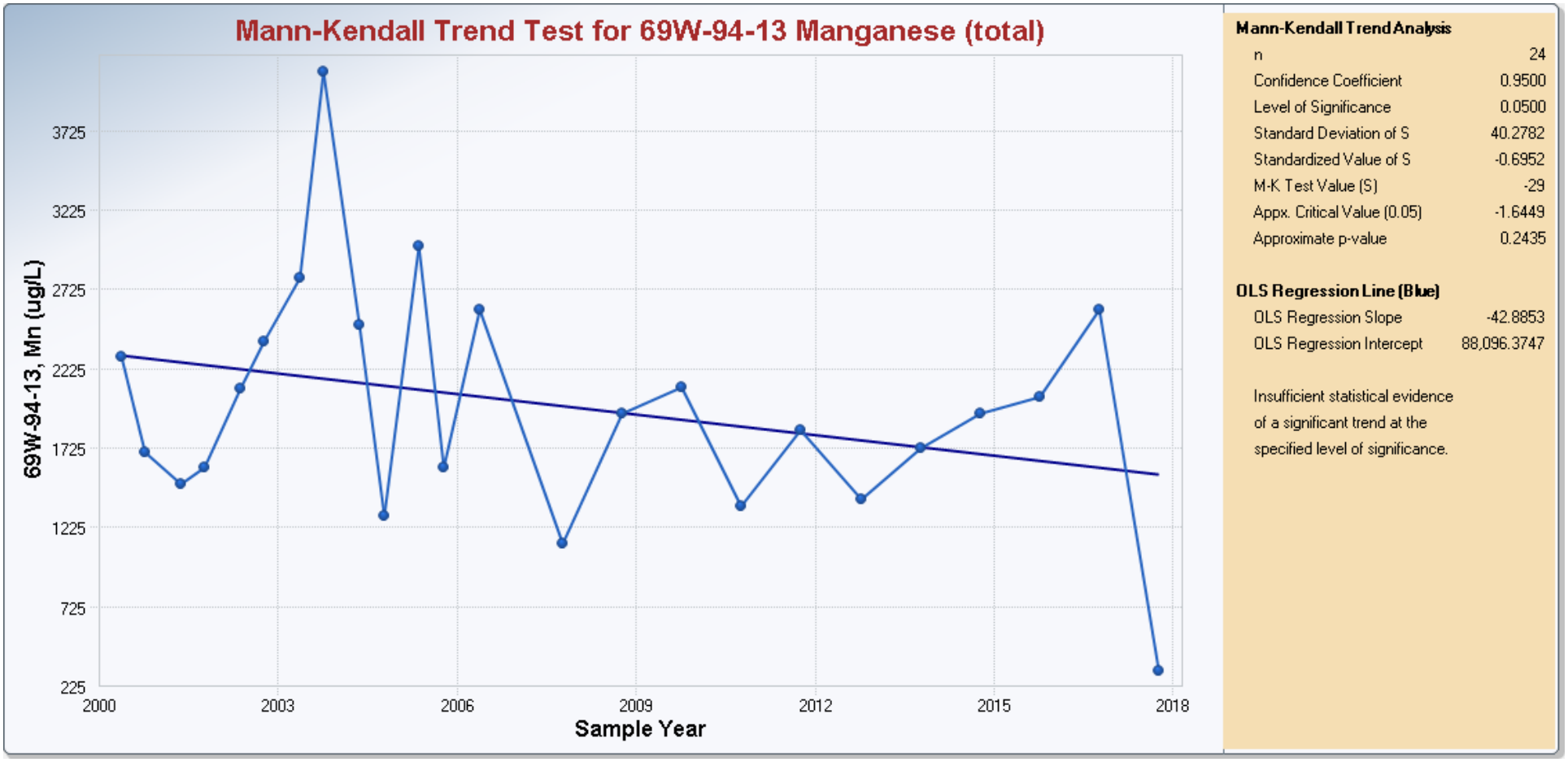
Appendix D

AOC 69W



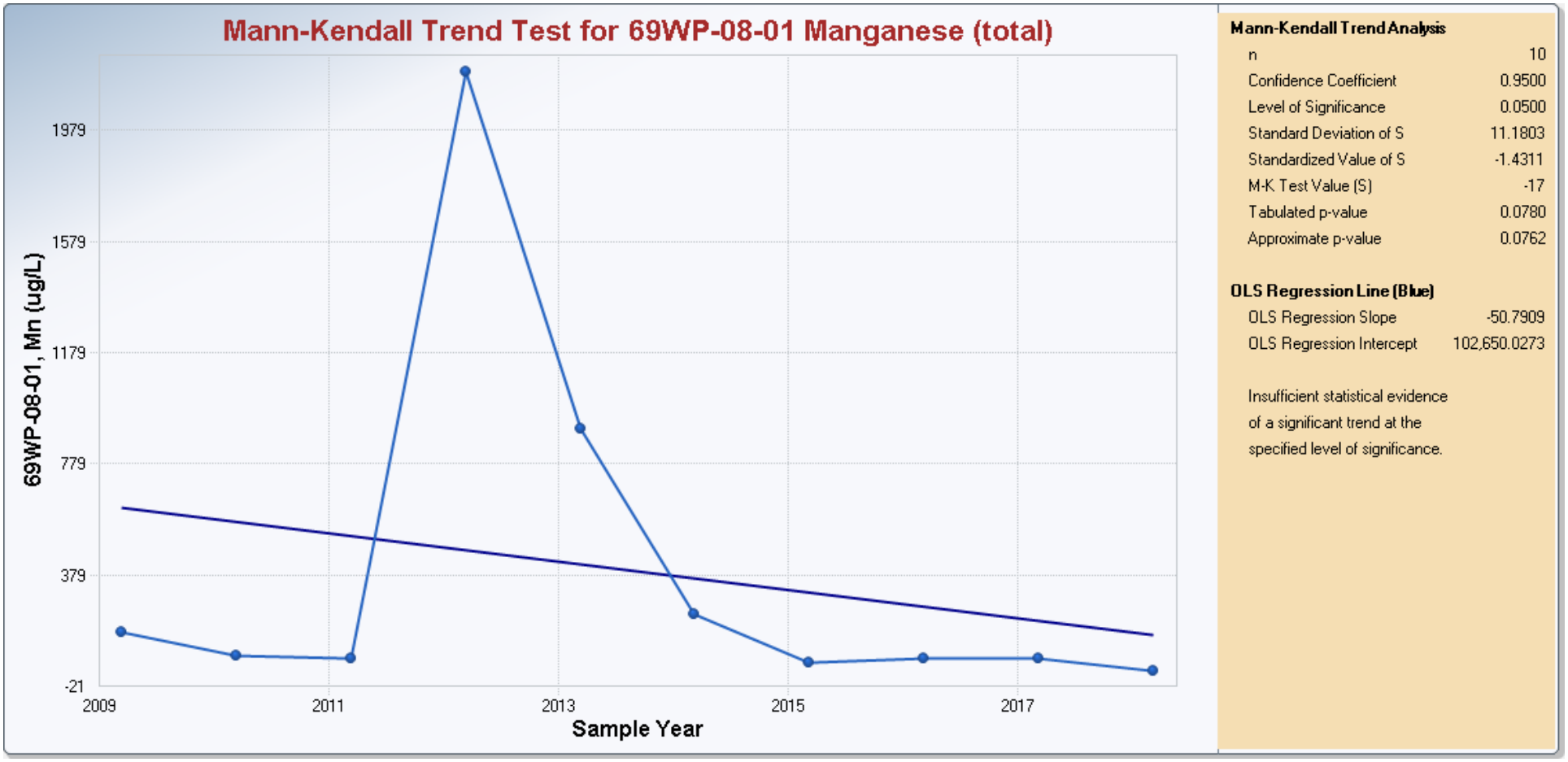
Appendix D

AOC 69W

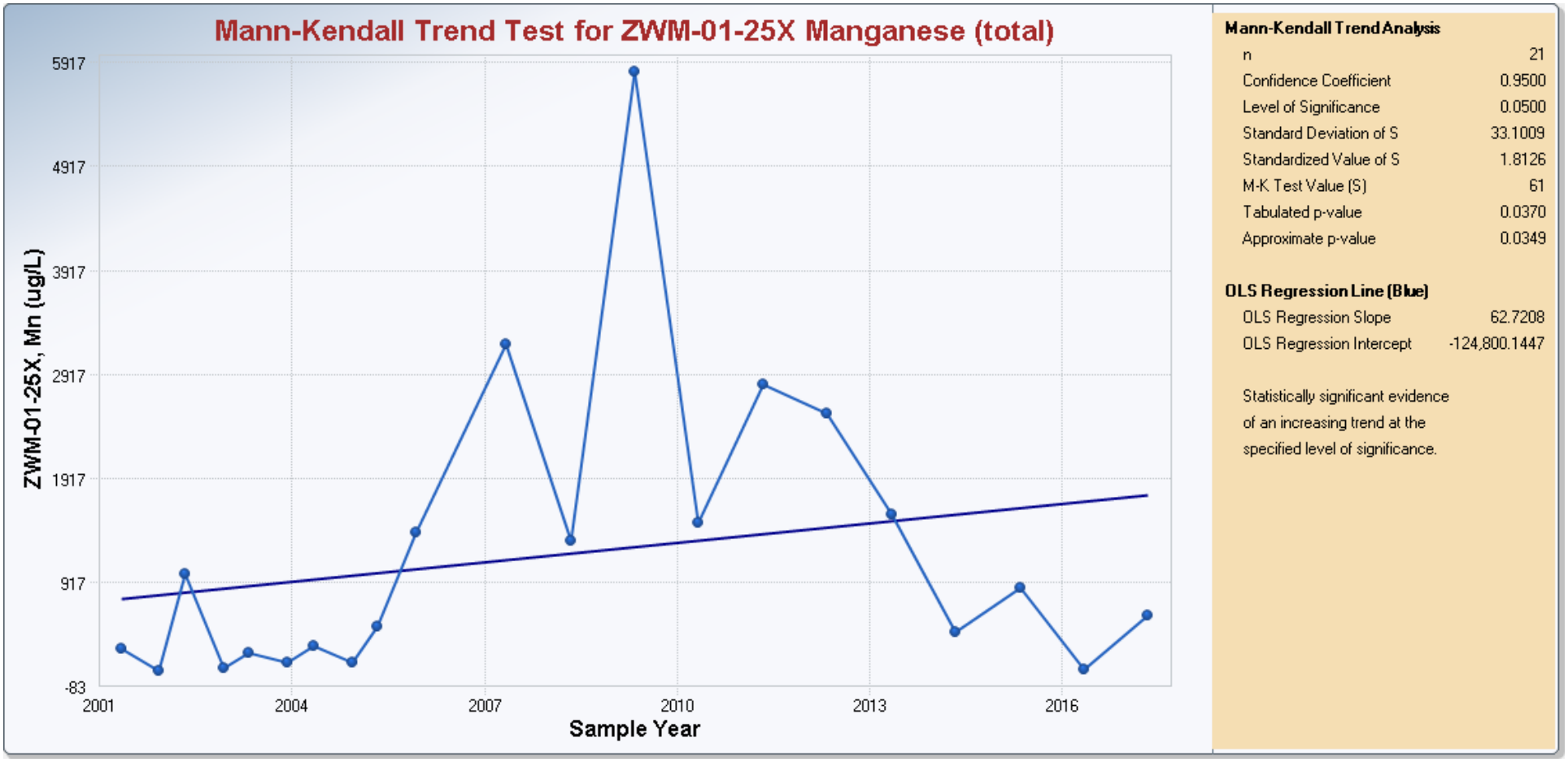


Appendix D

AOC 69W

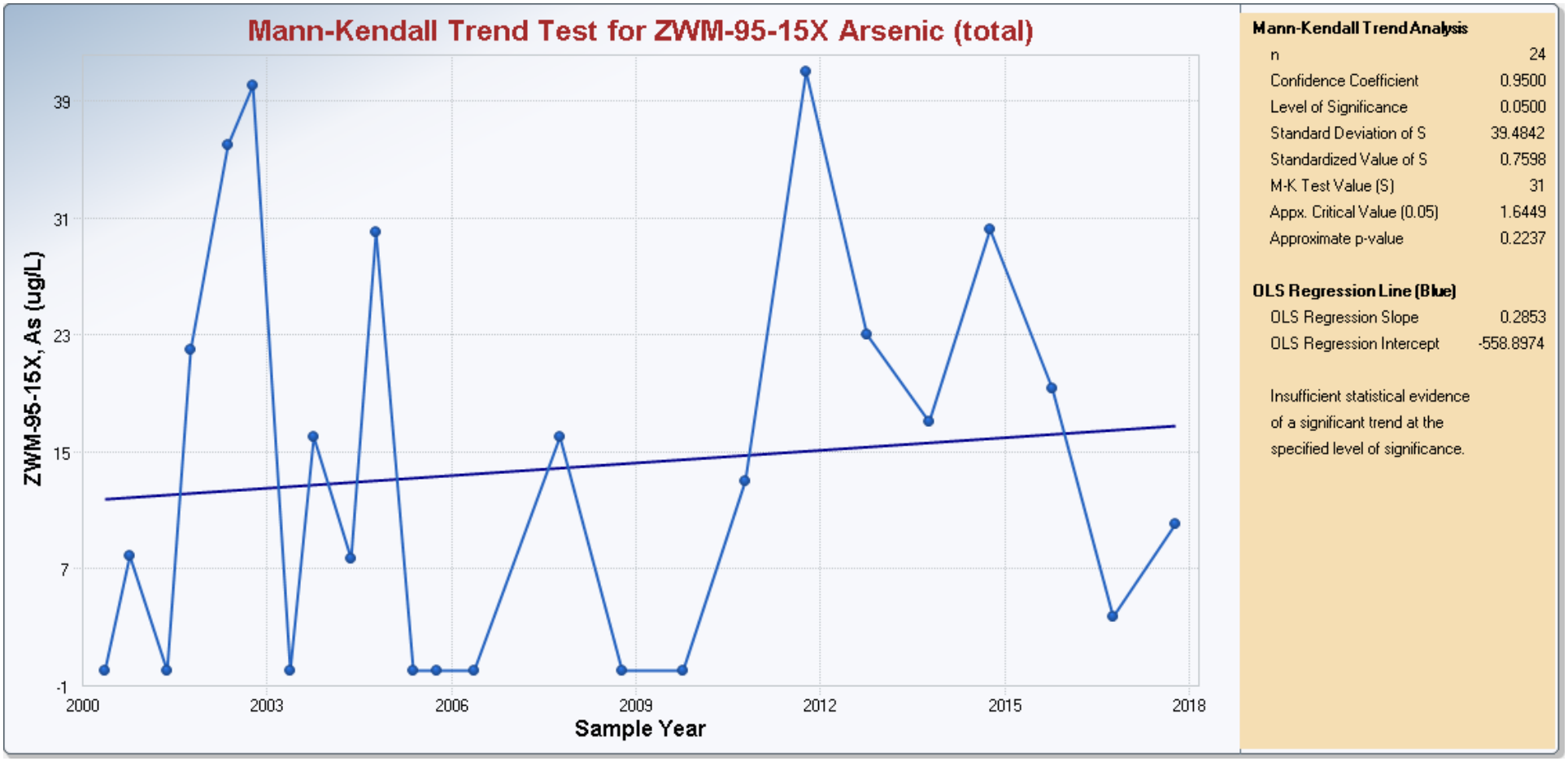

Mann-Kendall Trend Test for 69WP-08-01 Manganese (total)
69WP-08-01, Mn (ug/L)
1979
1579
1179
779
379
-21
2009
2011
2013
2015
2017
Sample Year
Mann-Kendall Trend Analysis
n 10
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 11.1803
Standardized Value of S -1.4311
M-K Test Value (S) -17
Tabulated p-value 0.0780
Approximate p-value 0.0762
OLS Regression Line (Blue)
OLS Regression Slope -50.7909
OLS Regression Intercept 102,650.0273
Insufficient statistical evidence
of a significant trend at the
specified level of significance.

AOC 69W



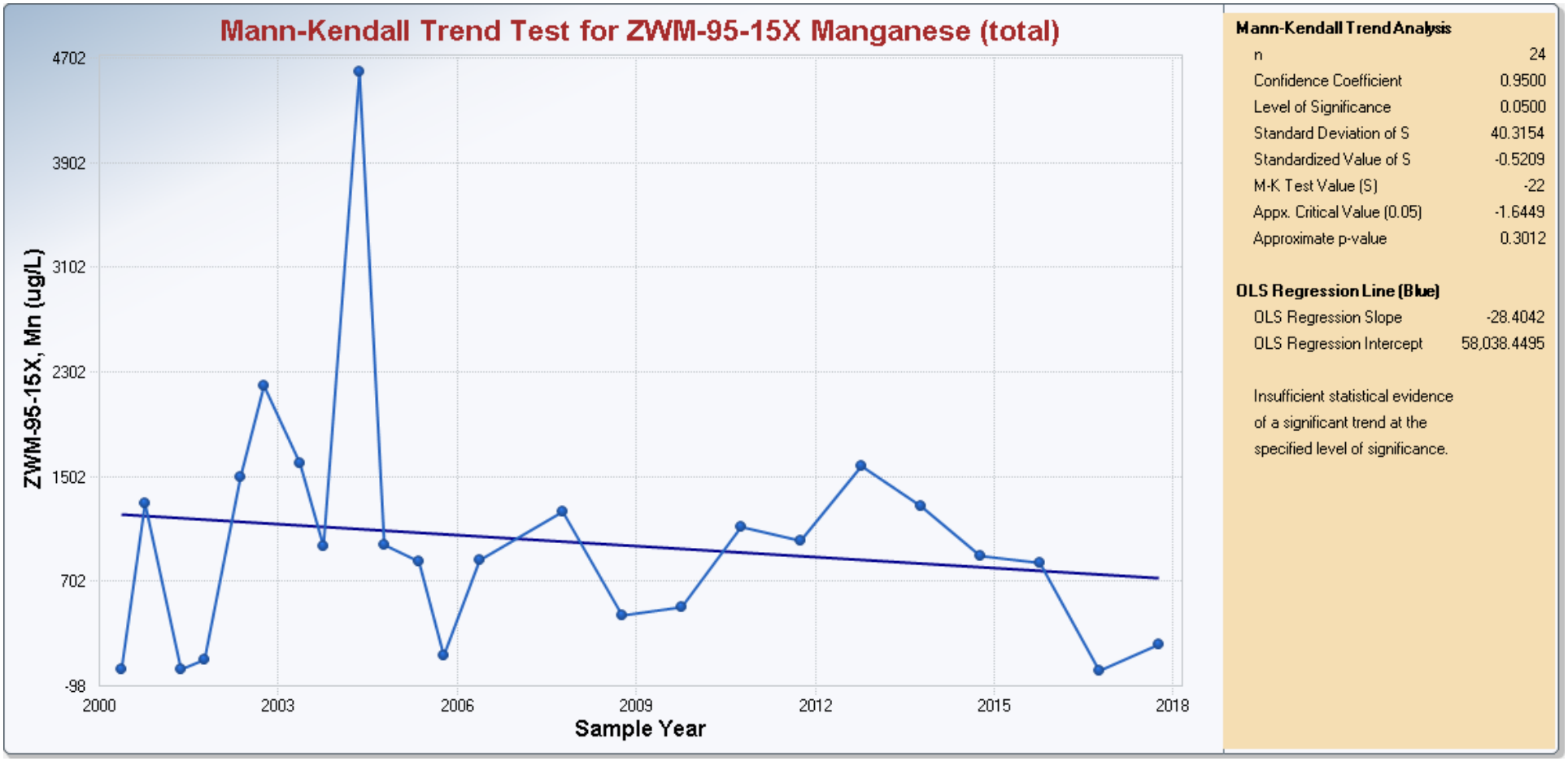
Appendix D

AOC 69W

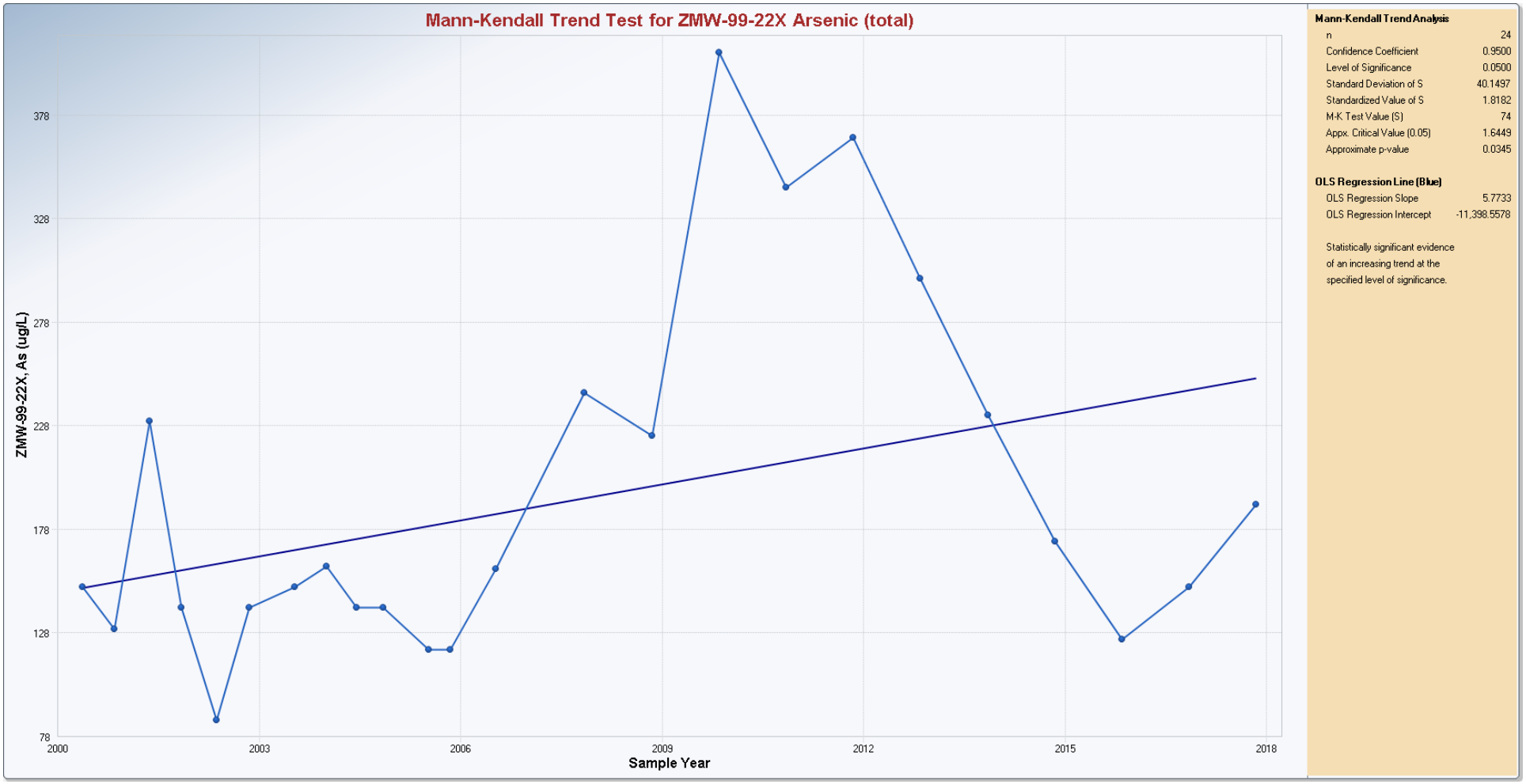


Appendix D

AOC 69W

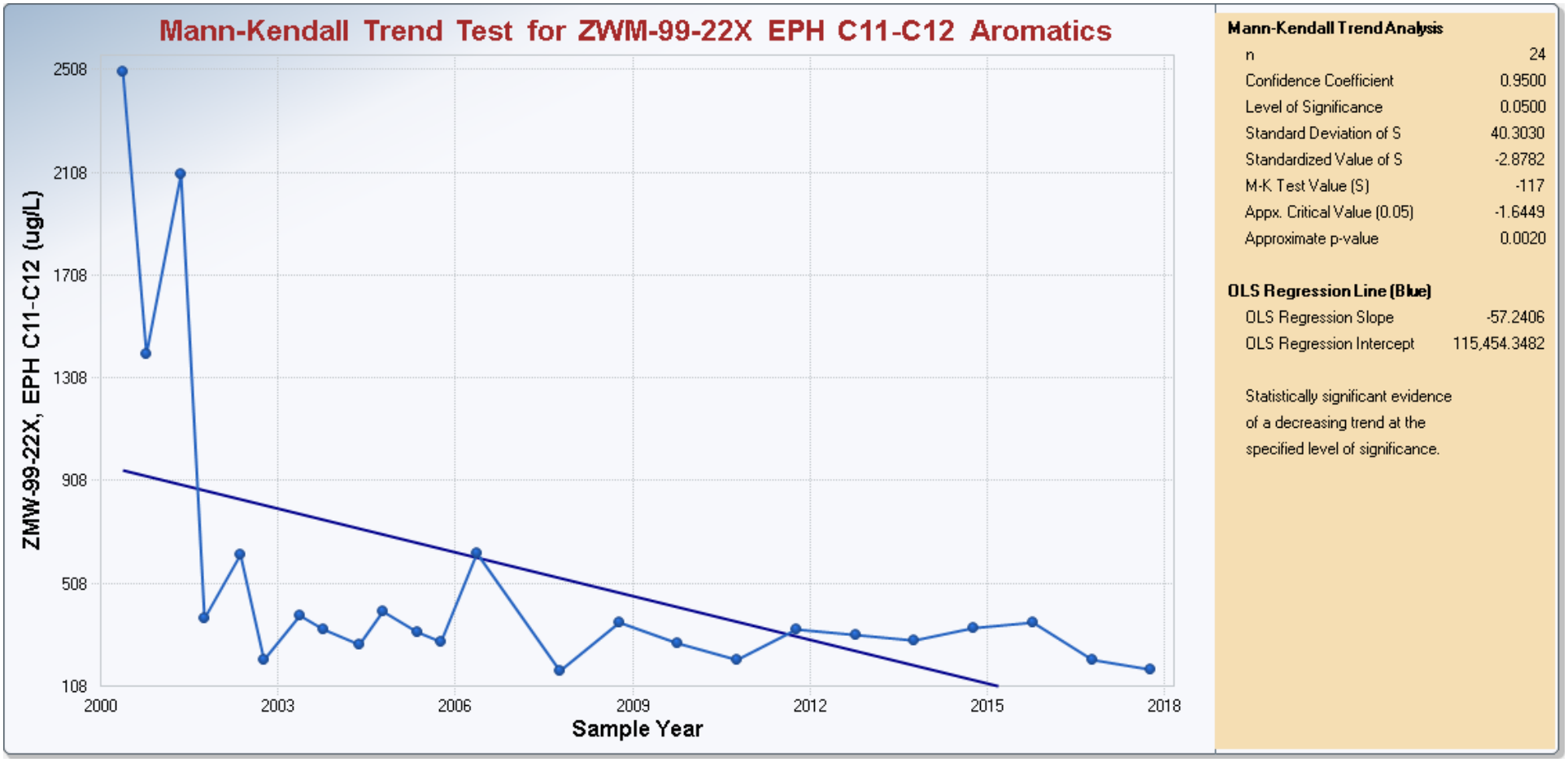

Mann-Kendall Trend Test for ZWM-95-15X Manganese (total)
ZWM-95-15X, Mn (ug/L)
4702
3902
3102
2302
1502
702
-98
2000
2003
2006
2009
2012
2015
2018
Sample Year
Mann-Kendall Trend Analysis
n 24
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 40.3154
Standardized Value of S -0.5209
M-K Test Value (S) -22
Appx. Critical Value (0.05) -1.6449
Approximate p-value 0.3012
OLS Regression Line (Blue)
OLS Regression Slope -28.4042
OLS Regression Intercept 58,038.4495
Insufficient statistical evidence of a significant trend at the specified level of significance.

AOC 69W
ZWM-99-22X – Arsenic



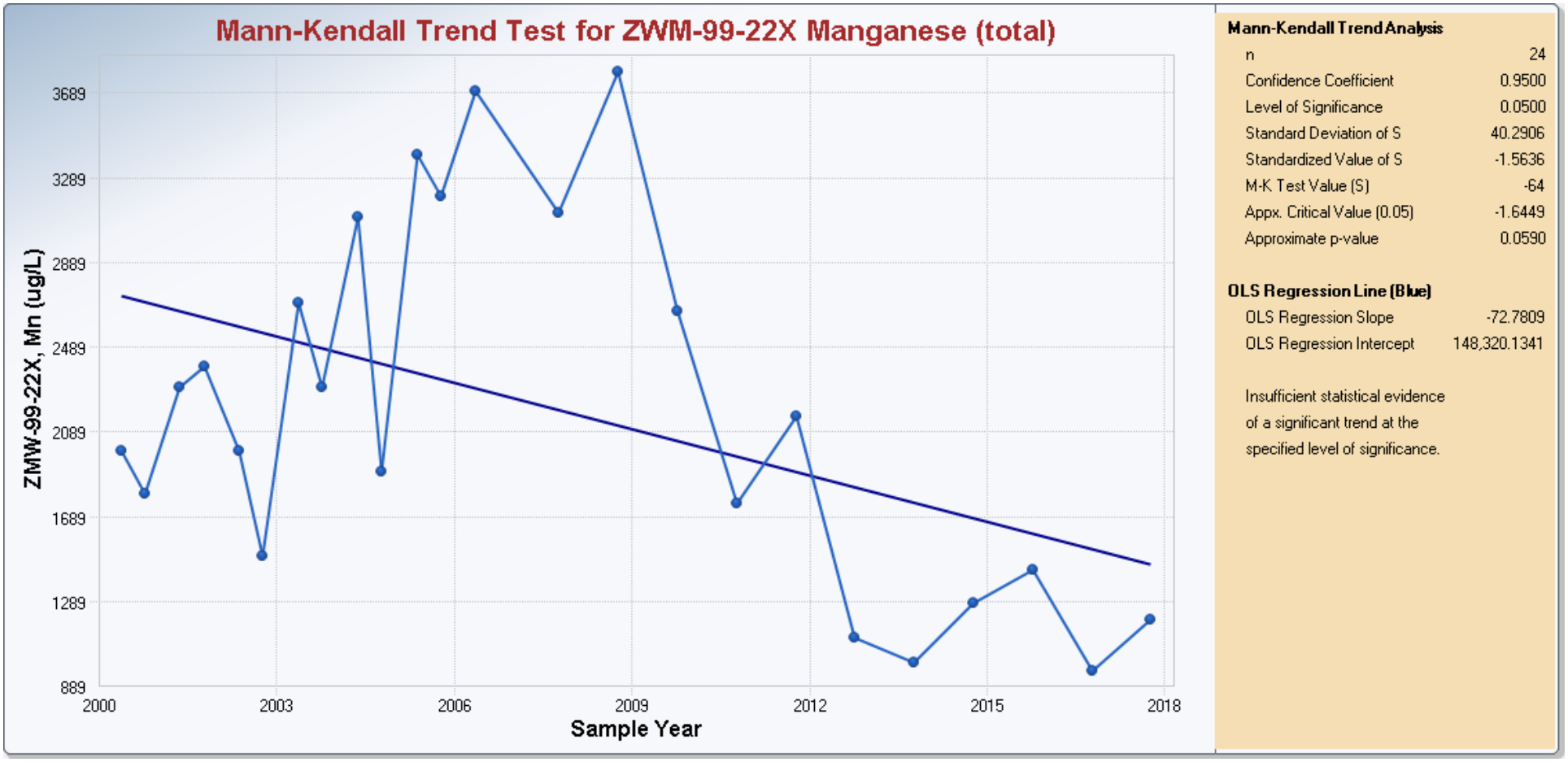
Appendix D

AOC 69W

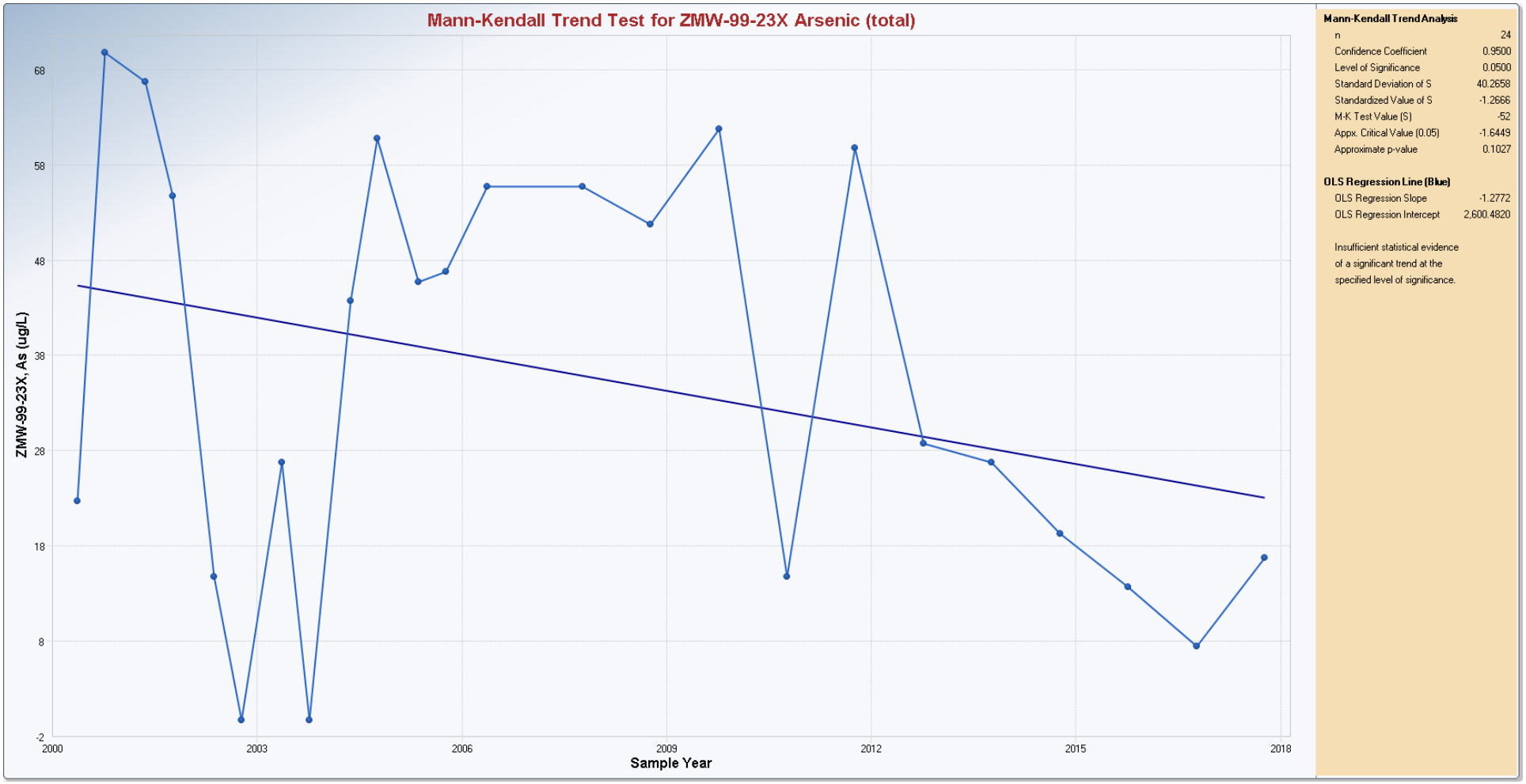


Appendix D

AOC 69W

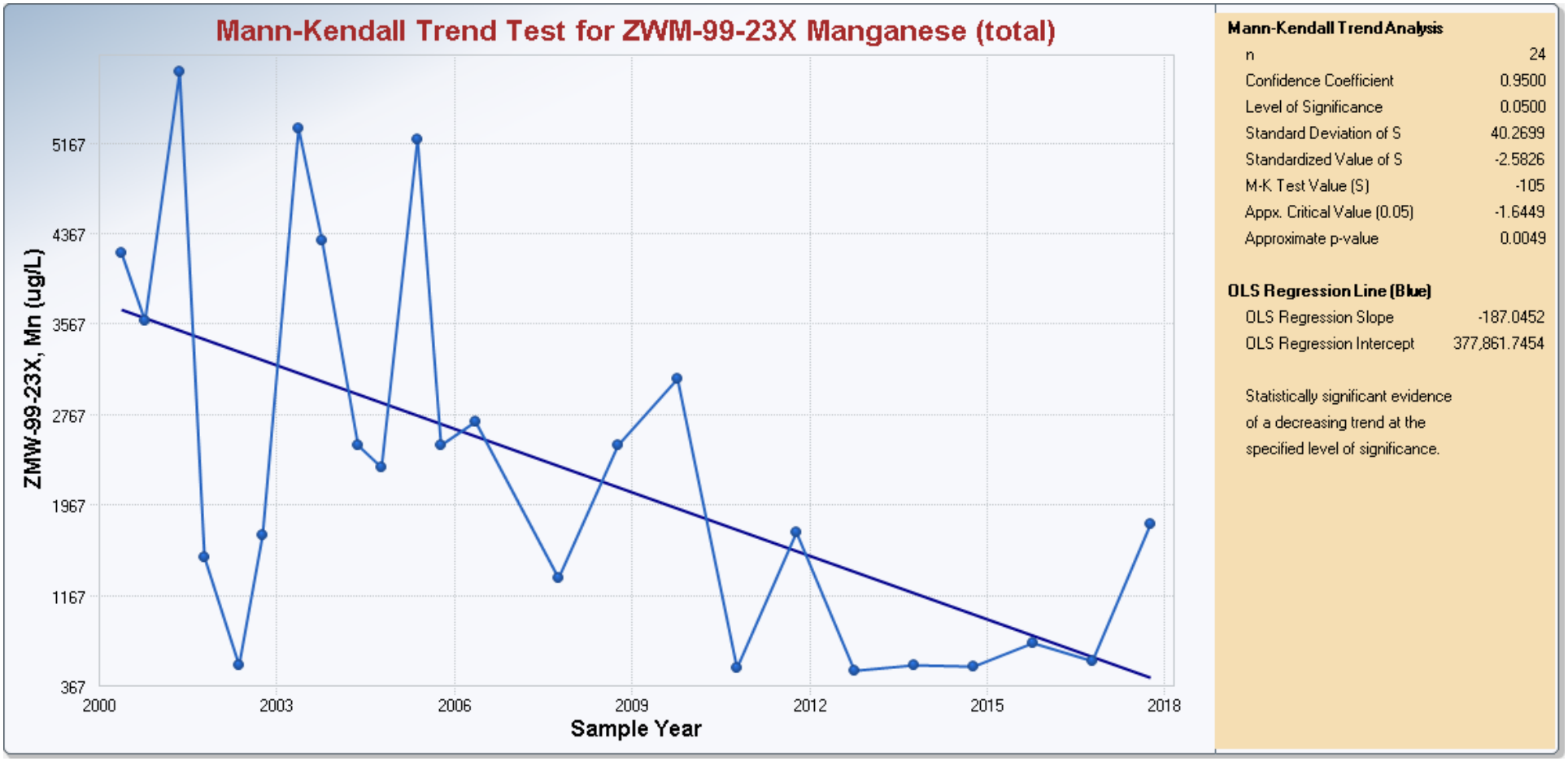

Mann-Kendall Trend Test for ZWM-99-22X Manganese (total)
ZMW-99-22X, Mn (ug/L)
3689
3289
2889
2489
2089
1689
1289
889
2000
2003
2006
2009
2012
2015
2018
Sample Year
Mann-Kendall Trend Analysis
n 24
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 40.2906
Standardized Value of S -1.5636
M-K Test Value (S) -64
Appx. Critical Value (0.05) -1.6449
Approximate p-value 0.0590
OLS Regression Line (Blue)
OLS Regression Slope -72.7809
OLS Regression Intercept 148,320.1341
Insufficient statistical evidence of a significant trend at the specified level of significance.

AOC 69W



Appendix D

AOC 69W


Mann-Kendall Trend Test for ZWM-99-23X Manganese (total)
ZMW-99-23X, Mn (ug/L)
5167
4367
3567
2767
1967
1167
367
2000
2003
2006
2009
2012
2015
2018
Sample Year
Mann-Kendall Trend Analysis
n 24
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 40.2699
Standardized Value of S -2.5826
M-K Test Value (S) -105
Appx. Critical Value (0.05) -1.6449
Approximate p-value 0.0049
OLS Regression Line (Blue)
OLS Regression Slope -187.0452
OLS Regression Intercept 377,861.7454
Statistically significant evidence of a decreasing trend at the specified level of significance.

APPENDIX E
ANNUAL LAND-USE CONTROL PLAN CHECKLIST FORMS

Annual Land Use Control Plan Checklist for AOC 32 and 43A

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Draft Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information	
Site Name/Location: AOC 32/43A	Name/Affiliation: Laurie Ekes/KGS
Remedy Includes: Long Term Monitoring, Institutional Controls	
Inspection: AOC 32/43A site was inspected in November 2017.	
Participants: Melissa Miller/Kevin Anderson - KGS	

II. Documentation and Records			
Item	Yes	No	Comments
Any related notices filed with Devens Enterprise Commission?		X	
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals or notices of intent		X	

III. Physical On-Site Inspection			
Item	Yes	No	Comments
Any evidence of new construction or excavation present in the area of the		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?	X		
Any signs of increased exposure potential?		X	

IV. Interview
Name of Interviewer: Laurie Ekes/KGS
Name of Interviewee: Ron Ostrowski (MassDevelopment) and Neil Angus (Devens Enterprise Commission)
Date/Location of Interview: 10/25/2017 Met with Ron and Neil at Mass Development, 33 Andrews Parkway, Devens, MA .
O'Reilly Auto Parts Warehouse is located within the foot print of AOC32/43A. They are required to submit an annual Stormwater Management O&M Report to Devens Enterprise Commission. The facility also has two monitoring wells which are sampled annually. This report is also submitted to MassDEP and Devens Enterprise Commission.

Annual Land Use Control Plan Checklist for AOC 32 and 43A

IV. Interview			
Name of Interviewer: Laurie Ekes/KGS			
Name of Interviewee: Jason Pahl			
Position: Distribution Center Manager, O'Reilly Auto Parts, 15 Independence Drive, Devens, MA			
Contact information: Email jpahl@oreillyauto.com Phone: (978)784-3134			
Interview Notes: October 30, 2017 - Sent email to Mr. Pahl with interview questions. November 8, 2017 - spoke to Mr. Pahl on the phone. His comments are summarized below.			
Item	Yes	No	Comments
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		Mr. Pahl noted that he received my email. He followed up with corporate O'Reilly Auto Parts and confirmed that they were in compliance.
Are there any extraction wells at the property?		X	
Are there any proposed plans for property sale, future development, construction or demolition activities at the property?		X	Mr. Pahl stated that there no changes to O'Reilly's business plan and no expansion planned for the facility.
Are there any issues with site access for monitoring?		X	There are fences around the property but the LTM wells are accessible.
V. Response Actions			
Item	Yes	No	Comments
Were violations of the LUCs present ?		X	
Are there Response Actions necessary based on the violations?		NA	
Are modifications/ terminations of LUC's necessary?		X	
Have Enforcement Actions been taken during this reporting period?		X	

If any response above are "Yes", please provide comments.

NA = Not applicable.

Annual Land Use Control Plan Checklist for AOC 43G

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information			
Site Name/Location: AOC 43G; Harvard, MA		Name/Affiliation: Laurie Ekes/KGS	
Remedy Includes: Long Term Monitoring, Institutional Controls, Intrinsic Bioremediation			
Inspection: AOC 43G site was inspected in November 2017.			
Inspectors: Melissa Miller/Kevin Anderson - KGS			
II. Documentation and Records			
Item	Yes	No	Comments
Any related notices filed with Harvard, MA?		X	
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals or notices of intent found?		X	
III. Physical On-Site Inspection			
Item	Yes	No	Comments
Any evidence of development present in the area of the remedy?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?	X		
Any signs of increased exposure potential?		X	

Annual Land Use Control Plan Checklist for AOC 43G

IV. Interview			
Name of Interviewer: Laurie Ekes/KGS			
Name of Interviewee: Robert Simeone, BRAC Environmental Coordinator			
Position: BRAC Environmental Coordinator			
Contact Information: Email: robert.j.simeone.civ@mail.mil			
Interview Notes: November 6, 2017 - sent email to Bob Simeone with checklist. December 12, 2017 - Mr. Simeone responded that there were no changes to AOC43G in 2017.			
Item	Yes	No	Comments
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		
Are there any extraction wells at the property?		X	
Are there any proposed plans for property sale, future development, construction or demolition activities at the property?		X	
Are there any issues with site access for monitoring?		X	
V. Response Actions			
Item	Yes	No	Comments
Were violations of the LUCs present ?		X	
Are there Response Actions necessary based on the violations?		NA	
Are modifications/ terminations of LUC's necessary?		X	
Have Enforcement Actions been taken during this reporting period?		X	

If any response above are "Yes", please provide comments.

NA = Not applicable.

Annual Land Use Control Plan Checklist for AOC 57

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information	
Site Name/Location: AOC 57 Area 2 and Area 3 Harvard, MA	**Name/Affiliation:** Laurie Ekes/KGS
Remedy Includes: Long Term Monitoring, Institutional Controls, Wetlands protection	
Inspection: AOC 57 site was inspected in November 2017.	
Inspectors: Melissa Miller/Kevin Anderson - KGS	

II. Documentation and Records			
Item	Yes	No	Comments
Any related notices filed with Devens Enterprise Commission?		X	
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals or notices of intent found?		X	

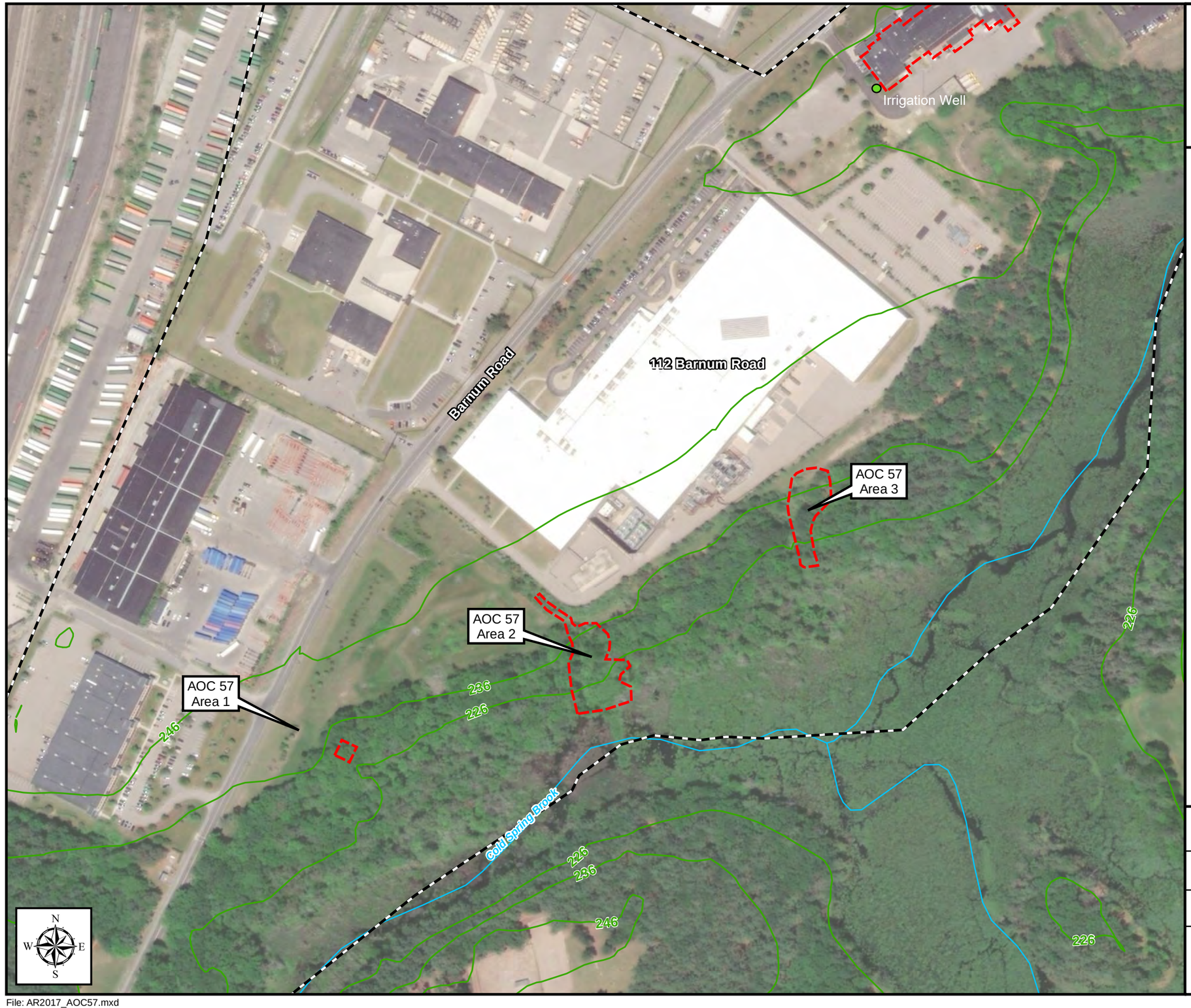
III. Physical On-Site Inspection			
Item	Yes	No	Comments
Any evidence of new construction or excavation present in the area of the remedy?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?	X		
Any signs of increased exposure potential?		X	

Annual Land Use Control Plan Checklist for AOC 57

IV. Interview			
Site Name/Location: AOC 57 Area 2 and Area 3 Harvard, MA			
Name of Interviewer: Laurie Ekes/KGS			
Name of Interviewee: Ron Ostrowski (MassDevelopment) and Neil Angus (Devens Enterprise Commission)			
Date/Location of Interview: 10/25/2017 Met with Ron and Neil at Mass Development, 33 Andrews Parkway, Devens, MA.			
Item	Yes	No	Comments
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		
Are there any extraction wells at the property?		X	An irrigation well (marked as non-potable water) was installed over a year ago adjacent to the property at 78 Barnam Road. This property is not with LUC boundaries of AOC57.
Are there any proposed plans for property sale, future development, construction or demolition activities at the property?		X	No footprint change to Nypro in 2017.
Are there any issues with site access for monitoring?		X	
V. Response Actions			
Item	Yes	No	Comments
Were violations of the LUCs present ?		X	
Are there Response Actions necessary based on the violations?		NA	
Are modifications/ terminations of LUC's necessary?		X	
Have Enforcement Actions been taken during this reporting period?		X	

If any response above are "Yes", please provide comments.
NA = Not applicable.

Figure E-1
Site Layout
Area of Contamination 57
Area 1, 2 & 3



Legend

- Former Fort Devens Boundary
- Area of Contamination (AOC)
- Stream
- Topographic Contour (Ft AMSL)

Note:
AOC 57 lies within the MassDEP Zone II Wellhead Protection Area.

Aerial Sources: Esri, DigitalGlobe,
GeoEye, i-cubed, USDA FSA, USGS, AEX,
Getmapping, Aerogrid, IGN, IGP,
swisstopo, and the GIS User Community

2017 Main Post Annual Report
AOC 57 - Area 1, 2 & 3

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 125 250
Feet

Date:
02/08/2019

Figure
E-1

KGS

File: AR2017_AOC57.mxd

Annual Land Use Control Plan Checklist for AOC 69W

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information			
Site Name/Location: AOC 69W		**Name/Affiliation**: Laurie Ekes/KGS	
Remedy Includes: Long Term Monitoring, Institutional Controls			
Inspection: AOC 69W site was inspected in November 2017.			
Inspectors: Melissa Miller/Kevin Anderson - KGS			
II. Documentation and Records			
Item	Yes	No	Comments
Any related notices filed with Devens Enterprise Commission?		X	
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals or notices of intent found?		X	
III. Physical On-Site Inspection			
Item	Yes	No	Comments
Any evidence of new penetrations or repaved cut marks present in the ESMA?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?	X		
Any signs of increased exposure potential?		X	

Annual Land Use Control Plan Checklist for AOC 69W

IV. Interview			
Name of Interviewer: Laurie Ekes			
Name of Interviewee: Ron Ostrowski (MassDevelopment) and Neil Angus (Devens Enterprise Commission)			
Date/Location of Interview: 10/25/2017 Met with Ron and Neil at Mass Development, 33 Andrews Parkway, Devens, MA .			
Item	Yes	No	Comments
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		
Are there any extraction wells at the property?		X	
Are there any proposed plans for property sale, future development, construction or demolition activities at the property?		X	
Any excavations, planned or emergency, that may have extended to soils below two feet in depth in ESMA?		X	
Are there any issues with site access for monitoring?		X	
V. Response Actions			
Item	Yes	No	Comments
Were violations of the LUCs present ?		X	
Are there Response Actions necessary based on the violations?		NA	
Are modifications/ terminations of LUC's necessary?		X	
Have Enforcement Actions been taken during this reporting period?		X	

Annual Land Use Control Plan Checklist for AOC 69W

IV. Interview			
Name of Interviewer: Laurie Ekes			
Name of Interviewee: Michelle McKenna			
Position: Business Manager, Francis W. Parker Charter Essential School			
Contact Information: Email: mmckenna@theparkerschool.org Phone: (978)772-3293			
Interview Notes: October 30, 2017 - Sent email to Ms. Mckenna with LUC questions. November 8, 2018 - Spoke to Ms. McKenna, she confirmed receipt of my email and stated that there are no issues with the site.			
Item	Yes	No	Comments
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		
Are there any extraction wells at the property?		X	
Are there any proposed plans for property sale, future development, construction or demolition activities at the property?		X	As noted in 2016, the roof of the school was replaced in 2017.
Any excavations, planned or emergency, that may have extended to soils below two feet in depth in ESMA?		X	
Are there any issues with site access for monitoring?		X	

ESMA = Excavated Soils Management Area

If any response above are "Yes", please provide comments.

NA = Not applicable.

Inspection Checklist for DCL Contributor Sites

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information

Site Name/Location: DCL Contributor Site AOC 9 Filter Bed Road, Ayer, MA	**Name/Affiliation:** Laurie Ekes/KGS
Remedy Includes: No further Action. The site was transferred from the Army to MassDevelopment in 2006 as defined in the Finding of Suitability to Transfer (FOST) dated February 2005. Inspections are conducted to verify no change in site conditions since remedial action completion in 2002.	
Use Restrictions: AOC 9 (Lease parcel A2A) is limited to commercial and industrial uses.	
Inspection/Date: January 29, 2018	
Inspectors: Kevin Anderson	

II. Documentation and Records

January 30, 2018 - Spoke with Ron Ostrowski for response to questions below.

Item	Yes	No	Comments
Any related notices filed with Devens Enterprise Commission?		X	No activity at AOC9.
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals or notices of intent found?		X	

III. Physical On-Site Inspection

Item	Yes	No	Comments
Any evidence of new construction or excavation present in the area of the remedy?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		NA	
Is there sufficient access to the site for monitoring?		X	No monitoring is performed at AOC A9.
Any signs of increased exposure potential?		X	

NA - Not Applicable.

Inspection Checklist for DCL Contributor Sites

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information

Site Name/Location: DCL Contributor Site AOC 40 Patton Road, Ayer, MA	**Name/Affiliation:** Laurie Ekes/KGS
Remedy Includes: No further Action. The site was transferred from the Army to MassDevelopment in 2006 as defined in the Finding of Suitability to Transfer (FOST) dated February 2005. Inspections are conducted to verify no change in site conditions since remedial action completion in 2002.	
Use Restrictions: AOC 40 (Lease parcel A4) is limited to open space and recreational uses.	
Inspection/Date: January 29, 2018	
Inspectors: Kevin Anderson	

II. Documentation and Records

January 30, 2018 - Spoke with Ron Ostrowski for response to questions below.

Item	Yes	No	Comments
Any related notices filed with Devens Enterprise Commission?		X	No activity at AOC40.
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals or notices of intent found?		X	

III. Physical On-Site Inspection

Item	Yes	No	Comments
Any evidence of new construction or excavation present in the area of the remedy?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		NA	
Is there sufficient access to the site for monitoring?		X	No monitoring is performed at AOC 40.
Any signs of increased exposure potential?		X	

NA - Not Applicable.

Inspection Checklist for DCL Contributor Sites

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information

Site Name/Location: DCL Contributor Site SA13 Lake George Street, Harvard, MA	**Name/Affiliation:** Laurie Ekes/KGS
Remedy Includes: No further Action. The site was transferred from the Army to MassDevelopment in 2006 as defined in the Finding of Suitability to Transfer (FOST) dated February 2005. Inspections are conducted to verify no change in site conditions since remedial action completion in 2001.	
Use Restrictions: SA13 (Lease parcel A8) is limited to commercial and industrial uses.	
Inspection/Date: January 29, 2018	
Inspectors: Kevin Anderson	

II. Documentation and Records

January 30, 2018 - Spoke with Ron Ostrowski for response to questions below.

Item	Yes	No	Comments
Any related notices filed with Devens Enterprise Commission?		X	No activity at SA13.
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals or notices of intent found?		X	

III. Physical On-Site Inspection

Item	Yes	No	Comments
Any evidence of new construction or excavation present in the area of the remedy?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		NA	
Is there sufficient access to the site for monitoring?		X	No monitoring is performed at SA13.
Any signs of increased exposure potential?		X	

NA - Not Applicable.

Annual Land Use Control Plan Checklist for DCL

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information			
Site Name/Location: DCL; Harvard, MA		Name/Affiliation: Laurie Ekes/KGS	
Remedy Includes: Long Term Monitoring, Institutional Controls			
Inspection: November 6, 2017 during landfill mowing			
Inspectors: Melissa Miller/KGS			
II. Documentation and Records			
Item	Yes	No	Comments
Any related notices filed with Devens Enterprise Commission?		X	
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals or notices of intent found?		X	
III. Physical On-Site Inspection			
The landfill was mowed on 11/6/2017 with over sight by KGS field personnel. KGS observations are noted below.			
Item	Yes	No	Comments
Any evidence of development present in the area of the remedy?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?	X		The access gate was absent.
Any signs of increased exposure potential?		X	

IV. Interview			
Name of Interviewer: Laurie Ekes			
Name of Interviewee: Ron Ostrowski (MassDevelopment) and Neil Angus (Devens Enterprise Commission)			
Date/Location of Interview: 10/25/2017 Met with Ron and Neil at Mass Development, 33 Andrews Parkway, Devens, MA .			
Item	Yes	No	Comments
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		
Are there any extraction wells at the property?		X	
Are there any proposed plans for property sale, future development, construction or demolition activities at the property?		X	The adjacent building construction was completed in early 2017. The sidewalk at the front entrance to the Landfill has been regraded by developer. Ron O and Neil Angus were aware of the activity.
Are there any issues with site access for monitoring?		X	DCL well LFM-07-03 was covered by construction in 2016; the well was dug up and uncovered in July 2017 and the Spring 2017 sampling event occurred in August 2017.
V. Response Actions			
Item	Yes	No	Comments
Were violations of the LUCs present ?		X	
Are there Response Actions necessary based on the violations?		NA	
Are modifications/terminations of LUC's necessary?		X	
Have Enforcement Actions been taken during this reporting period?		X	

If any response above are "Yes", please provide comments.
NA = Not applicable

Annual Land Use Control Plan Checklist for Grant Housing Area

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information	
Site Name/Location: Grant Housing Area	Name/Affiliation: Laurie Ekes/KGS
Remedy Includes: Land Use Controls, Institutional Controls	

II. Documentation and Records			
Item	Yes	No	Comments
Any related notices filed with Devens Enterprise Commission?		X	
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals or notices of intent found?		X	

III. Physical On-Site Inspection			
Inspectors: Melissa Miller, Frank Henderson - KGS			
Item	Yes	No	Comments
Any evidence of new construction or excavation present in the area of the remedy?		X	No new construction within designated 37mm impact area to the north of the former Oak and Maple housing area.
Is there evidence of damage to the remedy?		NA	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?		NA	Not applicable. Sampling is not conducted in this area.
Any signs of increased exposure potential?		X	

Annual Land Use Control Plan Checklist for Grant Housing Area

IV. Interview			
Name of Interviewer: Laurie Ekes/KGS			
Name of Interviewee: Neil Angus (978) 772-8831 x3334			
Position: Environmental Planner; Devens Enterprise Commission			
Date/Location of Interview: 10/25/2017 Met with Neil at Mass Development, 33 Andrews Parkway, Devens, MA .			
Item	Yes	No	Comments
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		The Grant Housing Area continues to be developed in accordance with the LUCIP. Phase 1 of the Emerson Green development is complete.
Are there any extraction wells at the property?		X	
Are there any proposed plans for property sale, future development, construction or demolition activities at the property?	X		Phase 2 of the Emerson Green development is scheduled to start in 2018.
Are there any issues with site access for monitoring?		NA	Sampling is not conducted in this AOC.
V. Response Actions			
Item	Yes	No	Comments
Were violations of the LUCs present ?		X	
Are there Response Actions necessary based on the violations?		X	
Are modifications/ terminations of LUC's necessary?		X	
Have Enforcement Actions been taken during this reporting period?		X	

If any response above are "Yes", please provide comments.
NA = Not applicable.

Grant HA and Impact Area Annual Review Checklist		
check√	*task*	*notes*
X	Interview of municipal personnel as to the discovery, reporting and disposal of UXO	Name(s) and title(s) of person(s) interviewed: Ron Ostrowski (978) 784-2936 Chief Joseph LeBlanc (978) 772-4600 Date(s) of interview: October 25, 2017 - Met with Ron O. Confirmed that Fire Chief LeBlanc conducts UXO training with new personnel. Any UXO discovered? **X No** □ Yes. (if "yes", provide detail regarding objects discovered, dates and locations of discovery and information regarding reporting and disposal)
Impact Area only		
check√	*task*	*notes*
X	Physical Inspection	Date conducted: September 28, 2017 Inspections: Melissa Miller, Frank Henderson - KGS **Condition of fencing, signage and vegetation:** A UXO sweep of the 37mm impact area was performed. A Schonstedt XT Metal Detector was used to sweep the Impact Area for potential MEC items. Four possible buried items were identified. No exposed UXO were observed in surface areas. Two animal holes under the fence were also noted. Signage was clearly visible and present all along the perimeter of the Impact Area fence line. Evidence of unauthorized access? **X No.** Yes. (if "yes", describe): Any surface or near surface UXO? **X No.** No exposed items were observed on or near surface. □ Yes. (if "yes", provide detail regarding objects discovered, dates and locations of discovery and information regarding reporting and disposal)
X	Interview current owner regarding utility repair or emergency work	Name(s) and title(s) of person(s)interviewed: Not applicable. No utility work being done in the 37-mm Impact Area. Date of interview: NA Work conducted: **None** □ Yes. (if "yes", provide detail information of the work including the date(s) of performance and the discovery of UXO)

Grant HA only		
check√	*task*	*notes*
X	Verify existence of website and content	Spoke to Ron Ostrowski and Neil Angus. Website is **www.devensec.com/planning-docs**. The Soil Management Plan and UXO information pamphlet (utility insert) are available on the website. They stated that these documents are provided to all incoming contractors.
X	Verify the inclusion of required utility bill inserts	Spoke to Cathy O'Connor (978) 784-2933 on 2/1/2018. Ms. O'Connor confirmed that informational inserts are included in first time utility bills of new residents and re-sent every year. A copy of the UXO utility bill letter and insert is included as Attachment 1.
X	Verify posting of utility bill insert in a conspicuous location	Spoke to Ron Ostrowski and Neil Angus. As noted above, information is available on the Website (www.devensec.com). Warning signs are posted near construction sites.
X	Verify distribution of current soils management policy to construction	Spoke to Ron Ostrowski and Neil Angus. As noted above, information is available on the Website (www.devensec.com). Pre-construction meetings are held prior where contractors are presented with the soils management policy. All workers must attend a UXO training conducted by Chief LeBlanc.
X	Verify that awareness training is being conducted	(1) Did ground intrusive construction activities occur during the reporting period in the Grant HA? **No** (2) At the time of application for the building permit, were contractors who were applying to conduct ground intrusive construction activities in the Grant HA provided a current copy of the Devens Soil Management Policy? **Yes, contractors attend preconstruction meetings and are presented copied of relevant plans. The info is also available on the website, as noted above.** (3) Were all contractors who applied for a building permit required to attend UXO awareness training prior to commencing ground intrusive construction activities? **Yes**
X	Verify that supplemental deed notice has been included in deeds conveying portions of the Grant HA	The development along Grant Road under construction in 2016 has been completed and individual deeds have been transferred to new owners as the units have been sold. The developer, Dan Gainsboro, is responsible for supplying the deed notice to new homeowners. Phase 2 of the project is starting and a home owners association has been formed. A copy of the deed that is included in the home sales agreement is attached. (Attachment 2).
X	Physical Inspection (to be conducted only if deemed necessary)	**X No.** A physical inspection of the Grant Housing Area development was not necessary. See Impact Area inspection notes. □ Yes. (if "yes", provide date of inspection, the areas that were inspected and whether any surface or near surface UXO were discovered)

Feb 10 , 2016

Dear Devens Residents:

This informational fact sheet is presented to you as a reminder of the unexploded Ordnance (UXO) history, here at Devens. The fact sheet will provide you a brief but comprehensive time line of the studies and work accomplished in identifying and removing UXO from Devens property.

All residents in the Grant Road Housing area will receive this notice in their first utility bill and yearly thereafter. This is part of the educational program on UXO as required by the Army's Land Use Control Implementation Plan (LUCIP) and supported by the EPA and DEP.

If you have any questions or comments on this program, please feel free to call me at 978-784-2936 for further information.

Sincerely,

Thatcher W. Kezer III
Senior Vice President, Devens

IMPORTANT INFORMATION ABOUT UNEXPLODED ORDNANCE (UXO)
FOR DEVENS RESIDENTS, EMPLOYEES, AND VISITORS

Devens is located on land once owned by the U.S. Army. For nearly 80 years from World War I until 1996, Devens' 4,400 acres were used for housing, research, education, administration, and military training purposes.

What parts of Devens were used for military training?
The Army used a 130-acre parcel called the Grant Road Housing Area for a firing range (including a firing point) and the adjacent Oak/Maple Housing areas (32 acres) principally for 37-millimeter anti-tank shells between World War I and World War II. A firing point is an area from which Army personnel fired artillery and other weapons at a target for training purposes. A firing range is the area between the firing point and the target. The Army stopped using the firing range in the 1930s. From the 1960s until the base closed in 1996, the area was occupied by approximately 260 homes for military families.

Where was the firing range?
The firing point was located at the northern end of the Grant Road Housing Area. Targets were located in an "impact area" on the northern slope of Oak Hill that is now surrounded by a fence.

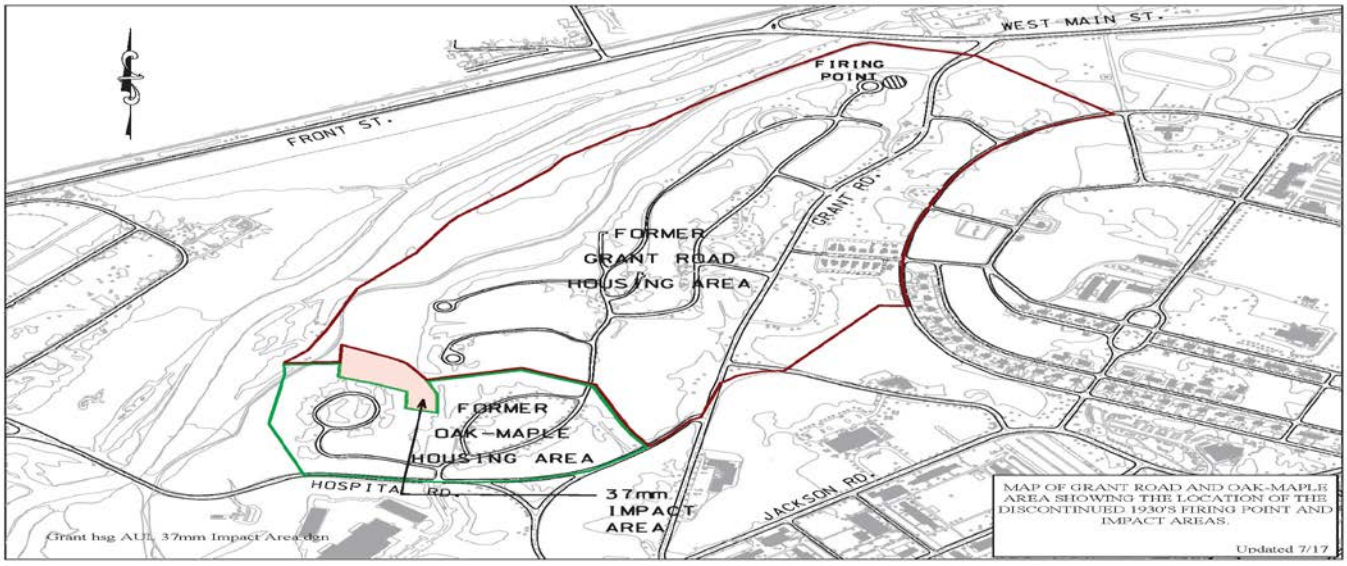


Figure 1. Map of Grant Road and Oak/Maple Housing Areas showing the location of the discontinued 1930's firing range impact area relative to now-demolished 1960's era military housing.

Was UXO found and removed?
In 1995 and 1996, as the base prepared to close, Army performed a munitions response investigation and subsequent removal action at portions of the Grant and Oak Housing Areas. Significant amounts of unexploded ordnance (UXO) and UXO scrap were found on the Oak Housing Area hillside (i.e. 37-mm Impact Area), located to the southwest of the Grant HA. In 2004 and 2005, the Army conducted a Preliminary Assessment/Site Inspection (PA/SI) and Supplemental Site Investigation (SSI) within the Grant HA and 37-mm Impact Area to assess whether military activities resulted in the release of munitions-related chemicals to soil and groundwater. Although no chemicals potentially related to UXO (i.e. munitions constituents) were detected, the 2008 PA/SI/SSI Report recommended that response alternatives involving land-use controls (LUCs) be considered for the 37-mm Impact Area and portions of the Grant HA to reduce explosive safety hazards and that a Munitions and Explosives of Concern (MEC) investigation be performed at the former Oak and Maple HAs to characterize potential MEC safety hazards and determine if additional removals and/or LUCs are warranted within these areas.

In 2006, to address concerns regarding potential remnant UXO within the 37-mm Impact Area and Grant HA, Mass Development issued results of a digital and analog ("mag, flag, and dig") geophysical survey and removal action conducted throughout the entire Grant Housing Area (HA) (former 37-mm artillery range) and northern portions of Oak and Maple HAs (located within the 37-mm firing fan/impact area). In total, an additional 31 UXO items and 17 other ordnance items were located and removed.

In 2010/2011, per recommendations detailed in the 2008 PA/SI/SSI Report, a MEC investigation was conducted at the former Oak and Maple HAs. Similar to the geophysical techniques utilized in 2006, a combination of digital and analog

methods were deployed to evaluate a portion (14 of 37 acres) of the former Oak and Maple HA property thought to have the greatest likelihood of MEC discovery. Although munitions debris (MD) was found scattered across several areas within both HAs, of the 3,647 anomalies investigated only 1 MEC item was found. The investigation concluded that the probability of encountering MEC within the previously developed former Oak and Maple HAs is considered to be low. In 2016, an additional 10 (100' X 100') grids and 13 concrete building slab footprints within the former Oak HA were surveyed using an analog, hand-held instrument. No MEC was recovered during this investigation.

Do I need to be concerned about unexploded shells or other ordnance?
UXO could remain in the housing and impact areas. However, the Army and MassDevelopment have taken all steps recommended by the U.S. Environmental Protection Agency (EPA) with the review and comment of the Massachusetts Department of Environmental Protection (DEP) to identify and remove UXO from the housing and impact areas. The Army and EPA, with the review and comment of DEP, concluded that (a) all identified UXO in the top 18 inches of the surface have been removed and (b) the presence of UXO deeper than 18 inches is unlikely given the primary type of UXO found—37-millimeter shells—the angle of penetration, soil conditions, and decades of frost heaves. Since technology cannot guarantee complete detection, the possibility remains of additional finds of UXO that could pose explosive safety hazards.

What does UXO look like and what should I do if I suspect I have found it?
UXO may appear as corroded bullets, shells of various sizes, or grenades. Below are pictures of UXO that might be found in Devens.





Figures 2 and 3. Pictured above is (at left) an intact 37mm anti-tank shell and (at right) a hand grenade. Both are shown with a standard 12-ounce beverage can.

The Department of Defense recommends that everyone—including children, family members, and landscapers—learn the three R's of UXO safety: recognize, retreat, and report.

• **RECOGNIZE** – When you may have encountered UXO.
• **RETREAT –** Do not touch, disturb, or move the UXO. Leave the area.
• **REPORT –** Call Devens Emergency Dispatch Center at (978) 772-7200 and report what you saw and where you saw it.

If you are conducting any activity that requires a building permit, call:
• Devens Enterprise Commission: (978) 772-8831

Awareness Briefings:
The Devens Fire Department conducts awareness briefings for contractors and other construction and utility personnel who intend to conduct ground-intrusive activities (such as digging) in Devens. These briefings instruct personnel on the steps both to recognize UXO and to follow should suspect UXO be encountered. Devens residents are also invited to attend an awareness briefing. To receive an awareness briefing, contact the Devens Fire Department at (978) 772-4600.

Where can I get more information?
For information on UXO and UXO removal, call:
• Devens Fire Department: (978) 772-4600
• MassDevelopment: (978) 784-2900

For additional information on the land use controls and implementation plan as well as the Devens Soil Management Policy and its related regulations, visit the Devens Enterprise Commission website at www.devensec.com or call the Devens Enterprise Commission at (978) 772-8831.

Worcester District Registry of Deeds - 20/20 Perfect Vision i2 Document Detail Report

Current datetime: 8/31/2017 4:06:41 PM

Doc#	Document Type	Town	Book/Page	File Date	Consideration
9575	DEED		56664/281	01/26/2017	513345.00

Property-Street Address and/or Description

21 CHANCE ST

Grantors

DEVENS VILLAGE GREEN LLC

Grantees

References-Book/Pg Description Recorded Year

Registered Land Certificate(s)-Cert# Book/Pg

Worcester South District Registry of Deeds
Electronically Recorded Document

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Recording Information

Document Number	: 9575
Document Type	: DEED
Recorded Date	: January 26, 2017
Recorded Time	: 02:28:28 PM
Recorded Book and Page	: 56664 / 281
Number of Pages(including cover sheet)	: 10
Receipt Number	: 982358
Recording Fee (including excise)	: $2,466.56

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MASSACHUSETTS EXCISE TAX
Worcester District ROD #20 001
Date: 01/26/2017 02:28 PM
Ctrl# 164407 21760 Doc# 00009575
Fee: $2,341.56 Cons: $513,345.00
****

Worcester South District Registry of Deeds
Anthony J. Vigliotti, Register
90 Front St
Worcester, MA 01608
(508) 798-7717

RECORD AND RETURN TO:	

~ Recording Information Area ~

QUITCLAIM DEED

Devens Village Green, LLC ("Grantor"), a Massachusetts limited liability company having its business address of 43 Bradford Street, Concord, Massachusetts 01742

For consideration paid of **FIVE HUNDRED THIRTEEN THOUSAND THREE HUNDRED FORTY-FIVE 00/100 ($513,345.00) Dollars** grants to (name removed)

with QUITCLAIM COVENANTS

the parcel of land with the buildings thereon located in the Devens Regional Enterprise Zone ("Devens"), Town of Harvard, Worcester County, Commonwealth of Massachusetts (the "Parcel") and more particularly described as follows:

Lot 17 as shown on a plan entitled: "Phase I Level One Lotting Plan, Subdividing Lot GR-1, Grant Road, Harvard (Devens), MA, Prepared For: Devens Village Green, LLC, Prepared by: Places Associates, Inc., 256 Great Road, Acton, MA 01460; Dated: November 6, 2015, Scale: 1" = 50'; recorded with Worcester Registry of Deeds in Plan Book 917, as Plan 28 (the "Lotting Plan"). The Parcel is also described as Assessor's Parcel **024.0-0006-0403.0**.

Said Parcel contains **6,272** square feet of land, more or less, according to said Plan.

The Parcel is conveyed subject to all matters depicted on the Plan.

The Parcel is conveyed subject to and with the benefit of all rights, easements, restrictions, obligations (and in particular the obligation to make payment of common area assessments) as set forth in the DECLARATION OF COVENANTS, CONDITIONS, AND RESTRICTIONS of EMERSON GREEN dated August 15, 2016 and recorded with said Deeds in Book 55809, Page 163 ("Declaration") (and as the Declaration may be amended from time to time) and in the bylaws and rules and regulations (as they may be amended from time to time) as

Property Address: 21 Chance Street, Harvard, (Devens), MA

set forth in the EMERSON GREEN HOMEOWNERS ASSOCIATION TRUST u/d/t dated August 15, 2016 and recorded with said Deeds in Book 55809, Page 163.

Subject to the obligation of Grantee, its successors and assigns, to consent to the extension of said Declaration of Covenants of Emerson Green in accordance with M.G.L. ch 184, s.28 when required and/or prudent to do so, to provide that the Declaration of Covenants shall continue in perpetuity or until such time as the Declaration is terminated pursuant to the terms set forth in the Declaration and not by operation of law. Said obligation to consent shall run with the land.

The Parcel is also conveyed subject to and with the benefit of easements, restrictions, rights and encumbrances of record and shown on said Plan, in particular the utility and access easements and the right, together with others, to use the "Lanes" as shown on said Plan and subject to the 5'Access Easement as depicted on the Lotting Plan and the requirement to maintain such 5' Access Easement free of any vehicle, personal property or other obstruction so as to permit unfettered ingress and egress through the Private Alleys.

For title see Deed of the Massachusetts Development Finance Agency dated December 8, 2015 and recorded with said Deeds in Book 54672, Page 167.

Executed under seal this 26th day of January, 2017.

DEVENS VILLAGE GREEN LLC, BY ITS MANAGER,
NAU PARTNERS LLC

By: _____
Daniel J. Gainsboro, Managing Member

By: _____
Robert Easton, Managing Member

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 26th day of January, 2017, before me, the undersigned notary public, personally appeared Daniel J. Gainsboro and Robert Easton as managing members of NAU Partners, LLC the manager of Devens Village Green LLC, proved to me through satisfactory evidence of identification, which was a Massachusetts driver's license, to be the person whose name is signed on the preceding document, and acknowledged to me that they signed it as the free act and deed of NAU Partners, LLC and Devens Village Green LLC.

PHILIP B. POSNER MY COMMISSION EXPIRES 10-30-2020 NOTARY PUBLIC COMMONWEALTH OF MASSACHUSETTS

_____ Notary Public
My Commission Expires:

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 26th day of January, 2017, before me, the undersigned notary public, personally appeared Daniel J. Gainsboro and Robert Easton as managing members of NAU Partners, LLC the manager of Devens Village Green LLC, proved to me through satisfactory evidence of identification, which was a Massachusetts driver's license, to be the person whose name is signed on the preceding document, and acknowledged to me that they signed it as the free act and deed of NAU Partners LLC and Devens Village Green LLC.

PHILIP B. POSNER MY COMMISSION EXPIRES 10-30-2020 NOTARY PUBLIC COMMONWEALTH OF MASSACHUSETTS

_____ Notary Public
My Commission Expires:

ACCEPTANCE: The Grantee does hereby accept and approve this Quitclaim Deed and agrees to all of the terms and conditions thereof as of the 26 day of Jan, 2017.

GRANTEE

Brian James Callaghan:

Vanessa Ramirez Callaghan: Vanessa Ramirez Callaghan

COMMONWEALTH OF MASSACHUSETTS

Worcester County, ss.

On this 26 day of Jan, 2017, before me, the undersigned notary public, personally appeared Brian James Callaghan and Vanessa Ramirez Callaghan proved to me through satisfactory evidence of identification, which was Mass. DL, to be the person whose name is signed on the preceding and acknowledged to me that he/she/they signed it voluntarily for its stated purpose.

Notary Public Michael Robbins
My commission expires: 11-30-2023

MICHAEL A. B. ROBBINS
Notary Public, Commonwealth of Massachusetts
My Commission Expires 11-30-2023

Exhibit A

SUPPLEMENTAL DEED NOTICE OF
POTENTIAL PRESENCE OF UNEXPLODED ORDNANCE

Grantor hereby gives notice that (i) the Parcel (or a portion thereof) is within the Grant Housing Area (as described below), and (ii) for a short period of time between World War I and World War II, the Parcel was used by the Army for training, including the use of military munitions, and from the early 1960s until the closure of Fort Devens in March 1996, the Parcel was used for military housing purposes. The Parcel is or was held by MassDevelopment pursuant to two deeds: (a) the 1996 Army Deed and (b) a deed, that included "Parcel A.21" inclusive of the former Oak Housing Area, a portion of the former Grant Housing Area and the 37mm Impact Area, in favor of MassDevelopment dated February 11, 2003 and recorded with the Registry of Deeds in Book 29378, Page 064 (the "2003 Army Deed," and, together with the 1996 Army Deed, the "Army Deeds"). Prior to conveyance of the Parcel, the Army performed removal actions of unexploded ordnance ("UXO") from the Parcel as described in the 1996 report by Human Factors Applications, Inc. ("HFA Report") Section XVII of the 1996 Army Deed and Section XI of the 2003 Army Deed provide a standard UXO notice indicating that, as a result of historic operations of the Parcel as an active military installation, there exists a possibility that UXO may exist on the Parcel, but that based on a comprehensive records search and statistical and physical testing of areas of the Parcel, the Army does not believe that UXO is present on the Parcel.

Following the conveyance of the Parcel to MassDevelopment and in preparation for the development of portions of the Parcel (including the Grant Housing Area) for new residential construction, the removal actions described in the HFA Report were determined to be incomplete and additional removal actions were determined to be necessary. Thereafter, the EPA, with the review and comment of the Massachusetts Department of Environmental Protection ("DEP"), oversaw an investigation of the Parcel to identify and address an array of possible contaminants, including UXO and other munitions and explosives of concern (MEC), at the Parcel. In March 2003, the Army initiated a Preliminary Assessment/Site Investigation ("PA/SI") and a subsequent Supplemental Site Investigation ("SSI") on portions of the Parcel (including the former Grant Housing Area) to address these contaminants. However, before the final PA/SI/SSI was completed, in order to accelerate the redevelopment of the Parcel for residential use, MassDevelopment voluntarily contracted with a private company to investigate and, as necessary, remediate UXO and other MEC at the Parcel. MassDevelopment's contractor performed digital geophysical mapping and UXO removal at the Parcel, reviewed the reports, studies, maps, and other materials generated by the Army and/or its contractors with respect to UXO and other MEC at the Parcel, and conducted extensive field investigations and removal actions to remove residual UXO and MEC from the Parcel. Details and conclusions from those investigations and removal actions are contained in the report prepared for MassDevelopment (Ordnance & Explosives Remediation, Inc. 2006).

Following the completion of MassDevelopment's investigations and removal actions, the Army completed the PA/SI/SSI. The final PA/SI/SSI recommended that land use controls be evaluated and implemented on the Parcel to address the potential for residual MEC. As a result of these recommendations, the Army prepared a Focused Feasibility Study ("FFS") to evaluate

the remedial alternatives to protect the public, including residents and workers, from any potential UXO and other MEC on the Parcel in light of the previous investigations and removal actions. Copies of the report detailing MassDevelopment's investigations and removal actions, the PA/SI/SSI and the FFS are available for review at the New England regional office of the EPA (5 Post Office Square, Boston), the Army (BRAC Division-Devens), the DEP (One Winter Street, Boston), the public libraries for the Town of Ayer, Massachusetts, the Town of Harvard, Massachusetts, and the Town of Shirley, Massachusetts.

The various alternatives that were evaluated by the EPA and the Army, and the selected remedy, are described in the Record of Decision dated September 2009 ("ROD"), a copy of which is available for review at the New England regional office of the EPA (5 Post Office Square, Boston), the Army (BRAC Division-Devens), the DEP (One Winter Street, Boston), the public libraries for the Town of Ayer, Massachusetts, the Town of Harvard, Massachusetts, and the Town of Shirley, Massachusetts. The ROD reached the following conclusions: (a) the investigation and removal actions have occurred using the best available technology; (b) while not 100% conclusive, these efforts have removed all identified UXO from the top 18 inches of soil throughout the Grant Housing Area and the Impact Area and to greater depths within the Impact Area; (c) UXO in the Grant Housing Area is unlikely at depths greater than 18 inches due to the angle of penetration of projectiles into the ground surface along the range, the effect of local soil composition (i.e., sand and gravel deposits) on limiting penetration depths, and up to 90 years for frost heaves to have brought items to the surface; (d) UXO in the Impact Area may be buried at depths deeper than the frost line, but that any potential associated with frost heaves bringing UXO to the surface is considered minimal; (e) the probability of encountering UXO in the Grant Housing Area is low; (f) although there remains a risk of exposure to remnant UXO with an explosive safety hazard, the remaining hazard of encountering UXO in the Grant Housing Area or the Impact Area would be primarily associated with construction work during future development (e.g., utility or foundation installation or other deeper excavation activities); and (g) the implementation of Land Use Controls ("LUCs") is the appropriate remedy to provide additional protection to residents and workers in the event that they encounter UXO at the Parcel. The LUCs for Grant Housing Area portion of the Parcel require the insertion of this Supplemental Deed Notice in subsequent deeds conveying ownership interests in this portion of the Parcel, and distribution of educational materials to inform the property owners, residents, and construction workers and utility workers conducting ground intrusive activities on the Grant Housing Area portion of the Parcel of the potential presence of UXO, how to identify UXO, and what actions to take if suspect UXO is encountered. The LUCs are more fully described in the Land Use Control Implementation Plan, a copy of which is available for review at the New England regional office of the EPA (5 Post Office Square, Boston), the Army (BRAC Division-Devens), the DEP (One Winter Street, Boston), the public libraries for the Town of Ayer, Massachusetts, the Town of Harvard, Massachusetts, and the Town of Shirley, Massachusetts. The ROD further concludes that, subject to compliance with the LUCs, the Grant Housing Area portion of the Parcel is suitable for unrestricted future use, including use for residential purposes.

However, should suspect UXO or other MEC be encountered at the Parcel, the Army has certain obligations to take necessary remedial action pursuant to Section 120(h) of CERCLA, Section VII of the 1996 Army Deed and Section I of the 2003 Army Deed. Section VII of the 1996 Army Deed and Section II of the 2003 Army Deed reserve for the Army a right of access to the Parcel if needed to fulfill these obligations. The ROD confirms the Army's commitment

with respect to MEC and UXO, including the obligations to conduct actions required by CERCLA and the Army Deeds.

This section of this Deed contains important factual and legal information. It shall be referenced in any subsequent deed conveying ownership interests in all or part of the Parcel.

The reports listed in Exhibit B-1 of this Deed are available for review at the New England regional office of the EPA (5 Post Office Square, Boston), the Army (BRAC Division-Devens), the DEP (One Winter Street, Boston), the public libraries for the Town of Ayer, Massachusetts and the Town of Harvard, Massachusetts.

All capitalized terms that are not defined herein shall have the meanings set forth in the Deed to which this exhibit is attached and which this exhibit is a part.

EXHIBIT A-1

REPORTS

Army, 1996. EPA Federal Facilities Agreement. 26 March.

Army, 2001. MassDevelopment Environmental Services Cooperative Agreement. September.

Human Factors Applications, Inc. 1996. Final Removal Action Report, Ordnance, Ammunition and Explosives Removal Action, Devens RFTA, Ft. Devens, Massachusetts. October 1996.

MassDevelopment, 1997. Final Zone II Plan. MassDevelopment, Devens Commerce Center 16 September.

Nobis Engineering, Inc. 2005. 2005 Five-Year Review Report, Volume I & II, Former Fort Devens, Devens, Massachusetts, prepared for U.S. Army Corp of Engineers, September 2005. URL http://www.epa.gov/regionl/superfund/sites/devens/237422.pdf

Ordnance & Explosives Remediation, Inc. 2006. Site Specific Final Report Digital Geophysical Mapping (DGM) & Unexploded Ordnance (UXO) Removal, Grant Housing Area, Former Ft. Devens, Harvard, Worcester, Massachusetts. 22 March.

USACE, St. Louis District, 1995a. U.S. Department of Defense BRAC, Ordnance, Ammunition and Explosives-Archives Search Report Findings, Fort Devens. May.

USACE, St. Louis District, 1995b. U.S. Department of Defense BRAC, Ordnance, Ammunition and Explosives-Archives Search Report Conclusions and Recommendations, Fort Devens. May.

USACE, St. Louis District, 1995c. U.S. Department of Defense BRAC, Ordnance, Ammunitions and Explosives-Archives Search Report Maps, Fort Devens. May.

USACE, 2006. New England District, Final Expanded Conceptual Site Model Report. June.

USACE, New England District, 2007. Performance Work Statement for Completion of CERCLA Documents Related to Munitions and Explosives of Concern at Oak and Maple Housing Areas, Devens, MA. Revised 11 May.

WESTON, 2004. Draft Final Explosives, Lead, and Perchlorate - Conceptual Site Model Investigation Areas- Grant, Locust, and Cavite Housing Areas, Former Fort Devens, Devens, Massachusetts. December.

WESTON, 2008a. Final Focused Feasibility Study, Grant Housing Area and 37MM impact Area Former Fort Devens Anny Installation, Devens, Massachusetts. April.

WESTON, 2008b. Proposed Plan, Grant Housing Area and 37MM Impact Area Former Fort Devens Army Installation, Devens, Massachusetts. September.

WESTON, 2008c. Final Preliminary Assessment Site Inspection/Supplemental, Site Investigation Comprehensive Report. October.

WESTON, 2009. Final Release Abatement Measure Completion Report/Partial Response Action outcome Statement- Grant Housing Area. June.

WESTON, 2009. Record of Decision, Grant Housing Area and 37-mm Impact Area Former Fort Devens Army Installation, Devens, Massachusetts. September.

ATTEST: WORC Anthony J. Vigliotti, Register

Former Oak and Maple HA Property		
The remedy for the Oak and Maple Housing Area was incorporated into the Grant HA and Impact Area site via a 2014 Explanation of Differences (ESD). The remedy included LUC interviews. Oak and Maple HA is zoned for commercial construction.		
check√	*task*	*notes*
X	Interview of municipal personnel as to the discovery, reporting and disposal of UXO	Name(s) and title(s) of person(s) interviewed: Ron Ostrowski/Environmental Services - MassDevelopment Phone: (978) 784-2936 Neil Angus/Environmental Planner - Devens Enterprise Commission Phone: (978) 772-8831 X3334 Date(s) of interview: October 25, 2017 An Oak and Maple Land Use Control Implementation Plan (LUCIP) addendum is being prepared and is currently under review. The Oak and Maple LUCIP addendum should be finalized in 2018. Any UXO discovered? **X No** □ Yes. (if "yes", provide detail regarding objects discovered, dates and locations of discovery and information regarding reporting and disposal)
X	Verify existence of website and content	Website is www.devensec.com/planning-docs.
X	Verify the inclusion of required utility bill inserts	NA
X	Verify posting of utility bill insert in a conspicuous location	NA
X	Verify distribution of current soils management policy to construction	NA
X	Verify that awareness training is being conducted	(1) Did ground intrusive construction activities occur during the reporting period? **No - There has been no construction activity in the Oak and Maple Housing Area property in 2017.** (2) At the time of application for the building permit, were contractors who were applying to conduct ground intrusive construction activities in provided a current copy of the Devens Soil Management Policy? **NA** (3) Were all contractors who applied for a building permit required to attend UXO awareness training prior to commencing ground intrusive construction activities? **NA**
X	Verify that deed notice has been included in deeds conveying portions of the Oak and Maple HA	NA
X	Physical Inspection (Required for Oak and Maple HAs)	**X No.** □ Yes. (if "yes", describe)
X	Physical Inspection	Were intrusive activities undertaken in Former Oak and Maple Areas? **X No.** □ Yes. (if "yes", describe) If intrusive activities were conducted, were they conducted with MEC construction support in accordance with the LUCIP? **NA** □ No. □ Yes. (if "yes", describe)

NA = Not Applicable

APPENDIX F

DEVENS CONSOLIDATION LANDFILL INSPECTION DOCUMENTATION

USACE GEOTECHNICAL ENGINEERING INSPECTION REPORT

US Army Corps
of Engineers®
New England District

GEOTECHNICAL ENGINEERING ANNUAL INSPECTION REPORT 2017

DEVENS CONSOLIDATION LANDFILL
FORMER FORT DEVENS
DEVENS, MASSACHUSETTS

15 & 17 November 2017

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1.0 INTRODUCTION

The Resource Conservation and Recovery Act (RCRA) (Subtitle C) Devens Consolidation Landfill (DCL) cap was constructed to eliminate the potential risk to human health and the environment associated with exposure to wastes; minimize off-site migration of contaminants; and limit infiltration to the underlying waste within the landfill area, thereby minimizing leachate generation. The RCRA cap consists of the following layers (working from the waste to the top of the cap): 12-inch thick subgrade/leveling layer immediately above the waste materials; geocomposite gas collection/vent layer; 40 mil very flexible polyethylene (VFPE) geomembrane; geocomposite drainage layer; and a 12-inch thick protective layer overlaid by an 18-inch thick vegetative support layer capped with 6 inches of topsoil. The landfill cap system was completed in the fall of 2002 and restoration of site staging areas was completed in spring of 2003. The DCL landfill general plan is presented in Figure 1. Landfill features are seen in the attached Photograph Log.

Post closure monitoring objectives and procedures are specified in the Operations and Maintenance (O&M) Manual included in the Post Closure Report. The United States Army is responsible for operating, monitoring, and inspecting the facility. Operations features include the routine site entry, gas monitoring, groundwater and surface water sampling, operation of monitoring equipment, scheduled operating events, and unscheduled operating events. Leachate wastewater is permitted to discharge to the Devens Wastewater Sewer System through the authorized industrial wastewater discharge permit.

1.1 Landfill Cap Inspection

United States Army Corps of Engineers personnel performed the 2017 annual inspection of the DCL on 15 and 17 November 2017. Observations were made regarding the site entry, vegetative cover, erosion, settlement, and general condition of the various features. Appendix A of this report contains the Inspection and Maintenance Checklists and Appendix B contains the Landfill Gas Summary Table, which summarizes the findings of these inspections.

Overall the landfill cap was in good condition, with no settlement or significant erosion. In general, the cap vegetation appeared healthy and provides good coverage of most areas of the cap, however the original perennial grasses and clover are beginning to get replaced over large areas of the cap, with weedy and some woody species invading, as noted in the previous 2016 inspection report. The woody vegetation which has tried to establish gets cut during the annual mowing, however the stalks are left over, and should be removed if feasible, and the areas reseeded. Some of the woody species are near gas vents and along riprap areas, and weren't fully cut, and could become established. Maintenance activities to re-establish growth (i.e. re-seeding, fertilizer) should be performed in general over the entire cap, due to a mixture of species which don't promote dense growth. Track marks from mowing were visible during the inspection. Reseeding and grass reestablishment would help with preventing future erosion (refer to Photograph Log Pictures 1 through 8).

The cap and adjacent area vegetation were mowed in the fall of 2017 (06 November 2017). Annual mowing should be continued and the annual inspection performed within 1 to 2 weeks of mowing, and at least 48 hours after a significant precipitation event (> 0.5 inches). The inspection should also be performed itself on a dry day to allow for proper operation of the landfill gas monitoring equipment that is not designed to be operated in the rain.

A green sheet metal storage shed next to the leachate pump station had and open swinging door. Photos reviewed from previous inspections have observed this shed with the same door open and unsecured. This storage shed door should be repaired as needed, and locked and secured to protect contents stored inside (Picture 9).

1.2 Entries and Exit Inspection

The site and access roads are located on private property owned by Mass Development. Gates at the south end of the landfill appears to have been dislocated, damaged and deposited in the shrubs on the west side of the access from Patton Road and no longer restricts access (Pictures 1 and 2). A variety of demolition debris-type of trash was present in the parking area on the day of inspection, with items ranging from propane tanks, concrete manhole riser, and piles of mulch and gravel (Pictures 10, 11 and 12). This debris appears to represent use of this parking area for "midnight dumping" and security to this area should be reestablished by replacing the gates to restrict vehicle access. Based on the disposition of the gate and chain link fence it appears this condition may have existed for some time. The access road from the entry gate around to the leachate pump station was in good condition. There were no ruts, potholes, or eroded areas. Herbicide treatment should be performed to remove these vegetative species from becoming fully established.

1.3 Fence Inspection

The perimeter fence is in good condition where it was able to be inspected. Inspection of the east and north perimeters of the landfill were hampered by the presence of a large coyote lingering in and out of the tree line and toe of slope of the landfill on the day of inspection and future inspections should note the presence of this wildlife as a potential safety hazard. The fence and entry gates, rock features (such as drainage swales and riprap), telephone poles lying on the ground, and the site's inherent relief help to minimize entry onto the site by motor vehicles. These access limitations appear to be adequate at the present time with no signs of vandalism or other unauthorized entry around the west, north, or east perimeter of the landfill.

2.0 DRAINAGE SYSTEM

The drainage system is designed to drain surface water and infiltrated water off the cap system. It consists of the following components: a geocomposite drainage layer, grass bench drains on the cap with gabion slope drains, a perimeter stone drain along the toe-of-slope, perimeter drainage channels, and a sediment detention basin with a riprap lined outlet area (located at the northeast corner of the landfill). The DCL general plan is presented in Figure 1.

Observations were made regarding the vegetative cover, vegetation types, erosion, and general condition of the drainage system. No maintenance activities were performed during this inspection. Appendix A of this report contains the Inspection and Maintenance Checklist, which summarizes the findings of this inspection.

The cap drainage system was in good condition. Drainage channels were free of sediment and debris. The vegetation on the side slopes of the landfill was healthy and dense. A minimal amount of grass was growing in the gabion slope drains, but there were no species that appeared to have extensive root systems that would disrupt the function of this system. Some woody vegetation has begun to establish in the drainage channel around the perimeter of the landfill (refer to Photograph Log Pictures 13 to 20). The woody vegetation stumps should be removed, if feasible, before they become established in the drainage system components.

The perimeter stone toe drain was showing signs of vegetation beginning to become established. The toe drain appeared to be functioning properly, and there were no visible signs of erosion or developing slope stability problems. Toe drains should continue to be monitored for vegetation, which should be removed via herbicide treatment if allowed, or removed/cut flush to ground as feasible, on at least an annual basis to maintain proper operation of the toe drain.

Minor maintenance actions recommended, at this time, for all the drainage channels (gabion slope drains, riprap toe drain, perimeter riprap drainage channels, etc.) includes spraying with an herbicide to eradicate and prevent further maturation of the vegetation that has become established, if allowed, and removal of small woody trees and woody stumps which could interfere with the drainage system.

3.0 GAS VENT SYSTEM

A passive gas venting system was installed to facilitate the ventilation of any gases generated from the degrading waste material beneath the landfill cap system. The passive system consists of eleven 6-inch diameter gas vents integrated into the geocomposite gas collection layer immediately beneath the 40-mil VFPE geomembrane (Picture 25).

Appendix A and B of this report contain the Inspection and Maintenance Check List and the Landfill Gas Monitoring table, respectively.

The gas vent system is in good condition. Most vent pipes had broken or missing bird/insect screens and all vents should have new screens installed with a hose clamp and screen fitting that can be attached/removed as a single unit. The new screens should be of similar mesh size as the old screens but made of more durable material. The ID labels are fading or absent on most gas vent riser pipes and the vents should be relabeled on two locations of the riser (north and south sides) to avoid incorrect identification during future monitoring.

A GEM 2000 gas monitor was used to monitor the gas vents for methane (CH_4), carbon dioxide (CO_2), oxygen (O_2), and %LEL. A MultiRAE+ was used to check VOC levels, hydrogen sulfide (H_2S), carbon monoxide (CO), oxygen, and %LEL readings. Gas monitoring showed: zero

readings for hydrogen sulfide (H_2S), and carbon monoxide (CO) in all gas vents; zero to trace VOC's (0.2 ppm maximum) compared to 0.1 ppm in ambient air; carbon dioxide (CO_2) levels ranging from 0% at southwestern vents V-2 and V-4 to 10.2% and V-9 ; and variable levels of oxygen (O_2). Nine gas vents had methane and %LEL of zero. The gas vents V-6 and V-9, had methane levels of 100% LEL (5% methane) or greater (17% methane) on the GEM 2000 and are the highest vents and located near the top of the landfill. These results compare to four (4) vents having methane of 5.2% to 22.3% during the 2016 inspection. Vents V-6 and V-9 were the two vents with the highest methane content in both the 2016 and 2017 inspections. Although historically there are high LEL readings for some of the higher elevation vents on the landfill, the Army believes this is not a concern for the reasons that follow. The landfill is fully encapsulated and hence the methane production is the result of the natural degradation of the organics from within the soils and sediments excavated and placed in the landfill during the construction process. The majority of the methane appears to be within the confined space of the respective vents of the passive gas collection system. The reason that the methane is predominantly observed in the higher elevation gas vents is that methane is lighter than air (predominantly N_2 and O_2). Once the methane has been passively vented to the surrounding atmosphere, it disperses rapidly and should not pose a significant ignitability risk. At the present time, an assessment of an active system does not seem to be warranted as these wells are passively vented directly to the atmosphere and the vents are not located near any potential ignition source.

4.0 CORRECTIVE ACTION

The following recommendations and corrective actions should be budgeted for future maintenance of the landfill cap:

1. The landfill cap, access roads, drainage system, and gas vent monitoring system were in good condition but require regular maintenance and inspection to secure access to the site and prevent overgrowth of woody vegetation.
2. The gate(s) to the parking area that control vehicle access from Patton Road should be replaced to prevent access of non-GOV vehicles and dumping of waste on the property. The waste, which appears to be primarily demolition debris and landscaping materials (mulch, gravel) should be confirmed for non-HTRW properties and then disposed off-site in an appropriate location.
3. The metal door to the storage shed next to the leaching pumping station should be repaired/replaced to secure this structure.
4. Repairs consisting of reseeding sparse vegetation over the landfill in general and removing woody stalks and roots should be performed during the next seed establishment period. If herbicide is not allowed/feasible to apply, then removal or cutting to grade of woody vegetation must be executed at least annually.
5. Minor maintenance actions for the drainage system that are recommended at this time include eradication of all vegetation that has begun to show establishment within drainage channels (gabion slope drains, riprap toe drain, perimeter riprap drainage channels, etc.) using an herbicide. Additionally, herbicide treatment should be performed on the grassy vegetation that has begun establishment in the crushed stone access roads to remove these vegetative species from becoming fully established.

6. All gas vent bird/insect screens should be replaced with a single unit held with a hose clamp and more durable screen material, which can be easily removed as one unit with a simple screwdriver. The proposed unit should be reviewed by USACE/Army prior to installation.
7. All gas vents casings should be relabeled in two locations on the riser (north and south sides), to facilitate identification during future inspections. The proposed method and labeling media should be reviewed by USACE/Army prior to apply to the vent casings.
8. Routine maintenance activities that should continue to be performed are annual mowing and monitoring and control of encroaching vegetation in the drainage system. The annual mowing of the cap should be done in late August to avoid harming ground-nesting songbirds. Mowing should also include the adjacent open field areas.
9. Historical landfill gas monitoring data should be graphed to establish trends that can be used for assessing the need for landfill gas migration monitoring on abutting property (ie: new building on southeast side of landfill).
10. The feasibility to construct solar panels on the landfill should be considered since access to the power grid appears to be feasible and in close proximity to the landfill on Patton Road, there are large energy consumers nearby (ie: behavioral health center, prison, etc.), and solar power generation could be a source of revenue to the Army to defray post-closure monitoring costs. This green energy initiative would expand Army's energy conservation programs using a form of landfill reuse that is common in the region. Similar USACE solar power lease/power purchase projects should be consulted for feasibility and applicability to the DCL site (ie: USACE Cape Cod Canal "Midway Site" solar photo-voltaic energy system project), and research into the process should be considered for area landfills with solar power (ie: Town of Lancaster Landfill on Rt. 70 on west boundary of Fort Devens South Post).
11. Since the cap was completed in 2002, post-closure inspection and monitoring has been performed for 15 years. Planning should commence to research the performance time and metrics to cease long-term monitoring and sampling activities, or to perform them at a reduced frequency, after 30 years. Current RCRA Subtitle C landfill cap regulations for post-closure monitoring periods of performance should be reviewed and discussed with the Army.

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FIGURE


Queenstown St
LFM-99-03B
LFM-99-05B
LFM-99-05A
LFM-99-01B
LFM-03-07
LFM-99-06A
LFM-99-02B
GV10
GV11
GV9
GV8
GV7
GV6
GV5
GV4
GV3
GV2
GV1
N
Figure 1
Fall 2017 Annual Inspection
15, 17 November 2017
Gas Vents
Photo Directions
LFM-99-05A - Monitoring Well ID
Base Map Devens As-Built Drawing C-7 from "Remedial Action Closure Report", Shaw Environmental, Inc. (September 2003).
Imagery: National Agriculture Imagery Program (NAIP) 7/28/16
Horizontal Datum - NAD 83
0 62.5 125 250
Feet
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PHOTOGRAPH LOG

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Index of Photographs

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Picture 5 - GV6 Looking Northwest Towards GV4
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Picture 25 - GV3 Looking North Typical Gas Vent and Sparse Grass Growth of Cap
Picture 26 - Southern Slope Looking East Toward GV2

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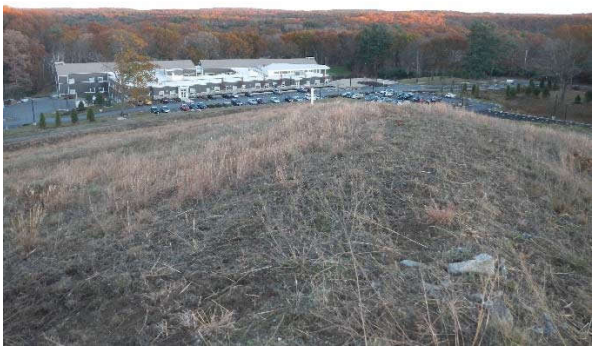
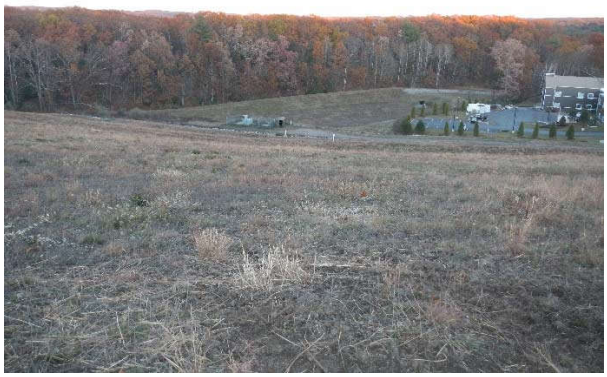
Picture 1



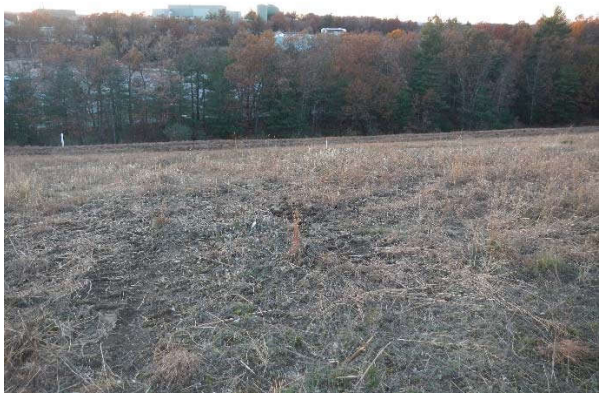
Picture 2



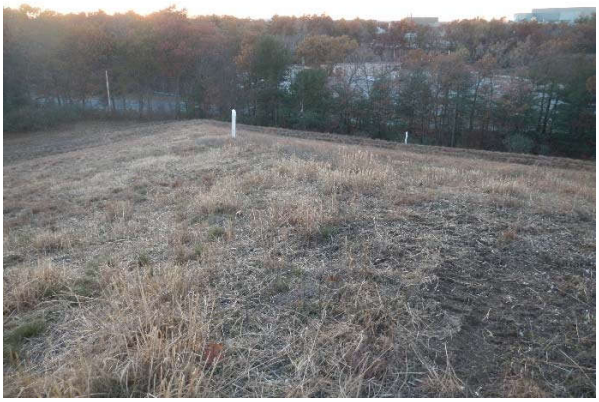
Picture 3



Picture 4



Picture 5



Picture 6



Picture 7



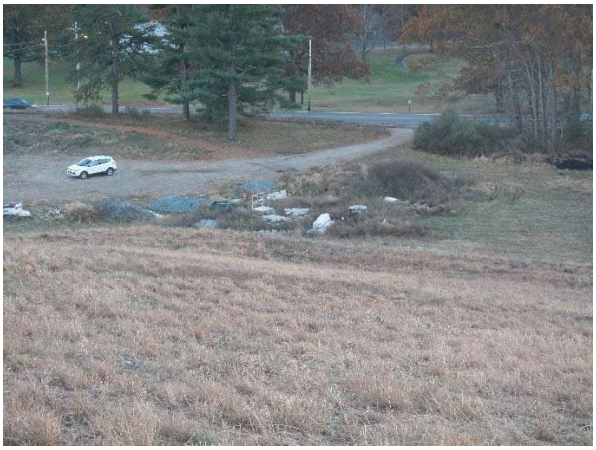
Picture 8



Picture 9



Picture 10



Picture 11



Picture 12

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Picture 13



Picture 14



Picture 15



Picture 16

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Picture 17



Picture 18



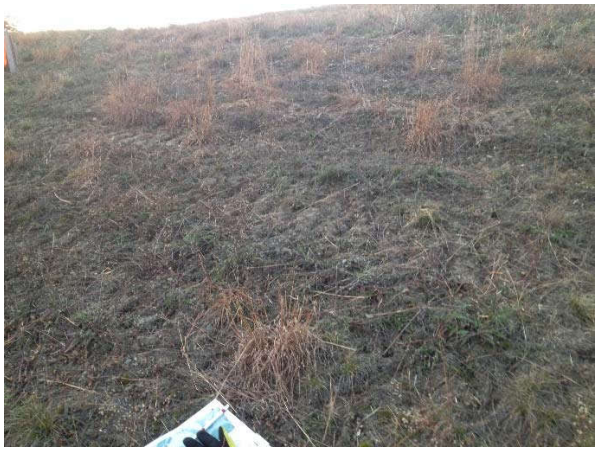
Picture 19



Picture 20



Picture 21



Picture 22



Picture 23



Picture 24



Picture 25



Picture 26

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APPENDIX A

Inspection & Maintenance Check List

US Army Corps of Engineers
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Inspection & Maintenance Check List
Devens Consolidation Landfill

Inspector's: Kilbridge, Thomas (KGS) Date: 15 & 17 November 2017

Item	Description of Inspection Items	Checked (X)	Comments
Landfill Cap	Inspect for Eroded Areas	X	No actively eroding areas were observed.
	Inspect for Settlement and Ponded Water	X	No settlement or ponded water was observed.
	Inspect for Wetland Species Encroachment	X	No encroachments of wetland species was observed
	Inspect Vegetated Areas	X	Vegetation is established in some areas, however is sparse in some areas also. Last mowed in Fall 2017 (06-Nov-2017). The sparse areas are getting larger over the years and a re-seeding program is required to reestablish thicker grassy areas on most of the cap. Signs of mowing tracks are being shown throughout the cap and can lead to severe erosion if not reseeded. Additionally some woody species are mowed down each year, however the stalks remain and need to be removed. Roots are establishing around gas vent pipe and throughout the soil cap and if the stalks are not removed thicker stalks will be established and need to be removed at a more costly rate. Removal of the woody plants needs to occur at least annually due to the fast growth rate of this type of vegetation.
Drainage System	Inspect Stone Toe Drain	X	Toe drains are in generally good condition and appear to be functioning as designed. Woody vegetation is beginning to grow in and around the toe drain areas. If feasible, apply herbicide as needed to control vegetation and saplings. Or remove woody plants if feasible, or as last option cut flush to ground surface.
	Inspect Gabion Slope Drains	X	The gabion slope drains are in good condition and appear to be functioning as designed. Gabions are beginning to have vegetation growth through the gabion baskets. If feasible, apply herbicide as needed to control vegetation and saplings.
	Inspect for Eroded Areas	X	No erosion noted, not action required at this time.
	Inspect for Debris & Unwanted Vegetation in Drainage Channels	X	No debris observed at this time. Weedy and woody vegetation beginning to grow in isolated areas in the swales.

Item	Description of Inspection Items	Checked (X)	Comments
			If feasible, swales should be sprayed with an herbicide annually to control weed and woody plant growth, or have such vegetation removed as described for toe drains.
	Inspect Rip-Rap Areas	X	Riprap is in good condition, but some areas observed to have woody weed growth beginning to be established. Rip-rap areas should be treated with herbicide, if feasible, or the woody weed vegetation should be removed or cut flush to ground surface.
Gas Vent System	Gas Monitoring Vent's 1 through 11	X	Results Gas sampling was conducted for VOC's, O_2, H_2S, LEL, CO, CO_2, and CH_4. The results can be found in Appendix B.
	Inspect Vent Pipe and Bird Screen	X	All vent pipes are in good condition structurally. All vent pipes had damaged or missing bird/insect screens. All screens should be replaced with a more durable screen material as a hose clamp/screen unit that can be attached and removed with a simple screw driver as one unit.
Security Fence	Inspect for Damage to or Breeches in Fencing	X	Perimeter security fence and gates are in good condition where present.
Access Road	Inspect for Erosion, Potholes and Rutting	X	The metal security gate to the access road from Patton Road was absent and was dislocated, damaged and deposited in the shrubs on the west side of the access to the parking area. Demolition debris and garbage deposited by "midnight dumping" of waste was observed in the parking area. The security gates should be replaced to restrict non-GOV vehicle access to the parking area, similar to that which existed at least in 2004 (see photo log Picture 10).
Description of Maintenance Activities Performed (as necessary): No maintenance activities performed during inspection.			

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Item	Description of Inspection Items	Checked (X)	Comments
The following maintenance and monitoring activities are recommended: 1. Replace security fence and gate(s) to restrict non-GOV vehicle access from Patton Road to parking area, similar at least to that which existed in 2004, to prevent trespassing such as unauthorized dumping of trash on site. 2. Remove trash/demolition debris from parking area observed during inspection. 3. Annual inspections for all components of cap and perimeter. 4. Annual mowing of grass areas and clearing of brush or woody vegetation from cap should be performed, as required. 5. Filling of erosion areas and animal burrows, as required. 6. Seeding of sparsely vegetated/woody vegetated areas on the cap. Areas are numerous and not shown on plan. 7. Spray unwanted weed vegetation in gabion slope drains, riprap toe drain, perimeter riprap drainage channels, and crushed stone access roads with an herbicide, if allowed/feasible. 8. Removal of woody species, or cutting flush to ground surface if cannot be removed. 9. Replace all bird/insect screens on gas vents with more durable screen that is affixed to vent with a metal hose clamp, such that the entire screen/clamp can be removed/attached as one unit with a common screwdriver. Show picture and/or sketch of example to USACE for review & approval prior to installing on vents. 10. Re-label all gas vents on the south and north sides of the vent casing. Propose method and labeling media to USACE for review & approval prior to installing on vents. 11. Repair/replace metal door on green storage shed next to leachate pump station building to secure this shed. 12. Investigate feasibility to install solar panels on landfill cap, similar to other local landfills (ie: Town of Lancaster Landfill, Rt. 70 (west boundary of Fort Devens South Post). This effort could defray cost for landfill long-term monitoring and expand Army's conservation initiatives.		

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APPENDIX B

Landfill Gas Monitoring

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APPENDIX B

Devens Consolidation Landfill
Landfill Gas Monitoring

INSPECTOR: Chris Kilbridge TITLE: Geologist DATE: 11/17/2017

ORGANIZATION: CENAE-EP-GC WEATHER: Cloudy 40º

BAROMETER*: 29.43 TIME: 11:12
BAROMETER*: 29.38 TIME: 16:20
BAROMETER*: 29.45 TIME: 16:40

Vent No.	VOC ppm Multi RAE+	H_2S ppm Multi RAE+	LEL % Multi RAE+	CO ppm Multi RAE+	O_2 % Multi RAE+	O_2 % GEM 2000	CO_2 % GEM 2000	CH_4 % GEM 2000	LEL % GEM 2000	Remarks
V-1	0.2	0.0	0	0	19.1	19.0	1.2	0	0	Screen Broken
V-2	0.0	0.0	0	0	20.9	20.4	0	0	0	Screen Broken
V-3	0.1	0.0	0	0	15.6	15.6	3.0	0.0	0	Screen Broken
V-4	0.1	0.0	0	0	20.9	20.4	0	0	0	Screen Broken
V-5	0.1	0.0	0	0	19.9	18.9	0.7	0.0	0	Screen Broken
V-6	0.0	0.0	>99	0	4.4	0.5	4.9	17.0	>100	Screen Broken
V-7	0.1	0.0	0	0	20.1	20.0	0.6	0.0	0	No Screen
V-8	0.1	0.0	0	0	20.5	20.5	0.5	0.0	0	No Screen
V-9	0.0	0.0	>99	0	6.8	2.2	10.2	5.0	99	Screen Broken
V-10	0.1	0.0	0	0	20.9	19.9	0.4	0.0	0	Screen Broken
V-11	0.1	0.0	0	0	17.1	16.2	3.4	0.0	0	Screen Broken

CALIBRATION INFORMATION:

Instrument: Multi RAE+
Calibrated by: US Environmental Rental Co.
Calibrated With: 50 ppm CO, 10 ppm H_2S, 50% LEL (CH4), 20.9% O_2 , PID 100ppm, CO2 0 ppm

Instrument: Landtec GEM 2000
Calibrated by: US Environmental Rental Co.
Calibrated With: 15% CH_4, 15% CO_2, 20.9% O_2

* Note: Barometric Pressures were obtained from the GEM 2000



APPENDIX G
RESPONSES TO COMMENTS

U.S. ARMY RESPONSES TO U.S. ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE DRAFT 2017 ANNUAL REPORT, LONG-TERM MONITORING – MAIN POST FORMER FORT DEVENS ARMY INSTALLATION, BRAC LEGACY SITES DEVENS, MASSACHUSETTS 8 February 2019

The following U.S. Army responses pertain to the U.S. Environmental Protection Agency comments, dated 4 June 2018, on the Draft *2017 Annual Report, Long-Term Monitoring, Main Post, Former Fort Devens Army Installation BRAC Legacy Sites* at the Former Fort Devens Army Installation, Devens, Massachusetts, dated April 2018.

General Comments

Comment #1: In comments on the 2015 and 2016 Annual Reports, EPA requested that Zone II Wellhead Protection Areas (WPAs) be shown on certain figures to correspond with discussions in the text. While EPA appreciates the addition of Zone II to Figure 1 in the 2017 Annual Report, it is difficult to evaluate potential impacts, if any, to affected drinking water supply wells (for which each of the Zone IIs is drawn) since they are not shown on the amended figures. (See Page-Specific Comments 4, 7, and 8.) Because the WPA represents an area from which contaminants might be drawn to a public drinking water well, EPA requests that a single figure be created (and included in the 2017 and subsequent annual reports) for each site that lies within a Zone II WPA that clearly identifies the Zone II WPAs, the water supply well(s) for which the Zone II applies, current contaminant concentrations, and groundwater flow directions (based on actual water level measurements collected from site-specific LTM wells).

Response: The MacPherson, Grove Pond wellfield, Shabokin, and Patton water supply wells and labels have been added to Figure 1-1. Figures 2-1 through 2-6 have been revised to indicate that AOC 57 is within the Zone II for the Grove Pond wellfield. The figures in Section 2 show the groundwater flow directions based on actual water level measurement and the current contaminant concentrations. A note will be added to Figure 3-1 to indicate that AOC 69W is within the Zone II for the MacPherson well. The figures in Section 3 show the groundwater flow directions based on actual water level measurement and the current contaminant concentrations. The Zone II shown in Figures 5-1 through 5-3 will be revised to indicate the Zone II is for the Grove Pond wellfield. The figures in Section 5 show the groundwater flow directions based on actual water level measurement and the current contaminant concentrations.

Comment #2: Additional monitoring wells are requested at AOC 57 to measure existing ORP values and determine contaminant concentrations (if any) in shallow groundwater on the far side of Cold Spring Brook and deep overburden groundwater (both on- and off-site (i.e. on the far side of Cold Spring Brook)). Many of the proposed monitoring well locations are analogous to those recently requested by EPA for the evaluation of PFAS contamination at AOC 57 in the upcoming PFAS RI.

Response: No changes to the Annual Report are necessary as the document is a summary of the 2017 monitoring program. The adequacy and optimization of the monitoring well network at AOC 57 will be further evaluated in 2019 and any changes will be provided as an update to the LTMMP for EPA review. At this time, an expansion to the AOC 57

monitoring well network (which has been in place since 2003) to the other side of Cold Spring Brook is not warranted given that site groundwater discharges to Cold Spring Brook.

Comment #3: As noted in EPA comments on the 2015 and 2016 Annual Reports, VPH impacts persist at AOC 43G. EPA realizes that there is not a cleanup goal for VPHs at AOC 43G, however Army's response to General Comment 3 on the 2016 Annual Report, stated that if continued exceedances of Method 1 GW-1 VPH concentrations are observed at the boundary or compliance point, risk-based concentrations would be developed. Please provide a proposed schedule for development of risk-based cleanup goals for VPHRI.

Response: Risk-based cleanup goals for VPH are not proposed at this time. See the response to Specific Comment #16.

Specific Comments

Comment #1: Page ES-2, Executive Summary, AOC 69W bullet #1 – Four wells are listed as exceeding the cleanup goal for arsenic and four wells exceed the manganese monitoring criterion. The last sentence of the paragraph attributes these elevated concentrations to "reducing conditions in the aquifer resulting from hydrocarbon degradation." However, for arsenic, only two of the four wells listed showed reducing conditions, and for manganese, only two of the four wells listed showed reducing conditions. Further discussion of wells with exceedances but not showing reducing conditions is needed. (See Page-Specific Comments 7 and 11.) (Also, please confirm correct reference to "ZWM-99-25X" (versus "ZWM-01-25X")).

Response: The text was revised to correctly reference ZWM-01-25X. Text was added to Section 3.7, see response to Specific Comment #11.

Comment #2: Page ES-3, Executive Summary, AOC 43G bullet #2 – Army noted an upward trend in C5-C8 Aliphatics and no trend (i.e. not decreasing) in C9-C10 aromatics in well XGM-94-04X in the 2016 Annual Report. In 2017, the upward trend continued for C5-C8 aliphatics. While Army intends to further evaluate these trends in 2018, EPA believes that expansion of the current monitoring network is warranted at this time to clearly define the upgradient plume edge or the downgradient extent of the plume in this area of AOC 43G.

Response: VPH was not identified as a site contaminant of concern in the ROD, and the concentrations of site volatile organic compound contaminants of concern (BTEX) have decreased below the cleanup levels established in the ROD. VPH is monitored to help evaluate the intrinsic bioremediation of the overall plume and the concentrations are compared to MCP standards just for comparison purposes. Even though there is a statistically upward trend of C5-C8 aliphatics concentrations at ZGM-94-04X since the beginning of the monitoring program in 1999, it should be noted the recent (2014 through 2017) concentrations are less than the 2010 to 2013 concentrations. And as noted, there is no statistically significant trend in C9-C10 aromatics concentrations in well ZGM-94-04X. With the past successful removal of the principal threat waste (i.e., the gasoline source area) and no current exposures to site groundwater, it is expected that the ongoing remedial action will restore the aquifer over time. Based on these considerations, expanded monitoring for VPH is not necessary at this time.

Comment #3: Page 1-5, Section 1.4.5 – EPA was pleased to see that the well LMF-03-07 was restored. Please include reference to Figure 6-1 in the text.

Response: A reference to Figure 6-1 has been added.

Comment #4: Page 2-1, Section 2.1, 1st paragraph – AOC 57 is located within a Zone II aquifer protection area and portions of the AOC are located within a "Non-Potential Drinking Source Area and a medium yield aquifer." Zone II is defined in Note 1 at the bottom of page 2-1 as "the area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions …". As discussed above, groundwater contamination within a Zone II could be drawn toward a public water supply well. Because Area 3 contains groundwater with arsenic concentrations above the MCL of 10 ug/L (i.e. 27 ug/L in 57M-95-03X and 180 ug/L in 57M-96-11X) and is located within Zone II, a statement as to whether groundwater contamination associated with AOC 57 threatens a public drinking water well should be included, as supported by site-specific field data. (See General Comment 1 and Page-Specific Comments 7 and 8.)

Response: The end of the second paragraph in Section 2.8 has been revised as follows:

"The metals are expected to come out of solution (precipitate) when the aquifer reverts to an oxidizing state within the impacted area, or when the impacted groundwater reaches and expands into an oxidizing environment; therefore, there is no anticipated adverse impact to the public drinking water wells in the Zone II.

As the AOC 57 groundwater is discharging to Cold Spring Brook and the history of below-MCL arsenic concentrations detected in the surface water at Area 3 (13 of 19 samples collected over the span of the monitoring program), support the lack of anticipated adverse impact to the public drinking water wells in the Zone II."

As indicated in the response to MassDEP Comment #1, Figure 2-1 and the text of Section 2.1 was revised to remove the Non-Potential Drinking Water Source Area.

Comment #5: Page 2-1, Section 2.1, 2nd paragraph – Because the 228-foot elevation is discussed in the text, EPA requests that it be shown on Figure 2-1.

Response: The 228-foot elevation contour was not shown on figures in previous reports and a 228-foot elevation contour is not available through MassGIS or USGS. The ROD used the 228-foot elevation contour to distinguish upland areas from the 100-year flood plain, but the ROD and the Remedial Action Work Plan do not show a 228-foot elevation contour. The 228-foot elevation contour is not a critical piece of information for the background description of the site or the groundwater monitoring program; therefore, the sentence referencing the 228-foot elevation contour and the subsequent sentence have been deleted.

Comment #6: Page 2-2, Section 2.1, 1st full paragraph – It is unclear whether the solar panel facility discussed in the text is the Building 3713 shown on Figure 2-1. Please elaborate in the text and/or include a note (or label) the buildings on the Section 2 figures.

Response: The text was revised to indicate the address of the solar panel facility is 112 Barnum Road, which is shown on Figure 2-1.

Comment #7: Page 2-5, Section 2.8, 2nd paragraph – The second paragraph of the conclusions section for AOC 57 discusses elevated arsenic concentrations in Area 3 wells and the association of these concentrations with low ORP values. The last sentence of the paragraph states that metals are expected to come out of solution when oxidizing conditions are reached, either with the passage of time or with groundwater flow into an oxidizing area. Because Area 3 is near the southern boundary of the former Fort Devens, local shallow groundwater is assumed to flow south and discharge to Cold Spring Brook. Unfortunately, there are no monitoring wells on the far side of the Brook or deep overburden groundwater data (within or downgradient of the AOC 57 site

boundaries). To confirm or deny Army's assumptions, EPA recommends the following: 1. Wells 57M-96-11X and 57M-95-03X should continue to be monitored and sampled over time to see if the predicted declines in metals concentrations, associated with predicted return to oxidizing conditions, actually occurs. 2. If feasible, piezometers 57P-98-04X and 57P-98-03X should be sampled to see if oxidizing conditions and lower metals concentrations are present at these locations. 3. Additional monitoring wells should be installed to measure existing ORP values and contaminant concentrations (if any) in shallow groundwater on the far side of Cold Spring Brook and deep overburden groundwater (both on- and off-site (i.e. on the far side of Cold Spring Brook)).

Response: Wells 57M-96-11X and 57M-95-03X will continue to be monitored in accordance with the LTMMP. See the response to General Comment #2 regarding the installation of new wells or expansion of the monitoring network at AOC 57.

Comment #8: Pages 2-5 through 2-6, Section 2.8, 3rd and 4th paragraphs – The third paragraph of the conclusions section for AOC 57 states," Surface water sampling results indicate limited potential for off-site migration of COCs via the groundwater to surface water discharge pathway." For reasons discussed above, this conclusion is based on speculation and not supported by currently available site data. In addition, the last two sentences of the fourth paragraph discuss arsenic concentrations in surface water, but the discussion appears to be general, not site-specific. The statement that arsenic concentrations in surface water "are sometimes below the MCL" implies that at other times these concentrations are above MCL. The final sentence of the paragraph refers to trend analysis and the possibility that concentrations will decrease or remain steady. This implies that above-MCL concentrations could continue. This argument provides little support to the claim, above, or limited potential for off-site migration. Additional site data must be collected to support the current discussion.

Response: The discussion of arsenic in surface water is based on AOC 57 data. The penultimate sentence of the fourth paragraph of Section 2.8 has been revised to read as follows:

"Downgradient of the site, the arsenic concentrations in surface water do not exceed the USEPA Water Quality Criterion and most of the samples (13 of 19 samples) at the longest sampled surface water location at Area 3 (57-AREA 3-SW-1) were below the MCL. Also, historical results from AOC 57 Area 2 surface water sampling indicate a decrease in arsenic concentrations in surface water to below the MCL in 2008 through 2014 (KGS, 2016b)."

Comment #9: Page 2-5, Section 2.8, 4th paragraph – The last full sentence on the page states, "the extent of the elevated arsenic in groundwater is defined." For reasons previously discussed, this statement is not supported by available site data. Only two Area 3 monitoring wells, both screened in shallow groundwater, were sampled and both had elevated arsenic concentrations. It is unknown how much farther beyond these two wells the elevated arsenic might extend, based on the data presented. Additional data is needed to define the extent of elevated arsenic. Specifically, additional monitoring wells should be installed to measure existing ORP values and contaminant concentrations (if any) in shallow groundwater on the far side of Cold Spring Brook and deep overburden groundwater (both on- and off-site (i.e. on the far side of Cold Spring Brook)).

Response: See the response to General Comment #2.

Comment #10: Page 3-1, Section 3.1, 4th paragraph – It appears that there may be a word missing in the next-to-last sentence (between "MassDEP" and "EPH"). Please evaluate and amend, if necessary.

Response: The phrasing is exactly as represented in the referenced ROD.

Comment #11: Page 3-2, Section 3.4.1, 1st bullet – Three wells with arsenic exceedances are listed here; a fourth well with arsenic equal to the MCL is listed in the Executive Summary (see Page-Specific Comment 1). Only two of these wells (69W-99-22X and 69W-99-23X) show reducing conditions, based on ORP and DO shown in Table 3-1. Similarly, for manganese, the same two wells had exceedances (above background) and reducing conditions, while the other two listed wells with manganese exceedances do not exhibit reducing conditions. These points should be discussed, either here or in Section 3.7 (see Page-Specific Comments 1 and 7).

Response: The following text was added after the last sentence of the first paragraph of Section 3.7:

"Over time, as the reducing conditions return to oxidizing conditions, the concentrations of elevated dissolved metals are anticipated to decrease, as evidenced at 69W-94-13.

Recent Results from 69W-94-13

Sample Year	*Arsenic (µg/L)*	*Manganese (µg/L)*	*Dissolved Oxygen (mg/L)*	*ORP (mV)*
2014	*101*	*1,940*	*0.2*	*-53.7*
2015	*120*	*2,050*	*0.21*	*-85.9*
2016	*76*	*2,600*	*1.79*	*-103.7*
2017	*24*	*320*	*2.66*	*140.2*

Comment #12: Page 3-2, Section 3.4.1, 2nd bullet – EPA understands that EPH concentrations are only presented for comparison purposes. However, the statement that EPH hydrocarbon results were non-detect or below benchmark levels is not correct, because C11-C22 Aromatics were detected in well ZWM-99-22X in the fall 2017 sampling round. Please amend the discussion accordingly.

Response: The first sentence of the bullet was revised as follows:

"EPH hydrocarbon results were non-detect or detected below benchmark levels."

Comment #13: Page 3-4, Section 3.4.3, last sentence – There is a typo; "ZWM-95-23X" should be "ZWM-99-23X".

Response: The typo "ZWM-95-23X" was corrected to "ZWM-99-23X".

Comment #14: Page 3-5, Section 3-7, 1st paragraph – The next-to-last sentence states, "Elevated dissolved metals … is due to reducing conditions." (See Page-Specific Comments 1, 7, and 11).

As stated above, this statement is based on Army's assumptions and cannot be supported by the limited site-specific data collected to date. Additional monitoring wells are needed to confirm current ORP values (and contaminant concentrations, if any) in shallow groundwater on the far side of Cold Spring Brook and deep overburden groundwater (both on- and off-site (i.e. on the far side of Cold Spring Brook)).

Response: See the response to Specific Comment #11.

Comment #15: Page 3-6, Section 3.7, next-to-last paragraph – EPA appreciates the evaluation of 2017 results for well 69W-94-13, which showed an EPH increase in 2016 (see Page-Specific Comment 8 on the 2016 Annual Report). The 2016 results are anomalous.

Response: Comment noted.

Comment #16: Page 4-3, Section 4.4.2, 1st and 2nd paragraphs on page – Increasing C9-C10 levels for XGM-94-04X were discussed in 2016 and continued in 2017. The same well is experiencing a statistically significant upward trend in C5-C8 aliphatics. What are the implications for site cleanup and a determination as to whether a risk-based standard needs to be developed?

Response: See the response to Specific Comment #2. The gasoline source area has been successfully removed and the associated VOC COCs have met the ROD cleanup goals. The Army will continue to monitor the attenuation of the residual groundwater contaminant concentrations. VPH is not a site COC and is just being monitored to help evaluate the attenuation of the residual plume. The Army will further evaluate the scope of the monitoring program and the implications for site cleanup in 2019 as part of a LTMMP update and/or in preparation for the 2020 Five-Year Review.

Comment #17: Page 5-3, Section 5.4.2, last paragraph on page – Noting fluctuating arsenic concentrations in 32M-01-18XBR to an "established reducing environment" appears to be a questionable conclusion. 2017 measurement show an ORP value of 134.4 and a DO of 5.42 mg/L, both well above the generally accepted levels of 50 and 1, respectively, for reducing conditions to be expected. This is acknowledged in the nest-to-last sentence of Section 5.4.3. The provided explanation in Section 5.4.2 may be too simple to account for the observed arsenic level.

Response: The last paragraph on page 5-3 was revised to read as follows:

"*Arsenic has been periodically detected above the 10 µg/L cleanup goal in AOCs 32 and 43A wells since 2006 (Table 5-2). Since 2010, the only well with arsenic detections above the cleanup goal was 32M-01-01-14XOB, except in 2015 at 32M-01-18XBR. Historical total arsenic concentrations at 32M-01-14XOB were consistently above 10 µg/L; ranging up to a high of 90 µg/L in 2015, with no overall statistically significant trend (p = 0.480). The concentration for dissolved arsenic in 32M-01-14XOB was 30 µg/L in 2017. As discussed for other AOCs, petroleum release sites typically generate a reducing environment in the aquifer formation which promotes more soluble, non-sequestered arsenic and therefore, a higher groundwater concentration of naturally occurring inorganics such as arsenic. Over time, as the petroleum-related carbon source is consumed, groundwater conditions are expected to become less reducing and concentrations of dissolved inorganics will decrease."*

The penultimate sentence of Section 5.4.3 has been revised to read as follows:

"The ORP and DO data show that the area is returning to an oxidizing environment with the lowest ORP and DO values present at 32M-01-14XOB."

Comment #18: Page 6-2, Section 6.1, 1st paragraph on page – Please show the location of the proposed new building on Figure 6-1. If the area of the requested soil gas probes is known, please show that as well. Please provide the sol gas monitoring plan to EPA when it is prepared.

Response: Figure 6-1 has been revised to include the new building. The soil gas probe installation work plan was finalized in October 2018 and the soil gas probes were installed and sampled in December 2018. The results have been provided to EPA and will also be presented in the 2018 Annual Report.

Comment #19: Page 6-2, Section 6.3 and Figure 6-4 – Groundwater gradient was calculated between LFM-99-02B and LFM-99-05B; both are bedrock wells, which makes for a more meaningful gradient measurement than if one bedrock and one overburden well were used. In the same Section, the last sentence states that the profiles in Figure 6-4 show that the groundwater level continues to be lower than the elevation of the landfill liner. This conclusion is not certain (though it may be true), because the water levels shown in the profiles are from bedrock wells. These water levels represent the potentiometric heads in the bedrock fractures intercepted by those wells. The profiles suggest that overburden exists between the liner, but if the bedrock surface is irregular, little or no overburden might exist beneath the liner at some locations. Landfill design plans or construction records might resolve this question. The potentiometric surface shown in blue on the profiles does not indicate, directly, whether this overburden is saturated or unsaturated. The only location with a bedrock/overburden well cluster is LFM-99-05A/B. At this location, the overburden well water level was 3 feet lower than the bedrock well water level, an encouraging observation. With no bedrock/overburden well couplet on the upgradient side of the landfill, there is not sufficient information to conclude that the overburden potentiometric surface is lower than the bedrock potentiometric surface throughout the site. Consequently, it cannot be stated with certainty that the overburden beneath the landfill is unsaturated, although EPA agrees that this is the more likely condition. Because of the trigger conditions, this is more than an academic question. (See Page-Specific Comment 20.) EPA suggests that an overburden well be installed on the upgradient side, adjacent to LFM-99-02B and that water levels be measured in this well in the next monitoring round. Overburden water levels should them be added to the profiles and discussed in the text. As written in this year's report (last sentence of Section 6.3), there is not currently enough information to reach the conclusion stated in the sentence with high confidence.

Response: During investigations in support of the design of the landfill, bedrock was encountered from 13 to 33.5 feet (ft) below ground surface (bgs) and the minimum cell floor elevation is 2 ft bgs (*Design Analysis Report for Consolidation Landfill, Devens Reserve Forces Training Area*, EA Engineering, Science, and Technology, October 1999). Therefore, overburden thickness beneath the landfill liner likely varies from approximately 11 to 31.5 ft.

The monitoring network, agreed to by EPA, has been sufficient for 15 years. Conditions at the site (e.g., liner/bedrock elevations) have not changed during that time, and there has not been a significant change in the overall hydrology of the system.

Overburden wells LFM-99-01A (co-located with LGM-99-01B shown on Figures 6-1 through 6-3 of the Annual Report) and LFM-99-02A (co-located with LFM-99-02B shown on Figures 6-1 through 6-3 of the Annual Report) were installed in support of designing the landfill. Evaluation of these wells for measurement of water levels will be conducted and use

of water level data from these wells as trigger conditions will be evaluated in support of an update to the long-term monitoring plan.

Comment #20: Page 6-2, Section 6.4 – For the same reasons discussed above in Page-Specific Comment 19 above, EPA believes that the overburden well water levels are more meaningful as triggers than the bedrock well water levels.

Response: See the response to Specific Comment #19.

Comment #21: Page 6-4, Section 6.7, 1st and 2nd bullets on page – The first bullet indicates that potential repairs to the shed door "are being evaluated for 2018." The second bullet (5th sentence) says that debris "should be assessed and removed…" and that "gate repairs and debris removal are being evaluated for 2018." Who will be doing the evaluations? It is now 2018; will these actions take place? Please document in the final 2017 report or in next year's report that these matters have been taken care of.

Response: The debris has been removed. The Army and MassDevelopment are evaluating the shed and gate repairs. The 2018 Annual Report will provide an update on the status of these issues.

Comment #22: Page 6-4, Section 6.7, 3rd bullet – This bullet indicates that the fence is in good condition. The 2016 Annual Report stated that fence repairs were needed and would be accomplished in July 2017 (2016 Annual Report, Section 7.7.2; Specific Comment 15 on 2016 Annual Report). Were these repairs completed?

Response: The repairs were completed in 2017, as indicated in the Final 2016 Annual Report and the U.S. Army Responses to USEPA Comments on the 2016 Annual Report.

Comment #23: Pages 6-4 and 6-5, Section 6.7, last bullet on p. 6-4 – In the 2018 Annual Report, please document completion the gas vent repairs recommended in this bullet.

Response: The 2018 Annual Report will document that the gas vent repairs were completed in May 2018.

Comment #24: Page 6-6, Sections 6.8.1 and 6.8.2, last bullets in each section – The upper ends of the nitrate levels, 2.1 mg/L and 3.3 mg/L are above an expected background level; are these levels typical and expected in this landfill setting, or could they be due to the use of fertilizer on the landfill cap?

Response: Nitrate/nitrite concentrations were similar in 2016/2017, although somewhat higher in downgradient wells LFM-03-07 and LFM-99-05A than the historical average concentration in these wells (1.2 and 1.1 mg/L, respectively). The reason for the increase is unclear as there was no fertilizer used onsite during 2016-2017. There is no monitoring criterion for nitrate/nitrite; however, these water quality parameters will continue to be monitored at these locations.

Comment #25: Figure 1-1 – EPA appreciates the inclusion of Zone IIs on this figure; however, as stated in General Comment 1, it would also be helpful to show the water supply well(s) for which the Zone II applies, current contaminant concentrations, and groundwater flow directions (based on actual water level measurements collected from site-specific LTM wells).

Response: See the response to General Comment 1.

Comment #26: Figure 5-2 – Please label the wells on this figure. Also, the closed 234-foot contour in the northeastern corner of the site should have inward tick marks.

Response: Figure 5-2 has been revised per the comment.

Comment #27: Figure 5-3 – The text mentions an eastward groundwater flow component in the northeastern portion of the site; please add a flow arrow in this area.

Response: Figure 5-3 has been revised to include an additional flow arrow going eastward.

Comment #28: Figure 6-1 – The text mentions a new building in this area; it would be helpful to show it on the figure. Also, please add a note explaining that LFM-03-07 was covered over and then uncovered. Such a note would be helpful on Figures 6-2 and 6-3 as well.

Response: Figures 6-1, 6-2, and 6-3 have been revised to include the new building and the following note. *"LFM-03-07 was paved over by asphalt during parking lot construction for the neighboring Building. In July 2017, LFM-03-07 was uncovered."*

Comment #29: Figure 6-4 and Sections 6.3 and 6.4 – The profiles in Figure 24 would be much more useful in determining whether the landfill liner is in contact with groundwater if the top surface of bedrock is shown on the profiles, if this information is available from the Shaw (2003) report or elsewhere. This would then show whether overburden intervenes between the liner and the top of bedrock. If the liner does not rest directly on bedrock, the key question is whether or not the overburden beneath the landfill is saturated. Overburden wells, not bedrock wells, should be used for the "triggers" discussed in Section 6.4. Water levels in "B" wells (bedrock) could be safely below the liner while overburden is saturated and the liner is in contact with groundwater. Conversely, bedrock water levels could be above the depth of the liner without necessarily meaning that the liner is in contact with groundwater. The 2017 result at the LFM-99-05A/B couplet (overburden well head lower than bedrock) is encouraging, but not conclusive. To be fully protective (and to avoid false alarms), the 2015 Long Term Monitoring and Maintenance Plan should be modified to define triggers based on overburden wells. If these triggers are critical and sufficient overburden wells do not exist, such wells should be installed. (See Page-Specific Comments 19 and 20.)

Response: See the response to Specific Comment #19.

Comment #30: Figure 7-1 – The yellow symbol for "Approximate Former Firing Location" in the Legend is nearly invisible; suggest a different color.

Response: The symbol for "Approximate Former Firing Location" in the Legend will be revised to a more visible color.

U.S. ARMY RESPONSES TO MASSACHUSTTES DEPARTMEMENT OF ENVIRONMENTAL PROTECTION COMMENTS ON THE DRAFT 2017 ANNUAL REPORT, LONG-TERM MONITORING – MAIN POST FORMER FORT DEVENS ARMY INSTALLATION, DEVENS, MASSACHUSETTS 8 February 2019

The following U.S. Army responses pertain to the Massachusetts Department of Environmental Protection (MassDEP) comments, dated 18 May 2018, on the Draft *2017 Annual Report, Long-Term Monitoring, Main Post, Former Fort Devens Army Installation BRAC Legacy Sites* at the Former Fort Devens Army Installation, Devens, Massachusetts, dated April 2018.

Comment 1 – Figure 2-1 – Presentation of the Non-Potential Drinking Water Source Area is misleading because, as noted beneath the legend, AOC 57 is located within the delineated Zone II of Ayer water supply wells (Figure 1-1) and therefore is located within a Current Drinking Water Source Area (310 CMR 40.0006, Current Drinking Water Source Area). Deletion is recommended.

> **Response:** Figure 2-1 and the report text has been revised to delete the Non-Potential Drinking Water Source Area.

Comment 2 – Figure 4-3 – The listed value for C9-C10 Aromatics in sample XGM-94-04X should be italicized.

> **Response:** Figure 4-3 has been revised so that the XGM-94-04X C9-C10 Aromatics bolded value is also italicized.

Comment 3 – Figure 5-2 – Well IDs should be posted at well locations.

> **Response:** Figure 5-2 has been revised to show Well IDs.

Comment 4 – Table 1-1 – Water level measurements were not collected from AOC 32/43A during the spring season as specified in the LTMMP. To ensure comparability with prior monitoring events, water levels should be measured during the spring season in the future.

> **Response:** Comment noted. Water levels were measured prior to the June 26-28, 2017 sampling event, but subsequent review of the data indicated an issue; therefore, a complete set of water levels was collected again from AOC 32/43A on July 7, 2017

Comment 5 – Table 5-1 – Please confirm or correct the results listed for ethylbenzene in sample 32M-01-18XBR and its duplicate.

> **Response:** Ethylbenzene values are correctly reported in Table 5-1 for 32M-01-18XBR and its duplicate.

Comment 6 – Appendix E, AOC 57 Checklist– Please attach a figure showing the location of the irrigation well installed at 78 Barnum Road, the AOC 57 LUC boundaries, and AOC Areas 2 and 3.

> **Response:** A figure has been added showing the location of the irrigation well at 78 Barnum Road along with the extent of AOC 57 Areas 2 and 3.

Comment 7 – Appendix E includes two versions of the Grant HA and Impact Area Annual Review Checklist. A single complete checklist should be provided.

> **Response:** Appendix E has been revised to include only one version of the Grant HA and Impact Area Annual Review Checklist.

Comment 8 – Appendix E, Grant Housing Area – A copy of the 2017 UXO utility bill mailing should be included (the provided letter is dated February 10, 2016).

Response: The letter presented in Appendix E which is dated February 10, 2016 was the one included in the 2017 utility bill mailing.

Comment 9 – Appendix E – Includes two versions of the Oak and Maple HAs checklist. A single complete checklist should be provided

Response: Appendix E will be revised to include only one version of the Oak and Maple HA Checklist.

U.S. ARMY RESPONSES TO U.S. ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE DRAFT FINAL 2017 ANNUAL REPORT, LONG-TERM MONITORING – MAIN POST FORMER FORT DEVENS ARMY INSTALLATION, BRAC LEGACY SITES DEVENS, MASSACHUSETTS 26 April 2019

The following U.S. Army responses pertain to the U.S. Environmental Protection Agency comments, dated 26 March 2019, on the Draft Final *2017 Annual Report, Long-Term Monitoring, Main Post, Former Fort Devens Army Installation BRAC Legacy Sites*, dated 8 February 2019, and the Army's 8 February 2019 responses to EPA's 4 June 2018 comments.

EPA Comments

Comment 1: EPA has received and reviewed Army's responses (8 February 2019) to EPA's June 4, 2018 comments on the above-referenced draft 2017 Main Post Annual Report. EPA has also received and reviewed the track-changes version of the Draft Final report, dated February 2019. EPA's assessment of Army's comment responses is arranged topically, below. EPA requests that a conference call be convened within thirty (30) days to discuss the unresolved issues identified below. EPA requests that Army refrain from releasing the final 2017 Annual Report until after the call to ensure that sufficient time has been devoted to resolving these concerns at the BCT level prior to referring them to Army/EPA management for final resolution.

Response: Upon review of the below responses, please provide a proposed date and time for a conference call to discuss. Since the purpose of the Annual Report is to present the results of the O&M and LTM work completed in 2017 which was based upon the existing LTMMP and not to present changes to the LTMMP, the Army proposes to move forward with submittal of the Final 2017 Annual Report at this time. Please find attached RL/SO version of the Final AR for review.

EPA's requested changes to the LTM program, such as the addition of monitoring wells, installation of new wells, or changes in sampling frequency or analytical parameters will be further evaluated and any proposed changes will be documented in a revised LTMMP. The Army will submit a revised LTMMP by 6/28/2019 for regulatory agency review and subsequent implementation for the 2020 O&M/LTM program. Note that the ongoing PFAS RI field investigations may result in the installation of new monitoring wells which could provide information to support further assessment of the historical LTM programs at AOCs 32, 43A, 43G, and 57.

Comment 2: Relationship between Wellhead Protection Areas and AOCs (General Comment 1 and Specific Comments 4, 7, 8, 25, and 27) – EPA appreciates the figure edits to show the public wells in addition to the associated wellhead protection areas (WHPAs) that are near the AOCs.

Response: Comment noted.

Comment 3: AOC 57 – Although interpretive water table elevations for the June 2017 LTM event may indicate "groundwater flowing in a south/southeast direction, toward Cold Spring Brook," the AOC 57 Areas 2 and 3 monitoring well network provides data specific to shallow groundwater

(all well screens are set at the water table) and, as such, are likely not representative of groundwater hydrology in the deeper portions of the aquifer. As such, Army's suggestion that the all AOC 57 groundwater discharges to Cold Spring Brook is based on interpretation and not on site-specific data. While it is likely that shallow groundwater flow is towards the brook, the Zone II maps for the Town of Ayer Grove Pond water supply wells clearly shows a component of deep groundwater flow from the AOC 57 area towards the Grove Pond wellfield. As such, statements regarding the "lack of anticipated adverse impacts to the public drinking water wells in the Zone II" are unsupported by existing site-specific data and should be omitted. In addition, statements such as "all groundwater at the site discharges to the brook" cannot be substantiated with currently available site data as such are speculative and unsubstantiated. If Army cannot amend the current AOC 57 discussion to acknowledge and adequately respond to the concerns raised in EPA's June 4, 2019 comments, EPA recommends that these issues (also relevant to the Area 1 PFAS RI) be immediately elevated to Army/EPA management for final resolution.

Response: The text will be revised to clarify that the shallow groundwater system associated with historical releases of COCs at AOC 57 (as monitored by the existing well network) discharges to Cold Spring Brook. It is noted that arsenic is the only groundwater COC at AOC 57 that remains at concentrations above the cleanup goal (MCL) as all other COCs related to the historical release have attenuated to below the cleanup goals. Elevated concentrations of arsenic in groundwater are understood to be a secondary release resulting from the reducing conditions generated in shallow groundwater due to the original petroleum release.

The text regarding impacts to public drinking water wells in the Zone II will be revised to state: "…support the lack of anticipated adverse impact to the public drinking water wells in the Zone II from the residual contamination in the shallow groundwater at AOC 57".

Please provide a copy or reference for the Zone II maps for the Town of Ayer Grove Pond water supply wells that clearly shows a component of deep groundwater flow from the AOC 57 area towards the Grove Pond wellfield.

Comment 4: AOC 69W – Groundwater flow in AOC 69W is toward the McPherson Well; this supports evaluation/inclusion of this AOC in the PFAS RI and continued, annual groundwater LTMP.

Response: The Army agrees that shallow groundwater at AOC 69W is flowing in the direction of the MacPherson Well. The Army already has included PFAS sampling at AOC 69W and further investigations are ongoing in and around AOC 69W as part of the PFAS RI field investigations. At this time, there is no information to indicate that historical activities at AOC 69W are a source of PFAS to groundwater; therefore, adding it to the PFAS RI program is not warranted at this time. At this time, it appears that the presence of PFAS in groundwater at AOC 69W is associated with an upgradient source, likely at the Devens Fire Station (AOC 76). The Army will continue to evaluate results from the RI field program and keep EPA informed.

Inclusion of PFAS in the ongoing LTM programs is premature at this time. Existing AOC 69W wells will be considered for inclusion in the well network to be developed for the PFAS RI to provide chemical and hydraulic information to support the RI Report. A LTM program for PFAS at any of the Fort Devens AOCs would be developed during the Remedial

Design/Remedial Action phase of the PFAS investigation. Note that, as agreed during the 25 March 2019 BCT meeting, the Army plans to conduct additional sampling of the MacPherson well for PFAS.

Comment 5: AOC 32 and 43A – Eastward flow in the northeastern corner of that site (dashed area on Figure 5-3) is toward the Grove Pond public water supply wells. This area should be closely monitored in the annual LTMP and sampled extensively as a potential source area in the PFAS RI.

Response: The Army agrees that groundwater at in the northeastern corner of AOC 32 is flowing to the east. AOCs 32/43A are already part of the ongoing PFAS RI field investigations and several vertical profiling locations have been or will be conducted to the east of AOCs 32/43A. The Army will continue to evaluate results from the RI field program and keep EPA informed.

Inclusion of PFAS in the ongoing LTM programs is premature at this time. Existing wells at AOCs 32/43A will be considered for inclusion in the well network for the PFAS RI to provide chemical and hydraulic information to support the RI Report. A LTM program for PFAS at any of the Fort Devens AOCs would be developed during the Remedial Design/Remedial Action phase of the PFAS investigation. Note that the Army is assisting the Town of Ayer with quarterly monitoring of the Grove Pond public water supply wells for PFAS.

Comment 6: General Comment #3 and Specific Comment #2 – EPA first raised concerns regarding the adequacy of the existing AOC 43G LTM well network and development of risk-based VPH standards in comments on the 2015 Annual Report. Despite Army's prior commitment to develop these standards (if Method 1 GW-1 VPH standards were observed at the site boundary or compliance point), it is now refusing to perform the work necessary considered necessary to assess the ongoing efficacy of the AOC 43G remedy (i.e. intrinsic bioremediation). In addition, EPA requested that Army expand the current LTM well network to more accurately define the upgradient edge and downgradient extent of the plume. Army has refused to add the additional LTM wells based on its supposition that the plume will attenuate prior to migrating off-site. Statements regarding possible off-site migration of contamination must be supported by site-specific data collected from within and downgradient of the site boundaries. Although Army has agreed to "further evaluate the scope of the monitoring program and the implications for site cleanup in 2019 as part of the LTMMP update and/or in preparation for the 2020 Five-Year Review" (FYR), EPA believes that these data gaps must be resolved well in advance of Army's issuance of the 2020 FYR (which is unlikely if deferred to the 2019 LTMMP update) and requests that a conference call be convened within thirty (30) days to reach consensus on a path forward or the matter will be elevated to Army/EPA management for final resolution.

Response: VPH was not identified as a site contaminant of concern in the ROD, and the concentrations of site volatile organic compound contaminants of concern (BTEX) have decreased below the cleanup levels established in the ROD. VPH is monitored to help evaluate the intrinsic bioremediation of the overall plume and the concentrations are compared to MCP GW-1 standards just for comparison purposes. Even though there is a statistically upward trend of C5-C8 aliphatics concentrations at ZGM-94-04X (located within the area of groundwater historically impacted by the original release) since the beginning of the

monitoring program in 1999, it should be noted the recent (2014 through 2017) concentrations are less than the 2010 to 2013 concentrations. And as noted, there is no statistically significant trend in C9-C10 aromatics concentrations in well ZGM-94-04X. With the past successful removal of the principal threat waste (i.e., the gasoline source area) and no current exposures to site groundwater, it is expected that intrinsic remediation identified by the ROD as the selected remedy will restore the aquifer over time..

The Intrinsic Remediation Assessment (IRA) Report (Stone & Webster/Harding Lawson Associates, November 1999) established the protocol by which VPH concentrations at wells were to be monitored to assess if MCP GW-1 standards were approached or exceeded at the "boundary or other compliance point" during the remediation period. The IRA Report defined the boundary as the limit of the Reserve Forces Training Area (RTFA) (i.e., the portion of former Ft. Devens retained by the Government for Army Reserve operations). At the current time, the boundary of the Army Reserve property to the east of AOC 43 is defined by Patch Road, which is approximately 975 feet to the east of source area well ZGM-94-04X. Sentry monitoring wells XGM-94-07X and XGM-94-08X (LTMMP, 2015), located at the downgradient extent of the historical groundwater impacts and approximately 800 feet from the current boundary, were sampled for VPH continuously from 1997 to 2014. The 2015 LTMMP removed the analysis of VPH at these wells for the 2015 and subsequent LTM efforts. Table 4-2 of the 2017 Annual Report (see attached) has been revised to include annual VPH data from 1999 to 2014 for these sentry monitoring wells (XGM-94-07X and XGM-94-08X). The data identify temporally discontinuous detections of VPH, with no detected concentrations greater than the GW-1 standards. Detections have been typically less than 50 percent of the GW-1 standards for all annual sampling rounds.

Therefore, as supported by 15 years of data, in accordance with the monitoring protocol established by the IRA Report, and as previously indicated in response to EPA General Comment #3, development of risk-based cleanup goals for VPH are not warranted or proposed at this time.

Please see the response to Comment #1.

Comment 7: Potential Changes to LTMMP (General Comment 2 and Specific Comments 7, 9, and 16) – As discussed above, EPA comments recommended additional monitoring at selected locations (e.g. AOC 57 and AOC 43G) to resolve existing questions and/or data gaps. Army has proposed deferring further discussion of EPA's concerns until the "adequacy and optimization evaluation of the monitoring well network at AOC 57" is "evaluated in 2019." Army's continued efforts to defer resolution of these matters is unacceptable. EPA requests that a conference call be convened within thirty (30) days to reach consensus on a path forward or the matter will be elevated to Army/EPA management for final resolution.

Response: Please see the response to Comment #1. The Army has attempted to resolve the EPA comments on the LTMMP. Based upon discussions between EPA and the Army regarding resolution of comments on the LTM activities at AOCs 57 and 43G, the Army prepared and provided presentation materials to EPA specifically targeted at a path forward for AOC 57 for the 21 March 2018 BCT meeting. This meeting was rescheduled for 4 April 2018. At the 4 April 2018 BCT, EPA chose to further defer discussion of LTM requirements to a later, unspecified date, in order to focus on current priorities (i.e., PFAS).

Table 4-2
AOC 43G Exceedances Over Time, 1999 to 2017
Main Post, Former Fort Devens Army Installation, Massachusetts

Sample Location	Fall 1999	Fall 2000	Fall 2001	Fall 2002	Fall 2003	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017
AAFES-2	**62**	**36**	**43**	**26**	**9.0**	**6.6**	**6.1**	**1.3**	ND	ND	**3.93 J**	ND	ND	**6.60 J**	**5.04**	**3.7**	**4.2**	ND	ND
XGM-93-02X	**81**	**32**	**12**	**140**	**24**	**39**	**29**	**18.5**	**8.8**	**2.6**	**0.997 J**	ND	ND	ND	ND	**0.77 J**	ND	ND	**0.38 J**
XGM-97-12X	**270**	**550**	**700**	**780**	**290**	**260**	**35.6**	**129**	**22.8**	**13.7 J**	**27.4 J**	ND	**13.8**	**3.03 J**	**3.87**	**1.5**	**3.8**	ND	ND
Toluene- 1,000 µg/L Cleanup Goal																			
XGM-97-12X	**390**	**1,100**	**870**	**1,000**	**610**	**460**	**53.4**	**239**	**15.9**	**11.4 J**	**5.3 J**	ND	ND	ND	**2.54**	ND	**7.4**	ND	ND
Iron, total - 9,100 µg/L Cleanup Goal																			
AAFES-2	**24,000**	**20,000**	**27,000**	**26,000**	**14,000**	**20,000**	**21,900**	**12,000**	**20,000**	**18,000**	**16,000**	**14,000**	**22,000**	**18,000**	**19,000**	**19,400**	**14,400**	**11,000**	**10,000**
AAFES-6/6R	**11,000**	**9,200**	**13,000**	**9,400**	NS	NS	NS	**11,000**	**11,000**	**6,500**	**4,300**	**3,300**	**1,100**	**6,900**	**9,200**	**8,240**	NA	NA	NA
XGM-93-02X	**30,000**	**18,000**	**11,000**	**24,000**	**15,000**	**28,000**	**11,500**	**13,000**	**5,800**	**11,000**	**8,500**	**11,000**	**12,000**	**6,000**	**10,000**	**9,580**	**13,200**	**6,000**	**6,500**
XGM-94-07X	**3,500**	**2,900**	**5,800**	**2,300**	**1,000**	**300**	**1,610**	**1,400**	**4,500**	**9,300**	**8,800**	**12,000**	**13,000**	**23,000**	**10,000**	**6,820**	NS	NS	NS
XGM-94-08X	**4,800**	**13,000**	**4,500**	**4,600**	**3,200**	**2,500**	**4,520**	**6,100**	**4,600**	**2,200**	**1,300**	**1,000**	**750**	**2,300**	**910**	**147**	NS	NS	NS
XGM-97-12X	**32,000**	**26,000**	**33,000**	**46,000**	**33,000**	**32,000**	**20,100**	**18,000**	**22,000**	**25,000**	**25,000**	**16,000**	**27,000**	**20,000**	**24,000**	**25,800**	**34,300**	**25,000**	**18,000**
Manganese, total - 375 µg/L Cleanup Goal																			
AAFES-2	**4,600**	**3,900**	**4,800**	**3,700**	**3,100**	**4,000**	**3,590**	**2,700**	**3,790**	**3,600**	**3,320**	**2,490**	**3,700**	**3,100**	**3,270**	**3,460**	**2,740**	**2,800**	**2,800**
AAFES-5	**710**	**180***	**190**	**27**	**21**	**89**	**118**	**50**	**34**	ND	ND	**244**	**36**	**206**	**127**	**32.5**	NS	NS	NS
AAFES-6/6R	**2,900**	**9,200**	**3,400**	**3,000**	NS	NS	NS	**2,900**	**3,090**	**3,630**	**907**	**1,670**	**1,830**	**3,220**	**2,820**	**3,000**	NS	NS	NS
AAFES-7	NS	NS	NS	NS	NS	NS	NS	NS	NS	**106**/ND	**81**	**79**	**5 J**	**706**	**2,390**	**1,640**	**139**	**510**	***330***
XGM-93-02X	**3,900**	**2,500**	**1,900**	**2,500**	**1,900**	**2,600**	**1,450**	**2,000**	**1,800**	**1,420**	**1,630**	**737**	**3,020**	**612**	**1,180**	**1,570**	**2,020**	**1,400**	**1,400**
XGM-94-04X	**2,900**	**2,200**	**3,400**	**2,000**	**1,400**	**1,400**	**1,580**	**1,100**	**559**	**68**	**2,730**	**6,490**	**2,140**	**2,580**	**2,730**	**1,510**	**1,090**	**1,500**	**1,700 J**
XGM-94-07X	**5,700**	**3,700**	**6,100**	**4,500**	**3,600**	**1,000**	**6,120**	**5,100**	**4,120**	**5,100**	**4,990**	**3,870**	**6,060**	**5,560**	**5,380**	**6,940**	NS	NS	NS
XGM-94-08X	**4,500**	**4,600**	**4,900**	**3,600**	**3,600**	**3,800**	**7,260**	**4,200**	**3,380**	**3,100**	**2,150**	**2,070**	**2,780**	**4,620**	**2,300**	**3,210**	NS	NS	NS
XGM-97-12X	**6,300**	**4,100**	**4,200**	**3,900**	**4,100**	**3,000**	**437**	**1,800**	**2,070**	**3,060**	**2,390**	**2,110**	**3,540**	**1,640**	**1,680**	**2,080**	**3,460**	**1,700**	**1,200**
C_5-C_8 Aliphatics - 300 µg/L VPH Standards																			
AAFES-2	ND	***1,400***	ND	***1,200***	***1,200***	ND	***2,070***	***1,430***	***1,400***	ND	ND	***859***	***1,270***	***1,560 J***	***1,390***	***1,250***	***728***	***850***	***890***
AAFES-6/6R	***370***	***420***	**290**	ND	NA	NA	NA	***305***	ND	ND	ND	**114**	ND	**215**	**287**	**188**	NS	NS	NS
XGM-93-02X	ND	***570***	**270**	***790***	***410***	ND	***788***	***519***	ND	ND	ND	**124**	ND	ND	**65**	**268**	**101**	**94**	**79 J**
XGM-94-04X	ND	***420***	**140**	ND	ND	ND	ND	ND	ND	ND	ND	***533***	***765***	***497 J***	***1,140***	**186**	**65**	***480***	***360***
XGM-94-07X	ND	ND B	ND	ND	ND	ND	ND	**113**	ND	ND	ND	**159**	ND	**66**	**120**	**58.8**	NS	NS	NS
XGM-94-08X	**120**	**150 B**	**100**	**140**	**120**	ND	ND	**125**	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS
XGM-97-12X	***970***	***1,300***	***1,100***	***1,100***	***1,100***	ND	***2,370***	***1,740***	***1,230***	ND	***4,050***	***644***	***367***	***507 J***	***494***	**272**	***515***	***420***	***350***
C_9-C_{12} Aliphatics - 700 µg/L VPH Standards																			
AAFES-2	ND	**81**	ND	**200**	ND	**57**	***5,220***	***987***	***1,000***	***1,020***	***950***	***768***	***1,080***	**542 J**	***1,650***	**688**	**85.7**	**430**	**530 J**
XGM-93-02X	ND	**39**	ND	**58**	**33**	**34**	***1,570***	**268**	**94**	**182**	**55.5**	ND	**85.1**	ND	**100**	**76.6**	**ND**	**56**	**78 J**
XGM-97-12X	**96**	ND	ND	**130**	ND	**90**	***7,310***	***1,340***	***1,080***	***2,210***	***1,450***	***922***	**535**	**275 J**	***724***	**162**	***718***	**230**	**170 J**
XGM-94-07X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**89.1**	**54.5**	**90.5**	ND	**66.8**	ND	NS	NS	NS
XGM-94-08X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**6.19 J**	ND	ND	ND	ND	ND	NS	NS	NS
C_9-C_{10} Aromatics - 200 µg/L VPH Standards																			
AAFES-2	***9,400***	***7,200***	***5,300***	***13,000***	***6,600***	***6,700***	***3,130***	***3,710***	***2,420***	***2,120***	***2,660***	***1,870***	***1,050***	***1,090***	***1,940***	***1,090***	***827***	***730***	***1,100 J***
XGM-93-02X	***510***	***2,300***	***1,100***	***3,600***	***1,600***	***3,700***	***918***	***766***	***228***	***325***	**110**	**73.4**	ND	ND	ND	**113**	**62.3**	ND	ND
XGM-94-04X	***200***	***570***	**170**	**28**	ND	ND	ND	ND	ND	ND	ND	***243***	***469***	***300 J***	***769***	**76.8**	ND	***320***	***410 J***
XGM-97-12X	***4,500***	***5,500***	**5400**	**7500**	8700	7400	3810	4010	4220	5260	4110	***2,470 J***	***463***	***367 J***	***840***	***253***	***1,560***	***340***	***430 J***
XGM-94-07X	ND	ND	ND	ND	ND	ND	ND	ND	ND	**45.1 J**	**76.4**	**77.8**	ND	ND	ND	ND	NS	NS	NS
XGM-94-08X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS

Notes:

0.333	= Detection	µg/L = microgram per liter	NA = Not Analyzed
0.333	= Above background or monitoring criteria	J = Estimated result	ND = Non-Detect
0.333	= Above cleanup goal	B = Blank qualified	NS = Not Sampled

The cleanup goal for iron is the background level. The cleanup goal for manganese is a site-specific goal determined in 2008 (Long-Term Monitoring Plan Former Fort Devens Army Installation, HGL, 2008).
The VPH carbon ranges are not contaminants of concern and are evaluated against MCP GW-1 standards for comparison purposes.
Benzene, ethylbenzene, xylenes, and toluene are not contaminants of concern but the cleanup goals are the Maximum Contaminant Levels.

Comment 8: Arsenic, Manganese, and Reducing Conditions (Specific Comments 1, 7, 11, 14, and 17) – EPA appreciates the additional information in the text of the draft final report and in the table included as part of the response to Comment 11. However, questions remain regarding wells that have high arsenic and manganese concentrations but that do not show reducing conditions. As previously stated, Army's prediction that elevated metals concentrations will decrease over time as groundwater reaches high ORP portions of the aquifer, is unsupported by currently available data. Army's proposal to discuss the possible expansion of the current LTM program cannot be deferred to the 2019 LTMMP update. EPA requests that a conference call be convened within thirty (30) days to reach consensus on a path forward or the matter will be elevated to Army/EPA management for final resolution.

Response: Please refer to responses to Specific Comments 1, 7, 11, 14, and 17. Regarding the remaining concentrations of arsenic and manganese, the Army notes that the current literature (e.g., *API Groundwater Arsenic Manual, API Publication 4761, February 2011*) describing the relationships among inorganic analytes and petroleum hydrocarbon releases in groundwater clearly supports the linking of ORP, pH and adsorptive characteristics of aquifer materials with concentrations of inorganic analytes such as arsenic and manganese. The projection that elevated metals will decrease over time, as presented in the 2017 Annual Report, is a position supported by the literature as well as the data for a number of wells at the AOCs, some of which have up to 20 years of monitoring. For specific areas/wells where elevated metals remain although aquifer conditions have progressed to a more aerobic state, it is important to note that the re-adsorption of metals by soil particles is controlled by the adsorptive ability of the soil as well as by the oxidizing state of the groundwater. The presence of metal oxyhydroxides that can adsorb and bind metals such as arsenic is required to support the attenuation of metals. The specific mineral composition of the soils across the AOCs varies widely, indicating that their adsorptive ability would be similarly variable. Therefore, the timeframes within which dissolved metals concentrations decrease will vary similarly from AOC to AOC, as well as at specific areas within individual AOCs. The LTM program, as designed, allows for continued monitoring to evaluate the progression of changes in the dissolved metals concentrations.

Regarding expansion of the current LTM program, please see the response to Comment #1.

Comment 9: Unsaturated Conditions Beneath the Landfill (Specific Comments 19 and 29) – EPA is pleased that two additional overburden wells (LFM-99-01A and LFM-99-02A) were identified for possible water level measurement. Army should evaluate and report on the viability of these wells during the conference call to be convened within thirty (30) days. If the wells are viable, Army must commit to collecting water levels measurements in 2019 and to presenting the data on a cross section in the 2019 Annual Report. If the wells are plugged and need to be redeveloped, please provide a schedule for completing this work or propose locations for new wells during the requested conference call. In addition, the discussion of "triggers" should be amended to reflect overburden well water levels, not bedrock well water levels. If the existing wells do not allow this, new overburden observation wells should be installed in appropriate locations to estimate the overburden groundwater potentiometric surface beneath the landfill. EPA requests that a conference call be convened within thirty (30) days to confirm Army's commitment to perform

this work prior to the 2019 LTMMP update (as recommended by Army). If Army cannot collect the requested water level measurements as requested, it should notify EPA asap so that the issue can be immediately elevated to Army/EPA management for resolution.

Response: Unfortunately, LFM-99-01A and LFM-99-02A were mistakenly identified and do not exist at the site. Overburden wells were not installed co-located with upgradient wells LFM-99-01B and LFM-99-02B because groundwater was not present in the overburden soils at those locations. Attached is the "*Hydrogeologic Study in Support of Proposed Consolidation Landfill, Former Golf Course Driving Range, Devens, Massachusetts*" prepared by HLA in December 1999. The study presents the monitoring wells installed and included boring logs (Appendix A) and monitoring well construction logs (Appendix B) for reference. Figure 3-2 presents two geologic cross-sections, which indicate that bedrock is shallow at LFM-99-01B (8 ft bgs) and at LFM-99-02B (9 ft bgs) and the groundwater was not observed in the overburden at these locations. The water table was observed at LFM-99-01B and LFM-99-O2B at 30.17 and 18.01 ft bgs, respectively. Based on this information, there is no saturated overburden at LFM-99-01B or LFM-99-02B; therefore, additional overburden well(s) are not proposed.

James Ropp

From: Keating, Carol <Keating.Carol@epa.gov>
Sent: Wednesday, June 12, 2019 2:27 PM
To: robert.j.simeone.civ@mail.mil
Cc: James Ropp; Reddy, Penelope W CIV (US) (PENELOPE.W.REDDY@usace.army.mil); Chaffin, David (DEP); Jim Vernon; Greg Kemp
Subject: RE: Final EPA Comments on the 2017 Annual Report - LTM - Main Post

Follow Up Flag: Follow up
Flag Status: Completed

Categories: Devens LTM

See corrected text in red below.

From: Keating, Carol
Sent: Wednesday, June 12, 2019 1:15 PM
To: robert.j.simeone.civ@mail.mil
Cc: James Ropp <JRopp@komangs.com>; Reddy, Penelope W CIV (US) (PENELOPE.W.REDDY@usace.army.mil) <PENELOPE.W.REDDY@usace.army.mil>; Chaffin, David (DEP) <david.chaffin@state.ma.us>; Jim Vernon <jvernon@nobis-group.com>; Greg Kemp <kemp@mabbett.com>
Subject: Final EPA Comments on the 2017 Annual Report - LTM - Main Post

Bob,

In the interest of finalizing the 2017 Main Post Annual LTM Report, EPA accepts the ~~April 2017~~ February 2019 revised draft final document, contingent upon successful incorporation of all recently agreed-upon changes. As discussed during our recent telephone conversation, while many of EPA's concerns remain unaddressed, delaying issuance of the 2017 Annual Main Post Report until these issues are resolved makes little sense given that Army recently issued the draft 2018 Main Post LTM Report.

Despite the fact that many of EPA's recent concerns were initially raised in comments on the draft 2015 LTMMP Update, 2015 Devens Five Year Review (FYR) and 2016 Annual Main Post Report, the disputed information was reproduced in the 2017 Annual Report. For reasons previously indicated, EPA considers Army's statements regarding the fate and transport of site groundwater and attainment of ROD-specified cleanup goals, based entirely on "interpretative" water table elevations and groundwater flow model predictions, as hypothetical and speculative without site-specific data to corroborate these conjectures. Army's continued refusal to expand the existing monitoring well network/LTM program, coupled with its unilateral decision in 2015 to eliminate LTM in Area 2 and significantly scale back LTM in Area 3 has significantly hindered the collection and availability of groundwater quality and COC concentration trend data needed to adequately evaluate the AOC 57 remedy and support statements such as "all groundwater at the site discharges to the brook" and "all COCs related to the historical release have attenuated to below cleanup goals." (As you may recall from 2015 FYR Review Report comments, EPA had referred to the 2015 "optimization evaluation" (i.e. LTMMP Update) referenced in the FYR Report as "draft" because it not undergone/completed the FFA-required review and comment process. Because the LTMMP Update isn't a "primary document" under the FFA, Army released the February 2015, "Final LTMMP Update" without EPA concurrence.) With the next (2020) Devens FYR scheduled to commence this fall, it is imperative that the additional work needed to effectively resolve these existing data gaps be performed prior to year's end. Otherwise, the protectiveness determination for these two sites in the 2020 FYR may be recommended as "protectiveness deferred" until sufficient site-specific data is collected to satisfactorily resolve these outstanding issues.

AOC 57 - For reasons discussed in EPA's comments on the aforementioned documents, Army must collect site-specific data to sufficiently characterize/define the lateral and vertical extent of contamination in shallow and deep groundwater associated with the site. Although "Area of Contamination" boundaries for Areas 2 and 3 are included in Figures 2-2 and 2-3 in the 2017 Annual Main Post Report, the "Site" boundary, as defined in CERCLA, includes any area to which site-related contaminants in exceedance of ROD-specified cleanup goals, have come to be located. This includes groundwater within and downgradient of currently depicted AOC boundaries. The current monitoring well network/LTM program is inadequate and must be amended to address the following:

- Since all of the monitoring wells in the existing LTM network are screened in shallow groundwater, contaminant concentrations in deeper portions of the aquifer, within or downgradient of the suspected AOC boundary, have not be adequately evaluated/assessed (i.e. existing monitoring wells are all screened in shallow groundwater); additional monitoring wells, with deeper screens, should be installed throughout Areas 2 and 3 to assess groundwater quality in deeper portions of the aquifer;
- Existing Area 2 (i.e. 57M-03-03X and 57M-03-04X) and Area 3 (57M-96-11X) monitoring wells have had or currently have COC detections above ROD-specified cleanup goals; samples of shallow and/or deep groundwater beyond these monitoring points must be collected/evaluated to confirm/deny the presence of contamination in this portion of the aquifer. The fact that COC concentrations in monitoring well 57M-96-11X (identified as a "source area" well in the 2017 Report (Page 2-3, § 2.5.1)) have remained above the cleanup goal (i.e. MCL) since 2003 (and that there are no other monitoring wells beyond this location), more than justifies expansion of the existing LTM network beyond 57M-96-11X, in the direction of Cold Spring Brook (CSB).
- Boundaries of the "reducing environment present in the aquifer (low DO and ORP), which tend to promote the mobilization of metals such as arsenic from native soils" must be defined; if monitoring wells 57M-95-03X and 57M-96-11X are suspected of being within the reducing zone, as indicated in the 2017 Report (Page 2-3, § 2.5.3), then sufficient site-specific data should be collected to confirm/define the oxygenated environment present in the aquifer (high DO and ORP). Site-specific data is needed to confirm where within the aquifer arsenic and manganese is "precipitated out of low-ORP groundwater emanating from the site" (i.e. CSB wetlands) and what the concentrations of these COCs are when it released back into the environment.

AOC 43G – Although EPA has withdrawn its request that Army develop risk-based VPH standards as part of the 2017 Main Post Annual LTM Report, it remains concerned about the existing monitoring well network and more specifically, whether it is sufficient to monitor the upgradient edge and downgradient extent of the AOC 43G groundwater plume. Army has consistently refused to add the additional LTM wells needed to respond to this issue based on its supposition that the plume will attenuate prior to migrating off-site. Once again, statements regarding plume attenuation and possible off-site migration of contamination must be supported by site-specific data collected from within and downgradient of previously-established site boundaries. Although Army had agreed in its response to comments to "further evaluate the scope of the monitoring program and the implications for site cleanup in 2019 as part of the LTMMP update and/or in preparation for the 2020 Five-Year Review" (FYR), since Army has since decided to forego the 2019 LTMMP update, the data needed to evaluate/confirm the protectiveness of the AOC 43G remedy in the 2020 Devens five-year review will not exist.

EPA recommends that the Devens BCT be convened as soon as possible to discuss and agree upon a short-term LTM program for the AOC 57 and AOC 43G site that will adequately respond to the deficiencies and data gaps outlined above.

Carol A. Keating
U.S. EPA Region 1
5 Post Office Square
Suite 100 - OSRR7-03
Boston, MA 02109
617-918-1393