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SWMU 39 CORRECTIVE ACTION IMPLEMENTATION PLAN

Direct Support Maintenance Facility

Fort Stewart, Georgia

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SWMU 39 CORRECTIVE ACTION IMPLMENTATION PLAN

Direct Support Maintenance Facility

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ACRONYMS AND ABBREVIATIONS

CAOs	Corrective Action Objectives
CAP	Corrective Action Plan
COPC	Constituent of Potential Concern
CSM	Conceptual Site Model
DCE	cis-1,2-dichloroethene
DPT	Direct Push Technology
DSMF	Direct Support Maintenance Facility
EC	Electrical Conductivity
ELCR	Excess Lifetime Cancer Risk
ERD	Enhanced Reductive Dechlorination
EVO	Emulsified Vegetable Oil
ft bgs	feet below ground surface
GAEPD	Georgia Environmental Protection Division
gpm	Gallons per Minute
HASP	Health And Safety Plan
HOT	Heating Oil Tank
K_{oc}	Organic carbon Partition Coefficient
LNAPL	Light Non-Aqueous Phase Liquid
MCL	Maximum Contaminant Level
SDS	Safety Data Sheet
µg/L	micrograms per Liter
mg/kg	milligrams per kilogram
MIP	Membrane Interface Probe
MNA	Monitored Natural Attenuation
ORC	Oxygen Releasing Compound
PAH	polycyclic aromatic hydrocarbons
PCE	Tetrachloroethene
PPE	Personal Protective Equipment

RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RSL	Regional Screening Level
SSL	Soil Screening Level
SVOC	Semi-volatile Organic Compound
SWMU	Solid Waste Management Unit
TCE	Trichloroethylene
TOC	Total Organic Carbon
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VAP	Vertical Aquifer Profile
VC	Vinyl Chloride
VOC	Volatile Organic Compound

1 INTRODUCTION

This Work Plan presents the requirements and strategies for corrective action implementation at the Direct Support Maintenance Facility, Solid Waste Management Unit (SWMU) 39, at Fort Stewart, Georgia. This work plan was prepared in accordance with the requirements of the Performance Based Contract number W91ZLK-13-D-0009 Task Order 0007 and follows the submittal of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report for SWMU 39 (Arcadis 2014), the Corrective Action Plan (CAP) for SWMU 39 (Arcadis 2017), the *Technical Memorandum – 2017 Baseline Groundwater Monitoring Event* (Arcadis 2018), and the Revised CAP for SWMU 39 (Arcadis 2018) which incorporated the *Technical Memorandum – 2017 Baseline Groundwater Monitoring Event* into the CAP.

1.1 Project Scope and Objectives

Based on the findings of the RFI Report for SWMU 39 (Arcadis 2014), a corrective action plan was developed to evaluate remedial alternatives for volatile organic compounds (VOCs) in groundwater and light non-aqueous phase liquid (LNAPL) associated with low level polycyclic aromatic hydrocarbons (PAHs) in soil near monitoring wells G4MW001 and G4MW002.

Based on the evaluation in the CAP, Enhanced Reductive Dechlorination (ERD) and Monitored Natural Attenuation (MNA) were selected as the remedies for VOC impacts to groundwater. Recovery with absorbent socks was selected as the remedy for LNAPL with maintenance of the concrete cap to prevent exposure to PAHs in soil. Land Use Controls were also selected to restrict potential use of groundwater from the surficial aquifer as potable water. This document presents the design and implementation strategy for the selected remedies.

Investigation and corrective action activities at Fort Stewart are managed using the criteria defined in the Georgia Environmental Protection Division (GAEPD) Facility Permit #HW-045(S).

1.2 Document Organization

This report contains eleven sections, including the introduction:

- Section 1: General introduction to SWMU 39, the objectives and scope of the corrective action, and the regulatory status of the SWMU.
- Section 2: General introduction to site background and summary of previous site investigations.
- Section 3: Discussion of site geology, hydrogeology, and nature and extent of impacts.
- Section 4: Statement of the objectives of corrective action and identification of specific areas to which correctives actions will apply.
- Section 5: Description of the proposed remedies.
- Section 6: Remedy Implementation. Presents implementation and operational methodology.

- Section 7: Discussion of general health and safety requirements.
- Section 8: Data analysis and reporting
- Section 9: Permits and Notifications - Presents a list of applicable permits and notifications.
- Section 10: Schedule
- Section 11: References

2 SITE BACKGROUND

2.1 Site Description

Fort Stewart is located in portions of Liberty, Bryan, Long, Tattnall, and Evans Counties, Georgia, approximately 40 miles west-southwest of Savannah, Georgia (**Figure 2-1**). The cantonment, or garrison area, is located within the Liberty County portion on the southern boundary of the reservation. Hinesville, Georgia is the nearest city to the garrison area and is located immediately outside of the reservation boundary. The Direct Support Maintenance Facility (DSMF) is an approximately 10-acre fenced facility with controlled access. Surrounding the fenced area along the southern and western sides of the Site is undeveloped land covered with grass, some shrub vegetation, and pine trees. A drainage ditch runs along the south and southwest portion of the fence. Rail lines are located south and southeast of the DSMF, with a rail spur running next to the drainage ditch along the southern side of the fence (**Figure 2-2**). The groundwater impacts extend beyond the fenced DSMF to the south, east and west. Historically, the area of groundwater requiring remedial evaluation was approximately 26 acres in the shallow zone of the Surficial Aquifer (water table to approximately 24 feet below ground surface [ft bgs]) and approximately 17 acres in the deep zone of the Surficial Aquifer (approximately 25 to 98 ft bgs) which partially overlapped the shallow zone impacts. The total impacted area was approximately 31 acres. Due to natural attenuation, the shallow zone impacts have decreased and only include an exceedance in one well. The COCs in the deep zone based on the 2017-2018 data impact an area of approximately 13 acres.

Historically, the DSMF was used as a vehicle wash/service rack. Two former underground storage tanks (USTs), USTs 59 and 60, and their associated heating oil tanks (HOTs) were located west of Building 1160, at the tracked vehicle maintenance platforms (Buildings 1161 and 1163). The HOTs provided fuel oil to a high-pressure washer at the platform. USTs 59 and 60 were 4,000-gallon concrete USTs utilized as non-regulated flow vaults and were connected to an oil water separator located at the Mechanized 60 (M60) maintenance platforms. An additional 500-gallon UST (61) was located immediately southeast of the tracked vehicle maintenance platform (Building 1161) and was used for the storage of used oil and was excavated and removed from the Site in 2006 (**Figure 2-2**). The two HOTs plus the two 4,000-gallon concrete USTs (59 & 60) were filled with grout and closed-in-place in 1997.

2.2 Summary of Previous Investigations and Corrective Actions

The investigations and remedial actions that have been completed to date are summarized below. They are presented in greater detail in the RFI (Arcadis 2014) and Revised CAP (Arcadis 2018). The activities have included the following:

1. Excavation activities at UST 61 with application of Oxygen Releasing Compound (ORC®) to the excavation floor and sidewalls in August 1995.

2. 1997 UST Closure of two Heating Oil Tanks (USTs 59 and 60) at SWMU 39 closed in place.

3. Investigations conducted in 2001 and 2002 consisting of installation of monitoring wells and soil borings in the areas of the USTs and HOTs (STEP 2003).

    - Soil below standards for PAHs and VOCs,
    - LNAPL in monitor well G4MW002 and G4MW007, and
    - Concentrations in groundwater of trichloroethylene (TCE) above standard.

4. An investigation performed in three phases in 2004 to further evaluate subsurface soil, groundwater, surface water, LNAPL, and evaluate potential remedial approaches.

    - Collection of soil, surface water, sediment and groundwater samples,
    - Installation of twelve (12) additional monitoring wells,
    - LNAPL removal from existing wells, and
    - Isolation of two concrete flow-through vaults and their associated oil water separator.

5. 2007 Interim Remedial Action consisting of soil excavation around G4MW007 and G4MW013 and replacement of the wells with larger diameter wells to aid in further remediation of free product (**Figure 2-2**). Following the excavation, ORC® was applied to the excavation sidewalls and bottom. Replacement wells G4MW007R and G4MW013R were installed. No free product has been detected in these wells.

6. Investigations conducted in 2008 for further delineation of TCE in groundwater at the request of the GAEPD.

    - Direct push technology (DPT) investigation and screening samples collected from 19 locations around SWMU 39. Results from the screening showed the continued presence of tetrachloroethene (PCE) and TCE in groundwater above the United States Environmental Protection Agency (USEPA) Maximum Contaminant Levels (MCLs).
    - Seven additional monitoring wells installed (G4MW026 through G4MW032) in March 2008. The new wells were screened from about 10 to 20 feet below ground surface (ft bgs) with one well screened from 35 to 45 ft bgs. The sampling results indicated detections of PCE and TCE south of the DSMF fenced area (and north of Italy Street).

7. Investigation Activities in 2010 and 2011 included activities for groundwater, LNAPL, background soil, soil, surface water and sediment during multiple mobilizations.

- Groundwater activities included hydraulic testing (five locations), completion of Membrane Interface Probe (MIP) borings (nine locations), Vertical Aquifer Profile (VAP) sampling (29 locations with multiple depths at each location), deep soil boring (one location), well installation (19 locations), and well sampling (two events conducted in 2011 for new and existing monitoring wells).

- LNAPL work consisted of eight borings around the remaining LNAPL area (G4MW002).

- Background soil borings were advanced at four locations around buildings 1161 and 1163 for PAHs and metals characterization.

- Soil sampling for PAH impacts in area of F39SB010 at six locations.

- Surface water and sediment samples collected from eight locations in the drainage canal.

8. Investigation conducted in 2017 consisted of sampling of monitoring wells to update concentrations since 2011 and a LNAPL recovery test (Arcadis 2018).

    - LNAPL recovery testing in monitor wells G4MW001 and G4MW002, and

    - Collection of groundwater samples from 31 monitor wells for analysis of VOCs and 6 monitor wells for total and dissolved arsenic.

9. Investigation conducted in 2018 consisted of sampling of monitoring wells to confirm concentrations detected in 2017.

    - Collection of groundwater samples for analysis of VOCs and Arsenic.

3 INVESTIGATION RESULTS AND CONCEPTUAL MODEL

Data collected during the RFI activities were utilized to refine the conceptual site model (CSM) as well as delineate the impacts in groundwater. The key elements of the CSM are summarized in the following sections and are based on detailed geologic logging, MIP/Electrical Conductivity (EC) soundings, soil samples from various depths, and collection of numerous groundwater samples via VAP sampling and groundwater monitoring well sampling. Additional detail and data are included in the RFI Report for SWMU 39 (Arcadis 2014) and Revised CAP for SWMU 39 (Arcadis 2018).

3.1 Geology and Hydrogeology

Soil borings advanced throughout SWMU 39 and other upgradient areas indicate that the subsurface is predominantly silty fine-grained sand with occasional lenses of clay, and coarse sand. Clay lenses are most prevalent in the eastern portion of the Site near F39TW11 (**Figure 2-2**). Regional and local geologic data shows that a competent confining unit is present at depth and effectively prevents downward migration of constituents of concern (COC) to the upper Floridan Aquifer.

Locally, a combination of soil borings, vertical aquifer profiling, and slug testing of monitor well installation contributes to the characterization of the Surficial Aquifer. The Site is underlain by silty fine-grained sands that range from 25 ft to 40 ft thick across the Site, with silt and clay content increasing with depth. In the eastern portion of the Site, near G4MW055, a 55-foot thick section of interbedded clay and clayey fine sand is present, followed by a layer of coarse-grained sand with two clay layers at 12 ft thick and 7 ft thick between 58 ft bgs and 85 ft bgs. A layer of clayey fine-grained sand appears at approximately 25 ft bgs to 30 ft bgs beneath the overlying silty fine-grained sand in the western portion of the Site, near Building 1160. Slug tests performed at five monitor wells in January 2011 returned hydraulic conductivity values that ranged from 10^{-3} to 10^{-5} centimeters per second and are consistent with the silty sand geology.

3.2 Nature and Extent of Impacts

3.2.1 Groundwater

Groundwater investigations conducted during 2004, 2008, 2010, 2011, 2017 and 2018 identified and delineated low-level VOCs (<100 micrograms per liter [ug/L]), predominantly PCE and TCE, in groundwater across much of site. Investigations have confirmed higher concentrations of PCE and TCE (>100 ug/L) in deeper groundwater in a small area of the site. The most recent analytical results from the 2017 and 2018 sampling events are included in **Tables 3-1** and **3-2**, respectively.

3.2.1.1 Supplemental Groundwater Sampling - 2018

In accordance with the Proposed Groundwater Sampling Plan included in Table 4 of the *Technical Memorandum – 2017 Baseline Groundwater Monitoring Event*, eighteen (18) monitoring wells were sampled in June 2018 to verify the 2017 results prior to finalizing injection design. Fourteen (14) monitoring wells were analyzed for VOCs:

- Shallow Interval: G4MW017, G4MW018, G4MW019, G4MW025, G4MW033, G4MW035, G4MW054; and
- Deep Interval: G4MW022, G4MW040, G4MW041, G4MW047, G4MW051, G4MW056, and G4MW057

The results of the June 2018 sampling event indicated no significant changes in the VOC magnitude or distribution observed in the 2017 data.

Additionally, six wells (G4MW54, G4MW036, G4MW039, G4MW051, G4MW052, G4MW053) were analyzed for total and dissolved arsenic. G4MW050 had been destroyed during road construction and was not sampled for analysis of total and dissolved arsenic. All arsenic results were below the USEPA MCL.

The lab and validation reports for the June 2018 sampling are included in **Appendix A**.

3.2.1.2 Shallow Groundwater

Figure 3-1 displays the 2011, 2017, and 2018 shallow zone groundwater results for benzene, PCE, TCE, cis-1,2-dichloroethene (DCE), and vinyl chloride (VC) from the permanent monitor wells. The extent of TCE impacts to shallow groundwater are presented on **Figure 3-1**, with the highest TCE concentration in shallow groundwater detected during the 2011 groundwater monitoring event in monitoring well G4MW033. The VOC results from 2017 indicated significant attenuation of the VOC impacts in the shallow zone since 2011. The 2018 results, which confirmed the lower concentrations in 2017, indicated all COC concentrations in shallow zone groundwater were below the USEPA MCL.

3.2.1.3 Deep Groundwater

Figure 3-2 displays the 2011 deep zone groundwater results for benzene, PCE, TCE, DCE, and VC from the permanent monitor wells and temporary vertical aquifer profile (VAP) points. **Figure 3-3** displays the 2011, 2017, and 2018 deep zone groundwater results for benzene, PCE, TCE, DCE, and VC from the permanent monitor wells. The highest chlorinated VOC impacts in deep groundwater during the VAP investigations and subsequent groundwater monitoring events were detected near F39TW11 and G4MW041/G4MW051. The impacts to deep groundwater are delineated vertically at G4MW055. During drilling of G4MW055, a clay layer was encountered at approximately 58 ft bgs. During the VAP investigations, sampling could not be completed deeper that 55 ft bgs due to insufficient water yield. The vertical impacts to groundwater appear to be contained above this clay layer. The sampling results from 2017 indicated that although decreases were noted in some wells, the VOC impacts in the deep zone were generally the same as 2011 with no significant attenuation overall. Concentrations in the source area wells decreased in the shallower monitor well (G4MW041 screened from 35 – 45 ft bls) and increased in the deeper monitor well (G4MW051 screened from 50 – 60 ft bls) between 2011 and 2017. The 2018 sampling results confirmed the concentrations and distribution in the 2017 data.

3.2.2 LNAPL

LNAPL associated with historical maintenance operations at Buildings 1161 and 1163 has been detected in monitoring wells G4MW001 and G4MW002. During the May 2011 monitoring event, approximately

0.65 ft of product was measured in G4MW001 and 3.26 ft of product was measured in G4MW002. The LNAPL thickness in the two wells tested for LNAPL recovery (G4MW001 and G4MW002) had decreased to below 1 foot (0.20 and 0.87 foot, respectively) prior to the test in September 2017. The LNAPL appears to be localized near these two monitoring wells. An estimate of the extent of LNAPL impacts is shown on **Figure 3-4**.

In general, LNAPL thickness quickly recovered following the initial purge and the measured transmissivity was within the Interstate Technology & Regulatory Council guidance threshold for practical recovery.

3.2.3 Soil

Between 2004 and 2011, surface soil and subsurface soil samples were collected within the fenced DSMF area. Low level VOC, PAH and metals were detected and delineated in surface and subsurface soil.

3.2.3.1 Surface Soil

The DSMF is a paved area, so surface soil samples were collected immediately below the concrete. The 2010 surface soil samples reported low level PAHs above the RSL and Soil Screening Level (SSL). The highest concentrations were detected in borings F39SB013 and F39SB010, just below the concrete pad on the southwest side of Building 1160. Soil samples collected in 2011 from monitor well G4MW053, located to the northeast on the opposite side of Building 1160, were non-detect. F39SB016 and F39SB015, collected to the northwest and southeast of F39SB013 and F39SB010, were also non-detect for PAHs. All soil boring locations and results are shown on **Figure 3-5**.

3.2.3.2 Subsurface Soil

Subsurface soil samples were collected at various depths up to 10 ft bgs. Subsurface soil samples collected in 2010 from locations F39SB001 through F39SB006, F39SB008, F39SB009, F39SB011, and F39SB012 were non-detect or below the industrial soil RSL and the SSLs. Concentrations of benzo(a)anthracene and benzo(b)fluoranthene exceeded the risk-based SSLs in the subsurface soil sample collected at F39SB007. Subsurface soil sampling results from location F39SB010 exceeded the risk-based SSL for benzo(a)anthracene and benzo(b)fluoranthene; but indicated decreasing concentrations with depth. Subsurface soil samples collected in 2011 from locations F39SB014, F39SB015, F39SB016, and G4MW053 were non-detect or below the SSLs and industrial soil RSLs for PAHs. The concentration of 4-chlorobenzeneamine exceeded the risk-based SSL in the subsurface soil sample collected from F39SB015. Concentrations of several PAHs in the subsurface soil samples collected at F39SB013 and F39SB017 exceeded the SSLs, and the concentration of benzo(a)pyrene in both subsurface soil samples exceeded the industrial soil RSL. All soil boring locations and results are shown on **Figure 3-6**.

Due to concentrations of benzo(a)anthracene and benzo(b)fluoranthene exceeding the SSLs for the protection of groundwater, site-specific SSLs were calculated for those constituents in the RFI (ARCADIS 2014). A few of the detected concentrations of these constituents were slightly higher than the calculated site-specific SSLs, however, none of these constituents were detected in groundwater samples collected in this area, indicating that the constituents are not leaching to groundwater. This area was historically

used for vehicle washing and service and is covered by 12 inches of concrete to support the heavier Army vehicles. The highest PAH detections in soil were found just below 12 inches of concrete (along the southwest side of Building 1160). Concentrations of PAHs in the subsurface soil samples decreased with depth, which is consistent with their Organic Carbon Partition Coefficient (Koc) values that indicate a potential to absorb to soil rather than migrate to groundwater. Based on decreasing concentrations with depth and PAH Koc values, these constituents were not identified as Constituents of Potential Concern (COPCs) for the leaching to groundwater pathway in the RFI. However, benzo(a)pyrene was identified as a COPC for the direct contact pathway (ARCADIS 2014).

Lead was detected at 5.4 milligrams per kilogram (mg/kg) in the subsurface soil sample collected at F39SB009 from 3 to 3.5 ft bgs. This concentration is below both the MCL-based SSL and the background value (11.1 mg/kg). No other metals were detected in subsurface soils at concentrations exceeding the background concentrations.

3.2.4 Surface Water and Sediment

A drainage canal parallels the southwestern DSMF fence line. A storm water outfall near Building 1161 discharges from the DSMF into the drainage canal. Seven surface water and eight sediment samples were collected in 2010. The 2010 surface water and sediment investigations identified low level SVOC and VOC concentrations below the screening criteria in the drainage canal along the southern edge of the DSMF. Lead and mercury were detected in surface water at concentrations above the In-stream Water Quality Standard and arsenic was detected in the sediment above the residential soil RSL. Lead was detected in all surface water samples, with the highest concentrations detected near the storm water outfall. The lead concentrations decreased downstream. Arsenic was detected in all sediment samples, with the highest detection reported upstream and adjacent to the rail lines. Both arsenic and lead are commonly found near rail lines. Historically, arsenic and/or lead have been used in old railroad ties, pesticides, and slag, used as railroad bed fill. Based on the proximity of the rail lines to the drainage canal, it is believed that the metals detected in surface water and sediment are related to the rail lines and are not associated with the historical activities at SWMU 39. As discussed and agreed upon in meetings with GAEPD, no further evaluation of impacts to surface water and sediments was recommended in the revised Final SWMU 39 RCRA Facility Investigation Report (Arcadis 2014) dated December 15, 2014, that was approved by GAEPD in a letter dated January 30, 2015 (GAEPD 2015).

4 CORRECTIVE ACTION OBJECTIVES AND TARGET AREAS

4.1 Corrective Action Objectives

Based on the results of the risk assessments conducted for SWMU 39, the primary goal of the corrective action is protection of human health from the effects of potential future exposures to groundwater by ingestion. Currently, drinking water is supplied by the public system and the surficial aquifer groundwater is not consumed as drinking water. There is no plan in the future to utilize surficial aquifer groundwater as drinking water. As a result, there is no completed risk pathway and no immediate risk. Human Health Risk Assessment results for potential future residents indicate some potential for risk; therefore, protection of human health is directly related to land use. The remedial response objective is to prevent possible future exposures by preventing groundwater consumption. Reducing the concentrations of PCE, TCE and its daughter products in groundwater to levels that are below USEPA MCLs is also a desired goal.

This section lists the corrective action objectives (CAOs) that were the basis for evaluating the remedial alternatives that will be implemented at SWMU 39. The corrective action objectives are established to provide remedial goals for SWMU 39. As provided by USEPA in the RCRA Corrective Action Plan guidance (USEPA 1994), these objectives include:

- Protection of human health and the environment.
- Attainment of media-specific cleanup standards.
- Control of source releases to reduce or eliminate, to the extent practicable, further releases that may pose a threat to human health and the environment.
- Compliance with applicable standards for the management of wastes.

4.2 Evaluation of Remedial Levels

Investigation, evaluation, and risk assessment efforts were carried out for SWMU 39 surface soil, subsurface soil, surface water, groundwater, and sediment. Constituents exceeding USEPA MCLs in groundwater and surface soil and LNAPL in the DSMF area were identified as potential risks requiring further evaluation.

4.2.1 Remedial Levels for Groundwater

Groundwater remedial levels are based on the USEPA MCLs for Drinking Water (June 2018). The MCLs for constituents requiring remedial evaluation are:

- PCE – 5 micrograms per liter (µg/L)
- TCE – 5 µg/L

- DCE – 70 µg/L
- VC – 2 µg/L
- Benzene – 5 µg/L
- Arsenic – 10 µg/L

LNAPL detected in monitoring wells G4MW001 and G4MW002 will be addressed by removing free product until it is no longer accumulating in the wells. Current groundwater concentrations in the area surrounding G4MW001 and G4MW002 are below the MCLs for constituents related to the LNAPL.

4.2.2 Remedial Levels for Soil

Low level PAHs have been detected in the surface and subsurface soil near monitor wells G4MW001 and G4MW002. During the risk assessment, the exceeding pathway was the Excess Lifetime Cancer Risk (ELCR) for a hypothetical future child resident as a result of direct contact with surface soil (0-1 ft bgs) and subsurface soil (1-8 ft bgs). All other calculated hazard indices and ELCRs are below the GAEPD acceptable risk levels. The GAEPD (2015) agreed that a target risk level of 1×10^{-5} was appropriate for this site because the current use of the site is as an active military base and the location of SWMU 39 is in an area of the post that is strictly commercial/industrial rather than residential. There are no plans to change land use around SWMU 39 in the foreseeable future. Therefore, no remedial levels were developed for surface or subsurface soil.

4.2.3 Remedial Levels for Surface Water and Sediment

As discussed and agreed upon in meetings with GAEPD, no further evaluation of impacts to surface water and sediments was recommended in the revised Final SWMU 39 RCRA Facility Investigation Report (Arcadis 2014) dated December 15, 2014, that was approved by GAEPD in a letter dated January 30, 2015. No remedial levels were established for the surface water and sediment.

4.3 Summary of Areas Requiring Remedial Evaluation

The areas requiring remedial evaluation are defined by the monitoring wells containing Benzene, PCE, TCE, DCE, arsenic, and LNAPL at levels above the USEPA MCL. Based on the VAP and monitoring wells, an area of higher level PCE, TCE, and DCE concentrations in deeper groundwater was identified upgradient of the DSMF, with a diffuse low level PCE and TCE (<100 ug/L) plume also present across much of the Site. **Table 4-1** identifies each well and its respective screen interval. **Table 4-2** presents the 2011 sampling data for Benzene, PCE, TCE, DCE, VC, and arsenic. **Tables 3-1 and 3-2** presents the sampling data collected at the 2017 Baseline Groundwater Monitoring Event and the 2018 Baseline Verification Groundwater Monitoring Event, respectively. **Figures 3-1, 3-2,** and **3-3** show the approximate areas within the shallow and deep zones of the aquifer where PCE, TCE, and DCE are greater than the MCL and require remedial evaluation. The area of groundwater requiring remedial evaluation in the shallow zone has decreased significantly since 2011. Only one well (G4MW033) exceeded the MCL in 2017 and none exceeded the MCL in 2018. The deep zone plume based on the 2017-2018 data impacts an area of approximately 13 acres.

5 DESCRIPTION OF CORRECTIVE ACTIONS

The selected corrective actions consist of Land Use Controls (LUCs), Monitored Natural Attenuation, LNAPL Recovery, Impermeable Cap Maintenance, and ERD. Each aspect of the corrective action is described below.

5.1 Land Use Controls

The LUCs will prohibit installation of water wells within or downgradient of SWMU 39. Under this alternative, LUCs would entail prohibition of potable water well installation and prohibition of groundwater consumption to address unacceptable potential risks to hypothetical future adult and child residents exposed to groundwater via ingestion. Although the low hydraulic conductivity of the surficial aquifer makes it unsuitable for potable water wells, restrictions would be applied to provide assurances that potable use of groundwater from the surficial aquifer does not occur. Restrictions would remain in place until groundwater quality meets MCLs for PCE, TCE, DCE, and VC. Some LUCs are already included in the Fort Stewart Dig Permit Process, which requires approval from the Fort Stewart Directorate of Public Works, Environmental Branch prior to installation of water wells within the Base.

The soil where the low-level PAHs were detected is currently capped by 12 inches of concrete, thereby preventing direct exposure to the soil or leaching to groundwater. PAHs were not detected in the groundwater. Based on the concrete cap, and the low levels detected in soil, LUCs will be utilized to ensure maintenance of the current concrete and continued use restrictions.

5.2 Monitored Natural Attenuation

Historical data indicate that daughter product DCE from the natural attenuation of PCE and TCE is present throughout the plume, indicating that the processes of natural attenuation are working to reduce the concentration of PCE and TCE at the site. This alternative would document that these processes continue to remain active and are reducing the extent and concentration of PCE and TCE in groundwater at a rate sufficient for achievement of CAOs.

5.3 Enhanced Reductive Dechlorination

ERD using emulsified vegetable oil (EVO) as a carbon substrate in the immediate vicinity of the wells where PCE and TCE have most impacted the aquifer historically, along with MNA in the shallow zone and downgradient areas, would provide for a reduction in toxicity and volume of PCE, TCE, and related daughter products in groundwater. Natural processes are currently reducing PCE and TCE to its daughter products. Successful delivery of a carbon substrate in deep zone groundwater in the treatment areas (**Figure 5-1**) would enhance these processes. If incomplete dechlorination is occurring, the injections would be augmented to include a soluble carbon donor, such as molasses or lactate, that is capable of rapidly stimulating the necessary environment for complete dechlorination. EVO will be injected into a well network within the vicinity of G4MW041 and G4MW051. Baseline monitoring will be utilized to assess the extent of the naturally occurring reductive dechlorination. Due to the low solubility and dissolution rate

of EVO, subsequent injection events would likely be needed every 18-24 months. The injection frequency will be based on the utilization rate of the carbon as measured by performance monitoring. Total organic carbon (TOC) within the active treatment area would be maintained at no less than 20 mg/L. Additional injection events will be necessary after TOC concentrations fall below 20 mg/L.

5.4 LNAPL Removal

LNAPL was observed in an area surrounding G4MW001 and G4MW002. To effectively recover LNAPL located in and around G4MW001 and G4MW002, the remedial alternative includes the installation of absorbent socks in the wells. Based on 2017 testing data from the Baseline Groundwater Monitoring Event (Arcadis 2018), G4MW002 had approximately 0.20 feet of LNAPL and G4MW001 had approximately 0.87 feet of LNAPL. Change out of the absorbent socks will be required until free product is no longer accumulating in the wells.

5.5 Groundwater Monitoring

A groundwater monitoring program would be implemented to track the progress of remediation, to ensure that conditions remain favorable for continued natural attenuation, and to determine when the CAOs have been achieved. The long-term monitoring well network would incorporate existing monitoring wells plus three monitoring wells installed as part of the active remedy. Low-flow or no-purge sampling technology will be used to collect groundwater samples for VOCs and other analytes. Groundwater monitoring will be implemented for the duration of the remediation period. The plume exists in an industrial area of the site, far from the downgradient base property line, and has shown no evidence of migrating downgradient. The Groundwater Monitoring Plan can be found in **Table 5-1**.

6 CORRECTIVE ACTION IMPLEMENTATION

The detailed implementation strategy for each of the corrective actions is discussed below.

6.1 Land Use Controls

Prohibiting groundwater consumption and the installation of potable water wells in the surficial aquifer is an effective approach to protect human health. Restrictions would mandate the use of an alternate water supply that is already in place and utilized at Fort Stewart. This control accomplishes the objective of reducing overall risk and protecting human health and the environment during the period of remediation. After the CAOs are achieved, restrictions could be removed. Groundwater use restrictions will be effective for as long as Fort Stewart remains a military installation.

The soil where the low-level PAHs were detected is currently capped by 12 inches of concrete, preventing direct exposure to the soil and mitigating the potential to leach to groundwater. An inspection of the area will be completed semi-annually to confirm the site conditions and area use have not changed as part of the land use restrictions. Logs of the site visits will be compiled and provided as part of an annual report.

6.2 LNAPL Recovery

Sorbent socks will be installed in monitoring wells G4MW001 and G4MW002 and routinely removed and replaced to evaluate the LNAPL recovery rate. No additional actions are anticipated, as current groundwater concentrations in the area surrounding G4MW001 and G4MW002 are below the MCLs for constituents related to the LNAPL. Additional groundwater monitoring for this area will be completed as part of the overall site groundwater monitoring program. A SoakEase™ or equivalent absorbent sock will be installed in both G4MW001 and G4MW002. Technical product information for SoakEase™ is attached as **Appendix B**. After water and LNAPL levels are determined, the sock will be suspended via a cord attached to a support loop. The sock will be installed at a level to maximize contact with the LNAPL interval and will be checked periodically to determine the amount of LNAPL recovered. When saturated, LNAPL will be extracted from the socks or the socks will be replaced. Initially, the socks will be monitored biweekly to assess the LNAPL recovery rate. The monitoring frequency will be adjusted based on the recovery rate. If the recovery rate is high enough to support frequent removal events, a skimming system that operates on solar power (i.e. solar sipper) will be evaluated. The LNAPL levels in the wells will be routinely gauged to evaluate the performance.

6.3 Monitored Natural Attenuation

The semi-annual groundwater monitoring program for natural attenuation of the low-level diffuse chlorinated solvent plume and source area remediation progress will be performed using wells within the existing monitoring network (**Table 5-1**). The monitoring program for natural attenuation will include a fall semi-annual monitoring event including 22 wells and a spring semi-annual monitoring event including 35 wells for VOCs (EPA Method 8260). During each semiannual monitoring events, six wells will be

analyzed for total and dissolved arsenic. Prior to each monitoring event, the monitoring wells will be gauged for depth to water.

6.4 Enhanced Reductive Dechlorination

The proposed source area treatment is ERD via injection of EVO. EVO serves as a long-term electron donor source and is comprised of soybean oil, emulsifiers, and water. Site data show the presence of dehalogenation daughter products that indicate naturally occurring biological degradation is ongoing. This approach will serve to enhance these processes further to achieve treatment objectives. Since VOC concentrations are over 1 ppm in the source area, it is likely that multiple injection events will be required. Delivery of the injection solution will be thru permanent injection wells. The target interval for the injections is within the zone where the geology transitions from silty sand to a sandy clay and silty clay. The fixed well infrastructure would be most cost effective to accommodate multiple EVO treatments and to provide the most efficient injection hydraulics. The use of DPT would increase the number of points required to achieve the same distribution and could result in poor distribution of fluid due to the complex geology at the site. Both temporary wells and an injection tipped nozzle may have reduced effectiveness in the sandy/silty clay and could result in an increased likelihood of aquifer fracturing and limited treatment distribution because of preferential flow of the injection solution.

EVO will be injected into permanent wells F39IW01 through F39IW06, as shown on **Figure 5-1**. Groundwater monitoring conducted prior to, during, and following completion of injection activities will be performed using dose response (within the injection area) and transport (outside of the injection area) monitoring locations. The scope of work includes:

- Installation of the injection and monitoring network in the deep zone within the source area;
- Supplemental lithologic information will be obtained during drilling;
- Baseline groundwater sampling at all injection and monitoring locations;
- EVO solution injection via six deep injection wells;
- Completion post-injection monitoring program as detailed in **Section 6.4.3.4** below to evaluate TOC distribution and flow in addition to early changes in total VOC and light gas (methane, ethene, ethane) concentrations; and
- Preparation of semiannual summary reports to provide an evaluation of results and recommendations for optimization of remediation.

A temporary above-ground injection system will be constructed to deliver the EVO solution to the injection wells. Based on the known site groundwater velocity of approximately 22 ft per year, the anticipated duration between EVO injection events is at least 2 years. The proposed injection well network will remain in place for use during future injection events, as necessary beyond the contract term.

6.4.1 Injection Distribution Methodology

Qualitative (visual response) and quantitative (laboratory analytical data) will be used over the course of the sampling program to evaluate changes at the selected monitoring well network prior to, during, and

following the completion of the injection. Fluorescein, a dye that is used frequently in environmental applications (Holmbeck-Pelham et al., 2000; Aley, 2002; Field, 2005; Nelson and Divine, 2005), will be mixed in the injection solution. The presence of fluorescein will serve as both a qualitative and quantitative tracer to evaluate the arrival of the injection solution at the dose response wells during the injection event. The overall longevity of tracers will also allow for characterization of the natural ambient groundwater flow velocity within the test area during post injection performance monitoring activities.

TOC analysis will be used as a supplemental hydraulic tracer of EVO distribution and will also serve to promote development of the reducing conditions (i.e., sulfate-reducing to methanogenic) necessary for ERD. Following injection, TOC data will be quantified over time and compared to concentrations of the inert fluorescein dye to evaluate the relative difference in the rate of change and assess overall carbon utilization.

6.4.2 Well Network

ERD implementation will occur over a network of two transects of three injection wells each, arranged across the footprint of the source area and established within the confines of the railroad tracks and Veteran's Parkway (**Figure 5-1**). To support the injection network, three monitoring wells will be installed. Installation will be completed via hollow stem auger drilling or mud rotary drilling, if necessary. The injection and monitoring networks, including a total of six injection wells and three monitoring wells, are presented on **Figure 5-1** and summarized in **Table 6-1.**

Injection wells will be installed with 30-foot on-center spacing based on a target injection radius of influence of 15 ft. The injection wells will be constructed with 4-inch PVC wire-wrapped well screen installed between 40 and 50 ft bgs and will be completed with 4-inch PVC riser and a flush mount well vault.

Two dose-response monitoring well locations will be installed within the anticipated 15-ft radius of influence of substrate delivery. Wells will be constructed with 2-inch PVC slotted well screens installed between 40 and 50 ft bgs and will be completed with 2-inch PVC risers and flush mount well vaults. A transport monitoring well is proposed to be installed outside the radius of influence and approximately 20 ft downgradient of the injection wells, based on site historical groundwater flow direction and anticipated velocity. The transport monitoring well will be constructed to the same specifications as the dose-response monitoring wells and will support characterization of the natural ambient groundwater flow conditions (i.e. velocity and direction) necessary to optimize implementation. A combination of three new and three existing monitoring well locations will be used to confirm EVO distribution during the injection event.

For all well installations, approximated target depths will be confirmed via visual inspection of soil cuttings during well installation and the proposed depths may be adjusted based on the conditions observed in the field. The general construction details of the proposed injection wells and monitoring wells is included on **Figure 6-1**. Following installation, all wells will be developed via downhole jetting and swabbing techniques to ensure good communication with the aquifer and to remove fine-grained materials that may have accumulated in the filter pack during installation. Well development will be conducted no earlier than 24 hours after grout placement to allow adequate time for the grout to set. Soil and purge water generated during the installation period will be containerized in labeled 55-gallon drums and staged on-

site within the designated Interim Derived Storage area located at Ft. Stewart for waste characterization and proper disposal.

6.4.3 Injection

Following completion of well network installation, injection will be conducted concurrently into all injection wells. Injection system setup and construction, injection solution preparation, injection procedures, injection monitoring, and sample handling are discussed in the sections below. Injection activities will be conducted pursuant to the appropriate Underground Injection Control (UIC) permits, to be obtained from the GAEPD in advance of the injection.

6.4.3.1 Injection System Setup/Construction

The mixing and injection system will include two 500-gallon cone-bottom polyethylene tanks, hoses for a potable water supply and injection solution distribution, injection manifolds with flow meters/totalizers and pressure gauges, injection wellhead assemblies for injection wells, and optional low-pressure injection pumps if needed. The system will be constructed on a mobile trailer to allow for movement across the site area and to minimize impacts to the busy and access-limited FST-39 area. A process and instrumentation diagram of the injection/tracer test system is included as **Figure 6-2**.

The polyethylene tanks and the injection trailer will be mobilized to the site before the injection begins. Injection solution consisting of EVO and fluorescein will be prepared in the tank. A layer of plastic sheeting will be placed under tanks, hoses, injection manifolds, and any other equipment that in contact with the injection solutions to contain any spills. Potable water will be delivered with a tanker truck or from fire hydrant dependent on location to the test area for injection solution preparation. If a fire hydrant is used as the clean water source, a temporary water service permit will be secured from the local authority, and a copy of the permit shall be kept on site during the injection/tracer test.

6.4.3.2 Injection Solution

The utilization of a fluorescein dye in addition to the EVO injection solution will increase data resolution pertaining to fluid distribution during injection and support characterization of groundwater flow direction and velocity. The injection solution volumes selected to achieve a breakthrough at the dose-response monitoring locations are based on estimated mobile porosities in similar geologies. Grab sample collection during the test will be used to evaluate this assumption, and volumes may be increased or decreased based on the results observed. A summary table illustrating the injection solution mixing recipe for variable volumes is presented in **Table 6-2**.

Injection solution volumes required to achieve breakthrough at a dose response monitoring location can be estimated by the target radius of injection influence (distance between injection and dose response wells), the length of injection well screen, and assumed mobile porosity. Following the completion of injection, the mobile porosity can then be verified or adjusted based on actual injection volumes required to achieve the breakthrough and will be used to optimize the injection program.

Based on experience at similar sites, mobile porosities can vary between 5 percent and 20 percent, depending on soils of this type. For this injection design, a mobile porosity of 10 percent was assumed,

which corresponds to approximately 5,300 gallons of solution per injection well, based on the target 15-ft injection radius and 10-ft injection well screen length. The total volume of solution that will be injected into the six injection wells is approximately 31,800 gallons per vent. A total demand of approximately 870 pounds of EVO and one pound of fluorescein powder will be needed for an injection solution consisting of 2 percent EVO and a concentration of 40 milligrams per liter (mg/L) of tracer. The injection solution volumes and demands of EVO and tracer may be adjusted as needed based on field observations during the injection. Design calculations for the EVO injection event are attached as **Appendix C**. The safety data sheet (SDS) for EVO and fluorescein are attached as **Appendix D**.

6.4.3.3 Injection Procedures

Following system construction, baseline groundwater monitoring (see monitoring section below), and preliminary batch solution mixing, the EVO solution will be delivered to up to six injection wells simultaneously via passive gravity feed, as long as flow rates remain at or above the design injection rate of 0.5 gallons per minute (gpm) per well. If passive injection flow rates are less than 0.5 gpm, a dedicated injection pump may be used to apply a low pressure (no greater than 5 psi) to increase flow. Slug tests conducted at SWMU 39 indicate that injection rates may be low (< 1 gpm) and decreased injection rates over time could occur with continued injections.

The injection solution will be mixed in a conical bottom tank and connected to the individual well heads. Conveyance hoses will be used to deliver the EVO and tracer solution from the injection trailer through a manifold network to each of the injection well heads. No injection solution will be stored in the tanks overnight or without attendance. During the injection event, injection flow rates and wellhead pressures will be recorded using flow-meters and pressure gauges within the manifold. After the initial injection, the design parameters will be evaluated and appropriately optimized.

Water for the injection, will be obtained from the Fire Department at Ft. Stewart. The Fire Department will be provided information on water usage and metering and water will not be used without permission. An approved backflow preventer will be used.

6.4.3.4 Performance Monitoring

The injection monitoring plan consists of three sampling periods, including baseline monitoring, breakthrough monitoring, and post injection performance monitoring. Performance monitoring will include TOC analysis in the source area wells (G4MW038, G4MW041, G4MW055, and the three new monitoring wells). The monitoring schedule will allow for assessment of both the tracer breakthrough during initial hydraulic influence and subsequent stabilization of groundwater flow through the monitoring network.

In general, monitoring will consist of gauging groundwater levels in monitoring wells, screening field parameters, recording injection pressures and flow rates during injection, and collecting groundwater samples for visual observation of fluorescein. All samples, except fluorescein, will be submitted to the TestAmerica Laboratory located at Nashville, TN for analysis. The injection monitoring plan is summarized below and outlined on **Table 6-3**. A summary of sample collection and laboratory analytical sampling methodology is presented on **Table 6-4**. Injection and groundwater monitoring data will be recorded on the field logs included as **Appendix E**. Field visual observation (discussed below) will be

used to provide real-time indication of breakthrough at monitoring locations. Purged water will be drummed and labeled properly and staged temporarily onsite at designated areas for future offsite disposal.

6.4.3.4.1 Baseline Groundwater Sampling

A baseline sampling event will be conducted at all injection and performance monitoring locations prior to the beginning of the injection. Samples will be collected and analyzed for VOCs, dissolved gases (i.e., methane, ethane and ethene), TOC, sulfate, dissolved iron, dissolved arsenic, and fluorescein. Dedicated sample tubing for each well will be installed at the middle of the screen interval, or at a depth corresponding to the most permeable geologic interval based on well installation logs. The depth of sampling will be recorded in the field log. Groundwater samples will be collected from each of the sampling points via peristaltic pump. Field parameter samples (groundwater color, specific conductivity, pH, dissolved oxygen, ORP, turbidity, and temperature) will be collected with a hand-held water quality meter using a flow-through cell to allow parameter stabilization and minimize air entrainment during sample collection.

Once field parameters have stabilized, the flow-through cell assembly will be disconnected and analytical samples will be collected for soluble parameters (sulfate, TOC, ferrous iron, dissolved arsenic, fluorescein) using the peristaltic pump and dedicated sample tubing. Sulfate, TOC, and dye samples will be submitted to the laboratory for analysis. Ferrous iron will be analyzed in the field using a dedicated test kit (**Table 6-4**). Samples for VOC and dissolved gases (methane, ethane, and ethene) will be collected via a weighted bailer. If the peristaltic pump cannot be used to obtain groundwater for sample collection, weighted bailers will be used to remove the well-specific purge volume prior to sample collection. Weighted bailers would also be used to collect volume for all field and analytical parameters.

6.4.3.4.2 Breakthrough Monitoring

Breakthrough monitoring will be conducted for the evaluation of radius of influence and volume relationship and distribution of injection solution. Groundwater grab samples will be collected periodically (i.e. every 1000 gallons) from dose-response monitoring well locations for TOC and fluorescein tracer analyses as well as field parameters and groundwater elevation. Dedicated sample tubing will be placed in each of the monitoring wells at the same depth sampled during the baseline sampling event. A peristaltic pump will be used to extract samples and minimize disruption within the well column after purging one well volume.

A series of visual standards consisting of varying ratios of EVO/fluorescein injection solution and site groundwater will be prepared before injection occurs. To demonstrate injection solution breakthrough, the color of grab groundwater samples will be compared to these visual standards either visually or in a darkened cooler using a black light to provide qualitative evidence of injection solution arrival. Additionally, split quantitative laboratory samples will be collected to confirm the field observations.

Samples of the injection solution will also be collected from each batch and analyzed for TOC and tracer concentration to establish the injection strength solution. Grab samples will be screened immediately upon collection using the visual standards. Following visual screening, samples will be stored onsite in a dark cooler with Blue Ice for potential analysis at the laboratory.

For each well, the injected volume will be recorded and used to confirm that breakthrough has occurred. Confirmation of a sufficient volume of injection solution will be determined by visual (i.e., EVO/fluorescein concentration) and geochemical (i.e., specific conductivity, pH, and temperature) evidence of solution breakthrough and subsequent parameter stabilization in the dose response wells. Active injection will continue until the planned approximate volume is injected or until sufficient performance monitoring data has been collected to assess distribution, whichever comes first.

6.4.3.4.3 Post-Injection Performance Monitoring

Post injection performance monitoring will be conducted to evaluate the ambient groundwater flow characteristics and organic substrate utilization rates. A total of five post injection performance monitoring events will be conducted at two weeks, four weeks, three months, and six months following completion of injection activities. Groundwater samples will be collected and analyzed for TOC, sulfate, dissolved iron, and fluorescein. Groundwater samples for analysis of VOCs, and dissolved gases will be collected during the four-week and six-month monitoring events. Sample collection during the four-week and six-month sampling events will be conducted via similar methodology and from the same depth intervals as those used during the baseline sampling event. Additional samples may be collected from any well, as needed, to fill data gaps that may arise during the post-injection monitoring period. Following the initial post-injection performance monitoring period, a subset of wells will be part of the semi-annual program.

7 GENERAL HEALTH AND SAFETY

A site-specific Health and Safety Plan (HASP) has been developed for the Site. A copy of the HASP will be maintained at the Site over the course of ongoing field activities. Prior to the injection event, care will be taken to ensure that all applicable health and safety measures are in place, including appropriate personal protective equipment (PPE) and secondary containment. Appropriate PPE must be worn on Site at all times. Training and protection equipment required for working in injection areas includes the necessary SDS for the chemicals that will be used at the Site. Field staff shall review the SDS as part of the daily tailgate safety meeting.

Traffic cones will be utilized to ensure proper traffic controls, as well as pedestrian and field staff safety. No potential damage is anticipated to the grass or pavement around the injection site. Areas of work will be returned to original conditions after injection are complete. Equipment left overnight will be properly packed and stored until the following work day in accordance with Ft. Stewart requirements. All equipment will be removed from the site after the injections are complete.

8 DATA ANALYSIS AND REPORTING

Following completion of the injection and post-injection performance monitoring events, the compiled results will be submitted to the Army and GAEPD to provide recommendations for optimizations to the corrective action implementation strategy. The results of the initial injection and performance monitoring will be included in the CAP Construction Completion Report. Subsequent performance monitoring results will be included in semiannual reports.

9 PERMITS AND NOTIFICATIONS

Prior to implementation of the pilot test activities, the following permitting and regulatory requirements will be completed:

- Local construction permits, if any, will be obtained.
- An underground injection control (UIC) permit will be obtained from the GAEPD.
- One-Call will be contacted prior to any intrusive activities to identify and mark any buried utilities within the treatment area.
- Well permits will be obtained for injection and monitoring locations, if necessary.
- A permit for using fire hydrant water will be obtained, if necessary.

10 SCHEDULE

It is anticipated that the source area pilot injection test activities will be initiated in August 2018, pending GAEPD's approval of the CAP, this Work Plan, and the UIC permit. Performance monitoring will be conducted quarterly. Sampling for MNA will be conducted semi-annually. The anticipated corrective action schedule can be found in **Table 10-1**.

11 REFERENCES

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TABLES

Table 3-1. Summary of Detected Constituents in Groundwater - 2017
SWMU-39, Fort Stewart, Georgia

				Location ID	G4MW10	G4MW11	G4MW13	G4MW14	G4MW16	G4MW17	G4MW18	G4MW19	G4MW20	G4MW22	G4MW23	G4MW24	G4MW25	G4MW26	G4MW27	G4MW29	G4MW32	G4MW33	G4MW35	G4MW36	G4MW36
				Sample ID	G4MW010	G4MW011	G4MW013	G4MW014	G4MW016	G4MW017	G4MW018	G4MW019	G4MW020	G4MW022	G4MW023	G4MW024	G4MW025	G4MW026	G4MW027	G4MW029	G4MW032	G4MW033	G4MW035	G4MW036	G4MW036A
				Sample Date	7/28/2017	7/26/2017	7/28/2017	7/26/2017	7/26/2017	7/26/2017	7/28/2017	7/28/2017	7/28/2017	7/28/2017	7/28/2017	7/28/2017	7/28/2017	7/26/2017	10/12/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/28/2017	7/28/2017
	Unit	Tap Water RSL[1]	MCL[2]																						
VOCs - USEPA Method SW8260 (µg/L)																									
1,1-Dichloroethane	ug/L	2.8		<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1-Dichloroethene	ug/L	280	7	<1.0 U	<1.0 U	**0.41 J**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,4-Trichlorobenzene	ug/L	1.2	70	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	NA	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	**6**	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U
1,2-Dichlorobenzene	ug/L	300	600	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	**0.47 J**	<1.0 U	<1.0 U	**0.74 J**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	
2-Butanone (MEK)	ug/L	5600		<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	NA	**4.6 J**	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	
Acetone	ug/L	14000		<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	**9.1 J**	NA	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U
Benzene	ug/L	0.46	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Carbon disulfide	ug/L	810		<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	NA	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U
Chloroform	ug/L	0.22	80	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
cis-1,2-Dichloroethene	ug/L	36	70	**3**	**4.5**	**9.2**	<1.0 U	**9.3**	**4.8**	**8.1**	**4**	NA	<1.0 U	<1.0 U	<1.0 U	**1.9**	**5.2**	<1.0 U	<1.0 U	<1.0 U	**3.6**	**3.5**	**6.1**	<1.0 U	<1.0 U
Ethylbenzene	ug/L	1.5	700	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	NA	<0.50 U	<0.50 U	**0.37 J**	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	
Tetrachloroethene	ug/L	11	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	**0.91 J**	<1.0 U	**10 J**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	
Toluene	ug/L	1100	1000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	**0.61 J**	NA	**7.8**	<1.0 U	**1.4**	<1.0 U	<1.0 U	1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	
trans-1,2-Dichloroethene	ug/L	360	100	**1.3**	**1.4**	**2.7**	<1.0 U	**2.9**	**1.5**	**2.6**	**1.3**	NA	<1.0 U	<1.0 U	**0.4 J**	**1.5**	<1.0 U	1.0 U	<1.0 U	<1.0 U	**0.89 J**	**2.1**	<1.0 U	<1.0 U	
Trichloroethene	ug/L	0.49	5	**0.82 J**	**1.4**	**3**	<1.0 U	**4.6**	**1.9**	**2.5**	**1.5**	NA	<1.0 U	<1.0 U	<1.0 U	**2.4**	<1.0 U	**4.7**	<1.0 U	**22**	**6.5**	**4.3**	<1.0 U	<1.0 U	
Xylenes, Total	ug/L	190	10000	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	**0.85 J**	NA	<0.50 U	<0.50 U	**1.7 J**	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	
Metals - USEPA Method SW6010 (mg/L)																									
Arsenic - Dissolved	mg/L	0.000052	0.01	NA	NA	<0.015 U	<0.015 U	NA	<15 U	NA	<0.015 U	<0.015 U	NA	NA	<0.015 UJ	<0.015 U	NA	NA	NA	NA	NA	NA	<0.015 U	<0.015 U	
Arsenic - Total	mg/L	0.000052	0.01	NA	NA	<0.015 U	<0.015 U	NA	<15 U	NA	<0.015 U	<0.015 U	NA	NA	**0.0083 J**	<0.015 U	NA	NA	NA	NA	NA	NA	<0.015 U	<0.015 U	

Notes:

[1] USEPA Regional Screening Level (RSL) for tap water as of June 2018

[2] USEPA Maximum Contaminant Level (MCL) as of June 2018

BOLD indicates a detection above the laboratory detection limit

Exceedances of tap water RSL are shaded gray

Exceedances of MCL are outlined

µg/L	micrograms per liter.
mg/L	milligrams per liter.
J	Constituent concentration was estimated.
U	Not detected at laboratory detection limit
NA	Not analyzed.
B	Detected in method blank.
D	Reported value is from a dilution.

Table 3-1. Summary of Detected Constituents in Groundwater - 2017
SWMU-39, Fort Stewart, Georgia

				Location ID	G4MW37	G4MW39	G4MW40	G4MW41	G4MW43	G4MW44	G4MW046	G4MW47	G4MW48	G4MW50	G4MW51	G4MW52	G4MW53	G4MW54	G4MW55	G4MW56	G4MW57
				Sample ID	G4MW037	G4MW039	G4MW040	G4MW041	G4MW043	G4MW044	G4MW046	G4MW047	G4MW048	G4MW050	G4MW051	G4MW052	G4MW053	G4MW054	G4MW055	G4MW056	G4MW057
				Sample Date	7/26/2017	7/28/2017	7/28/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	7/26/2017	10/12/2017	7/28/2017	7/28/2017	10/12/2017	7/26/2017	7/26/2017	7/26/2017
	Unit	Tap Water RSL[1]	MCL[2]																		
VOCs - USEPA Method SW8260 (µg/L)																					
1,1-Dichloroethane	ug/L	2.8		<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	<5.0 U	**2**	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1-Dichloroethene	ug/L	280	7	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	**5.3 D**	**3.1**	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,4-Trichlorobenzene	ug/L	1.2	70	<5.0 U	NA	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	NA	<25.0 U	<5.0 U	NA	<5.0 U	<5.0 U	<5.0 U	<5.0 U
1,2-Dichlorobenzene	ug/L	300	600	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	<5.0 U	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U
2-Butanone (MEK)	ug/L	5600		<10 U	NA	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	NA	<50 U	<10 U	NA	<10 U	<10 U	<10 U	<10 U
Acetone	ug/L	14000		<10 U	NA	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	NA	**88 D**	<10 U	NA	<10 U	<10 U	<10 U	<10 U
Benzene	ug/L	0.46	5	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	<5.0 U	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Carbon disulfide	ug/L	810		<2.0 U	NA	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	NA	<10 U	<2.0 U	NA	<2.0 U	<2.0 U	<2.0 U	<2.0 U
Chloroform	ug/L	0.22	80	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	<5.0 U	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U
cis-1,2-Dichloroethene	ug/L	36	70	<1.0 U	NA	**6.1**	**5.7**	**1.7**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	**330 D**	**1.8**	NA	<1.0 U	<1.0 U	**2.5**	**3.6**
Ethylbenzene	ug/L	1.5	700	<0.50 U	NA	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	NA	<2.5 U	<0.50 U	NA	<0.50 U	<0.50 U	<0.50 U	<0.50 U
Tetrachloroethene	ug/L	11	5	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	**1.9**	<1.0 U	NA	**31 D**	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	**22**
Toluene	ug/L	1100	1000	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	<5.0 U	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U
trans-1,2-Dichloroethene	ug/L	360	100	<1.0 U	NA	**0.73 J**	**2.1**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	**4.5 J D**	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Trichloroethene	ug/L	0.49	5	<1.0 U	NA	**14**	**4.2**	<1.0 U	**0.66 J**	**1.2**	**2**	<1.0 U	NA	**790 D**	**5.7**	NA	<1.0 U	<1.0 U	**9.6**	**27**
Xylenes, Total	ug/L	190	10000	<0.50 U	NA	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	NA	<2.5 U	<0.50 U	NA	<0.50 U	<0.50 U	<0.50 U	<0.50 U
Metals - USEPA Method SW6010 (mg/L)																					
Arsenic - Dissolved	mg/L	0.000052	0.01	NA	<0.015 U	NA	NA	NA	NA	NA	NA	NA	<0.015 U	NA	<0.015 U	<0.015 U	NA	NA	NA	NA
Arsenic - Total	mg/L	0.000052	0.01	NA	<0.015 U	NA	NA	NA	NA	NA	NA	NA	<0.015 U	NA	<0.015 U	<0.015 U	NA	NA	NA	NA

Notes:

[1] USEPA Regional Screening Level (RSL) for tap water as of November 2017

[2] USEPA Maximum Contaminant Level (MCL) as of November 2017

BOLD indicates a detection above the laboratory detection limit

Exceedances of tap water RSL are shaded gray

Exceedances of MCL are outlined

µg/L	micrograms per liter.
mg/L	milligrams per liter.
J	Constituent concentration was estimated.
U	Not detected at laboratory detection limit
NA	Not analyzed.
B	Detected in method blank.
D	Reported value is from a dilution.

Table 3-2. Summary of Detected Constituents in Groundwater - 2018
SWMU-39, Fort Stewart, Georgia

			Location ID	G4MW17	G4MW18	G4MW19	G4MW22	G4MW25	G4MW33	G4MW35	G4MW36	G4MW39	G4MW40	G4MW41	G4MW47	G4MW51	G4MW52	G4MW53	G4MW54	G4MW56	G4MW57
			Sample ID	G4MW017	G4MW018	G4MW019	G4MW022	G4MW025	G4MW033	G4MW035	G4MW036	G4MW039	G4MW040	G4MW041	G4MW047	G4MW051	G4MW052	G4MW053	G4MW054	G4MW056	G4MW057
			Sample Date	6/14/2018	6/14/2018	6/14/2018	6/14/2018	6/14/2018	6/14/2018	6/14/2018	6/14/2018	6/15/2018	6/14/2018	6/15/2018	6/14/2018	6/15/2018	6/14/2018	6/14/2018	6/15/2018	6/15/2018	6/14/2018
	Unit	Tap Water RSL[1]	MCL[2]																	
VOCs - USEPA Method SW826																				
1,1-Dichloroethane	ug/L	2.8		<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U M	NA	NA	<1.0 U	<1.0 U	<1.0 U	<10 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1-Dichloroethene	ug/L	280	7	<1.0 U	<1.0 U M	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	NA	<1.0 U	<1.0 U	<1.0 U	<10 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,4-Trichlorobenzene	ug/L	1.2	70	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	NA	NA	<5.0 U	<5.0 U	<5.0 U	<50 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U
1,2-Dichlorobenzene	ug/L	300	600	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	NA	<1.0 U	<1.0 U	<1.0 U	<10 U	<1.0 U	<1.0 U	<1.0 U	**4.8**	<2.0 U
2-Butanone (MEK)	ug/L	5600		<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	NA	NA	10 U	<10 U	<10 U	<100 U	<10 U	<10 U	<10 U	<10 U	<10 U
2-Hexanone	ug/L	34		<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	NA	NA	<5.0 U	<5.0 U	<5.0 U	<50 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U
4-Methyl-2-pentanone (MIBK)	ug/L	1000		<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	NA	NA	<5.0 U	<5.0 U	<5.0 U	<50 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U
Acetone	ug/L	14000		<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	NA	NA	<10 U	<10 U	<10 U	<100 U	<10 U	<10 U	<10 U	<10 U	<10 U
Benzene	ug/L	0.46	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	NA	<1.0 U	<1.0 U	<1.0 U	<10 U	<1.0 U	<1.0 U	<1.0 U	**5.2**	<1.0 U
Carbon disulfide	ug/L	810		<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	NA	NA	<2.0 U	<2.0 U	<2.0 U	<20 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U
Chloroform	ug/L	0.22	80	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	NA	<1.0 U	<1.0 U	<1.0 U	<10 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
cis-1,2-Dichloroethene	ug/L	36	70	**3.0**	**7.2**	**6.4**	<1.0 U	**3.4**	**2.7**	**3.6**	NA	NA	**13**	**4.2**	<1.0 U	**320 D**	<1.0 U	<1.0 U	<1.0 U	**0.73 J**	**3.2**
Ethylbenzene	ug/L	1.5	700	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	NA	NA	<0.50 U	<0.50 U	<0.50 U	<5.0 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U
Methylene Chloride	ug/L	4.7	5	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	NA	NA	<5.0 U	<5.0 U	<5.0 U	<50 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U
Tetrachloroethene	ug/L	11	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	NA	**5.0**	<1.0 U	**1.6**	**15 D**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	**16**
Toluene	ug/L	1100	1000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	NA	<1.0 U	<1.0 U	<1.0 U	10 U	<1.0 U	<1.0 U	<1.0 U	1.0 U	<1.0 U
trans-1,2-Dichloroethene	ug/L	360	100	**1.2**	**2.5**	**2.2**	<1.0 U	**1.1 M**	**0.51 JM**	**1.2 M**	NA	NA	**2.0**	**1.6**	<1.0 U	**1.5**	<1.0 U	<1.0 U	<1.0 U	1.0 U	<1.0 U
Trichloroethene	ug/L	0.49	5	**0.72 J**	**2.2**	**2.4**	<1.0 U	**1.5**	**4.7**	**3.1**	NA	NA	**67**	**3.0**	**1.9**	**660 D**	<1.0 U	<1.0 U	<1.0 U	**4.7**	**26**
Xylenes, Total	ug/L	190	10000	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	NA	NA	<0.50 U	<0.50 U	<0.50 U	<5.0 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U
Metals																					
Arsenic - Dissolved	mg/L	0.000052	0.01	NA	NA	NA	NA	NA	NA	NA	**0.0077 J**	<0.015 U	NA	NA	NA	<0.015 U	<0.015 U	<0.015 U	<0.015 U	NA	NA
Arsenic - Total	mg/L	0.000052	0.01	NA	NA	NA	NA	NA	NA	NA	<0.015 U	<0.015 U	NA	NA	NA	<0.015 U	<0.015 U	<0.015 U	<0.015 U	NA	NA

Notes:
1 USEPA Regional Screening Level (RSL) for tap water as of June 2018
2 USEPA Maximum Contaminant Level (MCL) as of June 2018
BOLD indicates a detection above the laboratory detection limit

Exceedances of tap water RSL are outline

Exceedances of MCL are shaded gray

µg/L - Micrograms per liter
mg/L - Milligrams per liter
NA - Not Analyzed
J - Estimated: The analyte was positively identified; the quantitation is an estimation
J1 - Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte- specific quality control criteria
U - Undetected at the Limit of Detection
Q - One or more quality control criteria failed
M - Manual integrated compound
D - The reported value is from a dilution

ARCADIS Design & Consultancy for natural and built assets

Table 4-1. Summary of Monitor Well Construction Details
SWMU 39, Fort Stewart, Georgia

Monitoring Well ID	TOC Elevation (ft msl)	Well Diameter (inches)	Screen length (ft)	Screened Interval (ft bgs)	Aquifer Zone
G4MW001	74.82	1	10	6 - 16	Shallow
G4MW002	74.33	1	10	5 - 15	Shallow
G4MW003	74.57	1	10	5 - 15	Shallow
G4MW004	74.51	1	10	5 - 15	Shallow
G4MW005	74.29	1	10	5 - 15	Shallow
G4MW006	74.38	1	10	5 - 15	Shallow
G4MW007R	74.74	4	10	5 - 15	Shallow
G4MW008	74.36	1	10	5 - 15	Shallow
G4MW009	74.75	2	10	4 - 14	Shallow
G4MW010	74.23	2	10	5 - 15	Shallow
G4MW011	74.08	2	10	5 - 15	Shallow
G4MW012	74.27	2	10	5 - 15	Shallow
G4MW013R	74.70	4	10	4 - 14	Shallow
G4MW014	74.96	2	10	2 - 12	Shallow
G4MW015	74.82	2	10	2 - 12	Shallow
G4MW016	72.28	1	10	3 - 13	Shallow
G4MW017	71.84	1	10	2 - 12	Shallow
G4MW018	74.27	1	10	2 - 12	Shallow
G4MW019	74.76	1	10	2 - 12	Shallow
G4MW020	74.64	1	10	2 - 12	Shallow
G4MW021	74.18	1	10	2 - 12	Shallow
G4MW022	72.59	2	10	3 - 13	Shallow
G4MW023	75.58	2	10	5 - 15	Shallow
G4MW024	74.41	2	10	5 - 15	Shallow
G4MW025	74.52	2	10	3 - 13	Shallow
G4MW026	76.01	2	10	9 - 19	Shallow
G4MW027	76.50	2	10	10 - 20	Shallow
G4MW028	82.91	2	10	9 - 19	Shallow
G4MW029	84.07	2	10	5 - 15	Shallow
G4MW030	67.64	2	10	10 - 20	Shallow
G4MW031	78.96	2	10	10 - 20	Shallow
G4MW032	74.27	2	10	35 - 45	Deep
G4MW033	74.23	2	10	5 - 15	Shallow
G4MW034	70.19	2	5	40 - 45	Deep
G4MW035	70.52	2	10	6 - 16	Shallow
G4MW036	83.62	2	5	40 - 45	Deep
G4MW037	82.47	2	10	34.5 - 44.5	Deep
G4MW038	85.12	2	10	35 - 45	Deep
G4MW039	86.02	2	10	35 - 45	Deep
G4MW040	72.21	2	10	35 - 45	Deep
G4MW041	84.24	2	10	35 - 45	Deep
G4MW042	77.24	2	10	35 - 45	Deep
G4MW043	72.58	2	10	14 - 24	Shallow
G4MW044	75.64	2	10	4.5 - 14.5	Shallow
G4MW045	75.44	2	10	20 - 30	Deep
G4MW046	77.15	2	10	9 - 19	Shallow
G4MW047	77.09	2	10	25 - 35	Deep
G4MW048	84.93	2	10	10 - 20	Shallow
G4MW049	84.86	2	10	25 - 35	Deep
G4MW050	83.26	2	10	35 - 45	Deep
G4MW051	84.02	2	10	50 - 60	Deep
G4MW052	83.78	2	10	35 - 45	Deep
G4MW053	74.78	2	10	35 - 45	Deep
G4MW054	71.59	1	5	2.2 - 7.2	Shallow
G4MW055	84.17	2	10	88 - 98	Deep
G4MW056	84.44	2	10	33.6 - 43.6	Deep
G4MW057	78.14	2	10	35 - 45	Deep
G4MW058	84.71	2	10	36 - 46	Deep
22-07R	75.38	4	5	5 - 10	Shallow
22-08	75.79	0.75	7	2.6 - 9.6	Shallow
22-09	75.52	0.75	7	2.4 - 9.4	Shallow

Notes:

TOC	Top of Casing
ft bgs	Feet below ground surface
ft msl	Feet Above Mean Sea Level

Table 4-2. 2011 Groundwater Analytical Data
SWMU-39, Fort Stewart, Georgia

				Location ID	G4MW10	G4MW11	G4MW13	G4MW14	G4MW16	G4MW16	G4MW17	G4MW18	G4MW19	G4MW20	G4MW22	G4MW23	G4MW24	G4MW25	G4MW26	G4MW27	G4MW28	G4MW29	G4MW30
				Sample ID	G4MW010	G4MW011	G4MW013	G4MW014	G4MW016	G4MW016 DUP	G4MW017	G4MW018	G4MW019	G4MW020	G4MW022	G4MW023	G4MW024	G4MW025	G4MW026	G4MW027	G4MW028	G4MW029	G4MW030
				Sample Date	1/27/2011	1/27/2011	1/27/2011	1/25/2011	1/26/2011	1/26/2011	1/26/2011	1/26/2011	1/27/2011	1/27/2011	1/25/2011	1/27/2011	1/27/2011	1/27/2011	1/25/2011	1/27/2011	1/25/2011	1/27/2011	1/26/2011
	Unit	Tap Water RSL[1]	MCL[2]																				
VOCs - USEPA Method SW8260 (µg/L)																							
1,1-Dichloroethane	ug/L	2.8		< 1 U	**0.17 J**	< 1 U	< 1 UJ	< 1 U	< 1 U	< 1 U	< 1 U	**0.13 J**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	ug/L	280	7	< 1 U	**0.49 J**	< 1 U	< 1 UJ	**0.5 J**	**0.52 J**	**0.28 J**	**0.43 J**	**0.59 J**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	ug/L	1.2	70	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	ug/L	300	600	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2-Butanone (MEK)	ug/L	5600		< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	**25**	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Acetone	ug/L	14000		< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	**10 J**	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Benzene	ug/L	0.46	5	**0.17 J**	< 1 U	< 1 U	< 1 UJ	**0.15 J**	**0.16 J**	**0.17 J**	< 1 U	< 1 U	< 1 U	**0.2 J**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Carbon disulfide	ug/L	810		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloroform	ug/L	0.22	80	< 1 U	< 1 U	< 1 U	< 1 UJ	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/L	36	70	**1.8**	**14**	**6.4**	< 1 U	**13**	**13**	**7.1**	**13**	**16**	**2.8**	**1.9**	**0.93 J**	**11**	**8.3**	< 1 U	**0.33 J**	< 1 U	**3.7**	**0.32 J**
Ethylbenzene	ug/L	1.5	700	< 1 U	< 1 U	< 1 U	< 1 UJ	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	11	5	< 1 U	< 1 U	< 1 U	< 1 U	**1.9**	**1.8**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	ug/L	1100	1000	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/L	360	100	**1.1**	**4.3**	**1.3**	< 1 UJ	**3.9**	**4**	**2.1**	**3.4**	**5.4**	**0.51 J**	**0.54 J**	**0.31 J**	**3.3**	**2.4**	< 1 U	< 1 U	< 1 U	**1.1**	< 1 U
Trichloroethene	ug/L	0.49	5	**0.32 J**	**6.2**	**3.3**	< 1 U	**15**	**15**	**15**	**6.7**	**6.3**	**0.22 J**	**3.1**	**1.4**	**2.8**	**5.8**	< 1 U	**6.4**	< 1 U	**2.9**	< 1 U
Xylenes, Total	ug/L	190	10000	< 1 U	< 1 U	< 1 U	< 1 UJ	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Metals - USEPA Method SW6010 (mg/L)																							
Arsenic - Dissolved	mg/L	0.000052	0.01	< 0.01 U	< 0.01 U	**0.006 J**	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	**0.0078 J**	**0.0099 J**	< 0.01 U	**0.0041 UB**	**0.0056 J**	**0.004 J**	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Arsenic - Total	mg/L	0.000052	0.01	**0.0052 J**	**0.0052 J**	< 0.01 U	< 0.01 U	**0.0048 UB**	< 0.01 U	< 0.01 U	< 0.01 U	**0.0076 J**	< 0.01 U	< 0.01 U	**0.0074 UB**	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	**0.0075 J**	< 0.01 U	**0.0067 J**

Notes:

[1] USEPA Regional Screening Level (RSL) for tap water as of June 2018

[2] USEPA Maximum Contaminant Level (MCL) as of June 2018

BOLD indicates a detection above the laboratory detection limit

Exceedances of tap water RSL are shaded gray

Exceedances of MCL are outlined

µg/L	micrograms per liter.
mg/L	milligrams per liter.
J	Constituent concentration was estimated.
U	Not detected at laboratory detection limit
NA	Not analyzed.
B	Detected in method blank.
D	Reported value is from a dilution.

Table 4-2. 2011 Groundwater Analytical Data
SWMU-39, Fort Stewart, Georgia

				Location ID	G4MW31	G4MW32	G4MW32	G4MW33	G4MW34	G4MW35	G4MW36	G4MW37	G4MW38	G4MW39	G4MW40	G4MW41	G4MW42	G4MW43	G4MW44	G4MW45	G4MW46	G4MW47
				Sample ID	G4MW031	G4MW032	G4MW032 DUP	G4MW033	G4MW034	G4MW035	G4MW036	G4MW037	G4MW038	G4MW039	G4MW040	G4MW041	G4MW042	G4MW043	G4MW044	G4MW045	G4MW046	G4MW047
				Sample Date	1/25/2011	1/25/2011	1/25/2011	1/27/2011	1/26/2011	1/26/2011	1/27/2011	1/27/2011	1/26/2011	1/26/2011	1/28/2011	1/27/2011	1/26/2011	1/27/2011	1/26/2011	1/26/2011	1/27/2011	1/26/2011
	Unit	Tap Water RSL[1]	MCL[2]																			
VOCs - USEPA Method SW8260 (µg/L)																						
1,1-Dichloroethane	ug/L	2.8			< 1 UJ	< 1 UJ	< 1 U	< 1 U	< 1 U	**0.28 J**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	ug/L	280	7		< 1 UJ	< 1 UJ	< 1 U	**0.34 J**	< 1 U	**0.64 J**	< 1 U	< 1 U	< 1 U	< 1 U	**0.2 J**	< 10 U	< 1 U	**0.16 J**	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	ug/L	1.2	70		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	ug/L	300	600		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2-Butanone (MEK)	ug/L	5600			< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 100 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Acetone	ug/L	14000			< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 200 U	**29**	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Benzene	ug/L	0.46	5		< 1 UJ	< 1 UJ	**0.19 J**	**0.22 J**	< 1 U	**16**	< 1 U	**2.1**	< 1 U	< 1 U	< 1 U	< 10 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	**0.23 J**
Carbon disulfide	ug/L	810			< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	**0.33 J**	**0.27 J**	< 10 U	< 1 U	**0.38 J**	< 1 U	< 1 U	**0.38 J**	< 1 U
Chloroform	ug/L	0.22	80		< 1 UJ	< 1 UJ	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 U	< 1 U	< 1 U	< 1 U	< 1 U	**0.55 J**	**1.1**
cis-1,2-Dichloroethene	ug/L	36	70		< 1 U	**1.9**	**1.8**	**4.9**	< 1 U	**7.5**	**0.53 J**	< 1 U	< 1 U	< 1 U	**24**	**97**	< 1 U	**1.7**	**0.93 J**	< 1 U	**0.33 J**	**0.28 J**
Ethylbenzene	ug/L	1.5	700		< 1 UJ	< 1 UJ	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	**0.43 J**
Tetrachloroethene	ug/L	11	5		< 1 U	**12**	**14**	**2.4**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	**290**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	**5.9**
Toluene	ug/L	1100	1000		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	**1.9**
trans-1,2-Dichloroethene	ug/L	360	100		< 1 UJ	< 1 UJ	< 1 U	**0.66 J**	< 1 U	**2**	< 1 U	< 1 U	< 1 U	< 1 U	**4.7**	**6.4 J**	< 1 U	**0.47 J**	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	ug/L	0.49	5		< 1 U	**14**	**14**	**33**	< 1 U	**3.7**	**0.38 J**	< 1 U	< 1 U	< 1 U	**52**	**550**	< 1 U	**1.4**	**4.9**	< 1 U	**2.5**	**3.2**
Xylenes, Total	ug/L	190	10000		< 1 UJ	< 1 UJ	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	**1.6**
Metals - USEPA Method SW6010 (mg/L)																						
Arsenic - Dissolved	mg/L	0.000052	0.01		< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	**0.012**	**0.009 UB**	< 0.01 U	**0.008 J**	**0.0059 UB**	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	**0.007 UB**	< 0.01 U	< 0.01 U
Arsenic - Total	mg/L	0.000052	0.01		< 0.01 U	< 0.01 U	< 0.01 U	**0.0052 J**	< 0.01 U	< 0.01 U	**0.015**	**0.0057 UB**	< 0.01 U	**0.021**	**0.0057 UB**	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	**0.0061 UB**	< 0.01 U	< 0.01 U

Notes:

[1] USEPA Regional Screening Level (RSL) for tap water as of November 2017

[2] USEPA Maximum Contaminant Level (MCL) as of November 2017

BOLD indicates a detection above the laboratory detection limit

Exceedances of tap water RSL are shaded gray

Exceedances of MCL are outlined

µg/L	micrograms per liter.
mg/L	milligrams per liter.
J	Constituent concentration was estimated.
U	Not detected at laboratory detection limit
NA	Not analyzed.
B	Detected in method blank.
D	Reported value is from a dilution.

Table 5-1
Proposed Groundwater Sampling Plan
FST-39 SWMU39
Fort Stewart, Georgia

Well ID	Site-wide Semi-Annual Sampling Event	Focused Semi-Annual Event	Analysis/Parameters		
			VOCs - 8260 B	Total and Dissolved Arsenic	Field Parameters
Shallow					
G4MW011	X		L		F
G4MW014	X		L		F
G4MW016	X		L		F
G4MW017	X	X	L		F
G4MW018	X	X	L		F
G4MW019	X	X	L		F
G4MW022	X	X	L		F
G4MW023	X		L		F
G4MW024	X		L		F
G4MW025	X		L		F
G4MW027	X		L		F
G4MW029	X		L		F
G4MW033	X	X	L		F
G4MW035	X	X	L		F
G4MW043	X		L		F
G4MW044	X	X	L		F
G4MW046	X		L		F
G4MW048	X		L		F
G4MW054	X	X	L	L	F
Deep					
G4MW032	X	X	L		F
G4MW036	X	X	L	L	F
G4MW037	X	X	L		F
G4MW039	X	X		L	F
G4MW040	X	X	L		F
G4MW041	X	X	L		F
G4MW047	X	X	L		F
G4MW051	X	X	L	L	F
G4MW052	X	X	L	L	F
G4MW053	X	X	L	L	F
G4MW055	X	X	L		F
G4MW056	X	X	L		F
G4MW057	X	X	L		F
Proposed Dose Response Well	X		L		F
Proposed Dose Response Well	X		L		F
Proposed Transport Monitoring Well	X	X	L		F

Notes:
Field Parameters will include: Temperatuire, pH, Specific Conductivity, Dissolved Oxygen, Oxidation Reduction-Potential, Turbidity.
F - Field Measurement Using Water Quality Meter
L - Laboratory Analysis
VOCs - Volatile Organic Compounds

Table 6-1. Proposed Injection and Monitor Well Construction Details
SWMU 39, Fort Stewart, Georgia

Well Type	Number of Wells	Well Diameter (Inches)	Screened Interval	Installation Details
Injection Well	6	4	40-50 ft bgs	- Each well installed with 30-foot on-center spacing - Target injection radius of 15 feet
Dose-Response Well	2	2	40-50 ft bgs	Proposed within the anticipated 15-ft radius of substrate delivery
Transport Monitoring Well	1	2	40-50 ft bgs	Proposed outside the radius of influence, approximately 20 ft downgradient of the injection wells

Notes:
ft bgs – feet below ground surface

ARCADIS Design & Consultancy for natural and built assets

Table 6-2. Injection Solution Mixing Summary
SWMU 39, Fort Stewart, Georgia

	Component	unit	Quantities per Batch									
	EVO	(% Volume)	2%									
	Rhodamine WT	(mg/L)	40									
	Rhodamine WT Concentrate[1]	(mg/L)	200,000									
	Flourescein	(mg/L)	40									
	Flourescein Concentrate[2]	(mg/L)	90,800									
	Dilution Factor	--	1									
Injection Well	**Solution Volume**	**(gal)**	**50**	**100**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**
	EVO	(gal)	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
IW-1S	Fluorescein Concentrate	(mL)	83	167	250	333	417	500	584	667	750	834
	EVO	(gal)	1	2	3	4	5	6	7	8	9	10
IW-1D	Rhodamine WT Concentrate	(mL)	38	76	114	151	189	227	265	303	341	379

Notes:
1. 20% by weight of Rhodamine WT.
2. Two pounds of Flourescence dissolved in 10 liter of water.

Table 6-3. Injection Monitoring Program
SWMU 39, Fort Stewart, Georgia

Description	Frequency	Well Network	Parameters
Baseline Monitoring	Prior to the start of test	Injection wells, dose-response and transport monitoring locations	Sulfate, dissolved iron, dissolved arsenic, TOC, tracers, VOCs, methane, ethane, ethene, field parameters, and depth to water
Tracer Breakthrough Monitoring	Every 1,000 gallons injected	Dose-response monitoring locations	TOC and tracer, field parameters and visual monitoring
	Every 1,000 gallons injected or daily	Transport monitoring locations	TOC and tracer, field parameters and visual monitoring
Post-Injection Performance Monitoring	Week 2 and Months 3 and 6 following completion of injection	Injection wells, dose-response and transport monitoring piezometers	Sulfate, dissolved iron, TOC, tracers, field parameters, visual monitoring and depth to water
	Week 4 and Month 6 following completion of injection	Injection wells, dose-response and transport monitoring piezometers	VOCs, methane, ethane, ethene, sulfate, dissolved iron, dissolved arsenic, TOC, tracers, field parameters, visual monitoring and depth to water

Notes:
1. Field parameters include pH, specific conductivity, dissolved oxygen, oxidation-reduction potential, turbidity, temperature, etc.
2. Monitoring frequency subject to change based on results observed during injection

Table 6-4. Analytical Sampling Methods
SWMU 39, Fort Stewart, Georgia

Analyte	Matrix	Laboratory	Analytical Method	Preservation Method	Bottle Requirements	Laboratory Hold Time	Comments
Volatile Organic Compounds[1]	Groundwater	Test America	SW-846 8260	Hydrochloric acid	40 mL glass vials (3)	14 days	
Total Organic Carbon[2]	Groundwater	Test America	SW-846 9060	Sulfuric acid	250 mL glass vial	14 days	
Sulfate[2]	Groundwater	Test America	9056	No preservative	500 mL plastic bottle	14 days	
Dissolved Iron[2]	Groundwater	--	CHEMetric K-6010D	--	--	--	Samples will be filtered on-site and measured using the designated field test kit.
Dissolved Arsenic[2]	Groundwater	Test America	SW-846 6010/7471	Nitric acid to pH<3	500 mL plastic bottle	6 months	Samples will be field filtered prior to shipment laboratory
Fluorescein Dye[2]	Groundwater	Ozark Underground Laboratory	SW-846 8260	Cool to 4 C ± 2 C Cool to 4	40 mL plastic vial	30 days	Refrigerate using Blue ice; Lab turn-around-time: 10 days
Rhodamine Dye[2]	Groundwater	Ozark Underground Laboratory	SW-846 8260	C ± 2 C	40 mL plastic vial	30 days	Refrigerate using Blue ice; Lab turn-around-time: 10 days
Light Gases (Methane, Ethene, Ethane)	Groundwater	Microseeps	RSKSOP-175	Trisodiumphosphate (TSP)	40 mL glass vials (2)	14 days	Laboratory turn-around-time: 10 days
Field Parameters[3]	Groundwater	--	--	--	--	--	Samples will be collected in the field using a hand-held monitoring device and flow-through cell

Notes:

-- Not applicable

[1] - The primary sampling method is the sample tubing straw method. The peristaltic pump and flow-through cell will be removed prior to sample collection.

[2] - The primary sampling method is via peristaltic pump with dedicated tubing. In the event that the peristaltic pump cannot be used to extract groundwater, samples will be collected via weighted bailers.

[3] - The primary sampling method is via peristaltic pump with dedicated tubing. In the event that the peristaltic pump cannot be used to extract groundwater, turbidity, specific conductance, temperature, oxidation-reduction potential (ORP) will be collected via weighted bailer. Dissolved oxygen (DO) readings will be collected using the straw method.

Table 10-1. Corrective Action Schedule

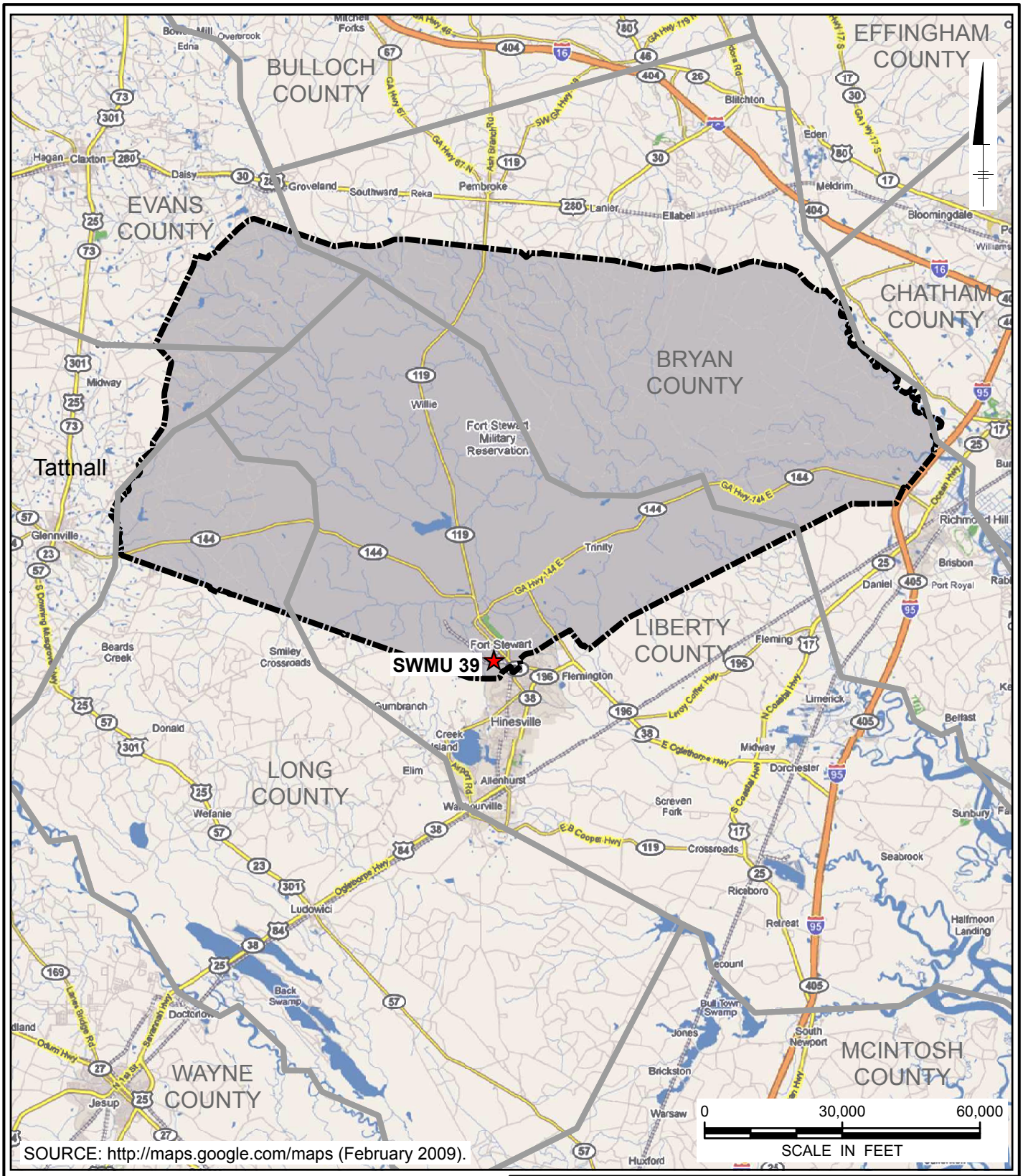
SWMU 39, Fort Stewart, Georgia

Task	Proposed Date
Corrective Action Plan Submittal	May 10, 2017
Corrective Action Work Plan Submittal	July 13, 2018
Injection Well Installation	August 27, 2018 - September 14, 2018
Construct Mobile Injection Trailer	August 27, 2018 - September 14, 2018
Baseline Groundwater Sampling	September 24, 2018 - September 28, 2018
EVO Injection Event	October 08, 2018 - November 14, 2018
Construction Completion Report	November 24, 2018 - December 14, 2018
1st Post-Injection Performance Monitoring (2 weeks after EVO Injection)	November 26, 2018 - November 30, 2018
2nd Post-Injection Performance Monitoring (4 weeks after EVO Injection)	December 10, 2018 - December 14, 2018
3rd Post-Injection Performance Monitoring (3 months after EVO Injection)	February 11, 2019 - February 15, 2019
4th Post-Injection Performance Monitoring (6 months after EVO Injection)	May 13, 2019 - May 17, 2019

NOTES:

Task Complete

FIGURES



SOURCE: http://maps.google.com/maps (February 2009).

FORT STEWART MILITARY RESERVATION, GEORGIA

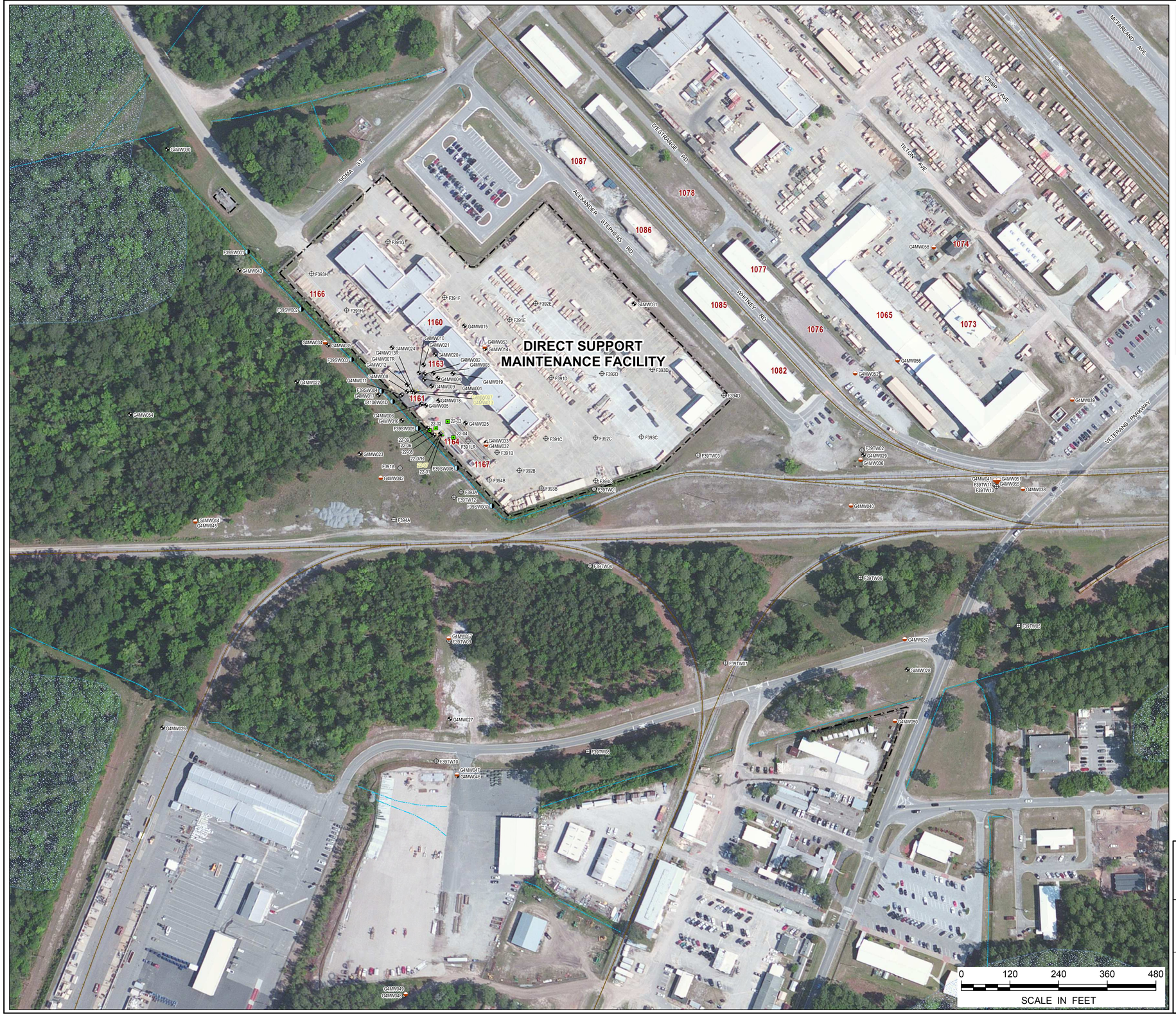
SWMU 39 – DIRECT SUPPORT MAINTENANCE FACILITY CORRECTIVE ACTION PLAN

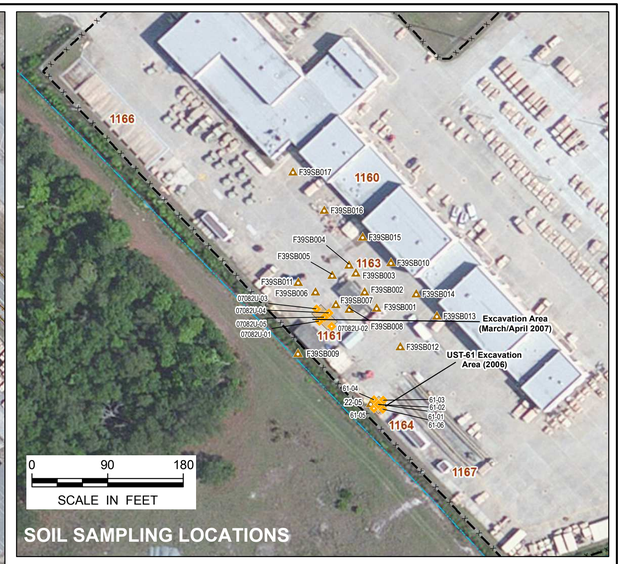
SWMU 39 Location Map

PIKA ARCADIS A JOINT VENTURE

FIGURE **2-1**

CITY:(KNOXVILLE) DIV/GROUP:(ENV/GIS) LD:(B.ALTOM) PIC:(T.TALELE) PM:(S.GIBBONS) TM: (S.BOSTIAN/C.ANDERSON)
PROJECT: 10153001.0001 PATH: G:\GIS\FTSTEWART_PIKA\MAPDOCS\FST39\2015\CAP\F2-1 S39_CAP REG.MXD SAVED: 10/19/2015 BY: BALTOM





SOIL SAMPLING LOCATIONS

LEGEND

- Fencing
- Surface Water Drainage
- Rail Spur
- National Wetlands
- Monitor Well (deep)
- Monitor Well (shallow)
- Monitor Well (abandoned)
- Monitor Well (temporary)
- Vertical Profile
- Surface Water/Sediment Sample
- Soil Boring
- Excavation Area
- Excavation Soil Sample
- 1065 Building Number

NOTES:
1) Abandoned wells have been highlighted in yellow and offset for clarity.
2) The Site (SWMU 39) consists of the Direct Support Maintenance Facility (DSMF) and the area beyond the DSMF's fence to the south, east and west that has been impacted by VOC-contaminated groundwater.

REFERENCE: Chatham Survey (November 29, 2011).
AERIAL SOURCE: ESRI Online Imagery (October 2013).
PROJECTION: NAD83 State Plane Georgia East Feet

FORT STEWART MILITARY RESERVATION, GEORGIA

SWMU 39 – DIRECT SUPPORT MAINTENANCE FACILITY CORRECTIVE ACTION PLAN

Site Map

PIKA ARCADIS A JOINT VENTURE

FIGURE **2-2**

G4MW13 4 - 14	2011	2017
Benzene	< 1	<1
PCE	< 1	<1
TCE	3.3	3
DCE	6.4	9.2
VC	< 1	<1

G4MW30 10 - 20	2011	2017
Benzene	< 1	< 1
PCE	< 1	< 1
TCE	< 1	< 1
DCE	0.32 J	< 1
VC	< 1	< 1

G4MW043 14 - 24	2011	2017
Benzene	< 1	<1
PCE	< 1	<1
TCE	1.4	<1
DCE	1.7	1.7
VC	< 1	<1

G4MW24 5 - 15	2011	2017
Benzene	< 1	<1
PCE	< 1	<1
TCE	2.8	<1
DCE	11	1.9
VC	< 1	<1

G4MW10 5 - 15	2011	2017
Benzene	0.17 J	<1
PCE	< 1	<1
TCE	0.32 J	0.82 J
DCE	1.8	3
VC	2.5	<1

G4MW035 6 - 16	2011	2017	2018
Benzene	16	< 1	< 1
PCE	< 1	< 1	< 1
TCE	3.7	4.3	3.1
DCE	7.5	6.1	3.6
VC	< 1	< 1	< 1

G4MW20 2 - 12	2011	2017
Benzene	0.2 J	< 1
PCE	< 1	< 1
TCE	0.22 J	< 1
DCE	2.8	< 1
VC	< 1	< 1

G4MW31 10 - 20	2011	2017
Benzene	< 1	< 1
PCE	< 1	< 1
TCE	< 1	< 1
DCE	< 1	< 1
VC	< 1	< 1

G4MW022 3 - 13	2011	2017	2018
Benzene	< 1	< 1	< 1
PCE	< 1	< 1	< 1
TCE	3.1	< 1	< 1
DCE	1.9	< 1	< 1
VC	< 1	< 1	< 1

G4MW14 2 - 12	2011	2017
Benzene	< 1	< 1
PCE	< 1	< 1
TCE	< 1	< 1
DCE	< 1	< 1
VC	< 1	< 1

G4MW19 2 - 12	2011	2017	2018
Benzene	< 1	< 1	< 1
PCE	< 1	< 1	< 1
TCE	6.3	1.5	2.4
DCE	16	4	6.4
VC	< 1	< 1	< 1

G4MW054 2.2-7.2	2011	2017	2018
Benzene	< 1	< 1	< 1
PCE	< 1	< 1	< 1
TCE	< 1	< 1	< 1
DCE	< 1	< 1	< 1
VC	< 1	< 1	< 1

G4MW017 2 - 12	2011	2017	2018
Benzene	0.17 J	< 1	< 1
PCE	< 1	< 1	< 1
TCE	15	1.9	0.72 J
DCE	7.1	4.8	3.0
VC	< 1	< 1	< 1

G4MW18 2 - 12	2011	2017	2018
Benzene	< 1	< 1	< 1
PCE	< 1	< 1	< 1
TCE	6.7	2.5	2.2
DCE	13	8.1	7.2
VC	< 1	< 1	< 1

G4MW29 5 - 15	2011	2017
Benzene	< 1	< 1
PCE	< 1	< 1
TCE	2.9	< 1
DCE	3.7	< 1
VC	< 1	< 1

G4MW25 3 - 13	2011	2017	2018
Benzene	< 1	< 1	< 1
PCE	< 1	< 1	< 1
TCE	5.8	2.4	1.5
DCE	8.3	5.2	3.4
VC	< 1	< 1	< 1

G4MW11 5 - 15	2011	2017
Benzene	< 1	<1
PCE	< 1	<1
TCE	6.2	1.4
DCE	14	4.5
VC	< 1	<1

G4MW016 3 - 13	2011	2017
Benzene	0.16 J	<1
PCE	1.9	<1
TCE	15	4.6
DCE	13	9.3
VC	< 1	<1

G4MW33 5 - 15	2011	2017	2018
Benzene	0.22 J	< 1	< 1
PCE	2.4	< 1	< 1
TCE	33	6.5	4.7
DCE	4.9	3.5	2.7
VC	< 1	< 1	< 1

G4MW044 4.5 - 14.5	2011	2017
Benzene	< 1	<1
PCE	< 1	<1
TCE	4.9	0.66 J
DCE	0.93 J	<1
VC	< 1	<1

G4MW023 5 - 15	2011	2017
Benzene	< 1	< 1
PCE	< 1	< 1
TCE	1.4	< 1
DCE	0.93 J	< 1
VC	< 1	< 1

G4MW027 10 - 20	2011	2017
Benzene	< 1	< 1
PCE	< 1	0.91 J
TCE	6.4	4.7
DCE	0.33 J	< 1
VC	< 1	< 1

G4MW028 9 - 19	2011	2017
Benzene	< 1	< 1
PCE	< 1	< 1
TCE	< 1	< 1
DCE	< 1	< 1
VC	< 1	< 1

G4MW026 9 - 19	2011	2017
Benzene	< 1	< 1
PCE	< 1	< 1
TCE	< 1	< 1
DCE	< 1	< 1
VC	< 1	< 1

G4MW046 9 - 19	2011	2017
Benzene	< 1	<1
PCE	< 1	<1
TCE	2.5	1.2
DCE	0.33 J	<1
VC	< 1	<1

G4MW048 10-20	2011	2017
Benzene	0.15 J	< 1
PCE	< 1	< 1
TCE	< 1	< 1
DCE	0.48	< 1
VC	0.56	< 1

LEGEND

- Fencing
- Rail Spur
- Surface Water Drainage
- National Wetlands
- Sanitary Sewer Line
- Manhole
- Monitor Well (shallow)
- Approximate Extent of TCE Regulatory Exceedance - 2017
- 1065 Building Number

NOTES:
1) All units reported in micrograms per liter (µg/L).
2) All constituents screened to U.S. EPA Maximum Contaminant Level (MCL) as of June 2018.
3) D - The reported value is from a dilution.
4) J – Constituent value was estimated.
5) VOC – Volatile Organic Compounds

Chemical Name	MCL
Benzene	5 µg/L
Tetrachloroethene (PCE)	5 µg/L
Trichloroethene (TCE)	5 µg/L
cis-1,2-Dichloroethene (DCE)	70 µg/L
Vinyl chloride (VC)	2 µg/L

0 120 240 360 480
SCALE IN FEET

AERIAL SOURCE: ESRI Online Imagery (October 2015).
PROJECTION: NAD83 State Plane Georgia East Feet

FORT STEWART MILITARY RESERVATION, GEORGIA

SWMU 39 – DIRECT SUPPORT MAINTENANCE FACILITY CORRECTIVE ACTION PLAN

Shallow Zone
Groundwater VOC Sampling Results (2011, 2017, and 2018)

PIKA ARCADIS A JOINT VENTURE

FIGURE
3-1

G4MW056	(33.6'-43.6')
Benzene	< 1
PCE	1.0
TCE	21
DCE	5.8
VC	< 1

F39B06	(30'-34')	(36'-40')
Benzene	0.62	0.53
PCE	19	37
TCE	4.8	15
DCE	1.3	6.2
VC	< 0.5	< 0.5

G4MW058	(36'-46')
Benzene	< 1
PCE	< 1
TCE	< 1
DCE	< 1
VC	< 1

F39B05	(30'-34')	(36'-40')	(42'-46')
Benzene	< 0.5	0.23 J	0.18 J
PCE	< 0.5	< 0.5	< 0.5
TCE	< 0.5	< 0.5	< 0.5
DCE	< 0.5	< 0.5	< 0.5
VC	< 0.5 J	< 0.5 J	< 0.5

F39E11	(30'-34')	(36'-40')	(42'-46')
Benzene	0.15 J	1.7	0.65
PCE	19	2.2	0.2 J
TCE	27	13	0.5
DCE	6.8	13	2.0
VC	< 0.5	< 0.5	< 0.5

F39C14	(30'-34')	(36'-40')	(42'-46')
Benzene	0.12 J	0.22 J	0.10 J
PCE	1.7	0.65 J	0.13 J
TCE	0.61	2.7	0.28 J
DCE	1.3	< 1	< 0.5
VC	< 0.5	< 1	< 0.5

G4MW053	(35'-45')
Benzene	< 1
PCE	< 1
TCE	< 1
DCE	< 1
VC	< 1

F39D23	(30'-34')	(36'-40')	(42'-46')
Benzene	0.11 J	0.21 J	0.24 J
PCE	0.16 J	10	0.20 J
TCE	7.3	68	6.4
DCE	2.1	15	6.3
VC	< 0.5	< 0.5	< 0.5

G4MW052	(35'-45')
Benzene	< 1
PCE	< 1
TCE	5.3
DCE	2.2
VC	< 1

F39C12	(30'-34')	(36'-40')
Benzene	< 0.5	0.24 J
PCE	< 0.5	0.12 J
TCE	< 0.5	< 0.5
DCE	< 0.5	< 0.5
VC	< 0.5 J	< 0.5 J

G4MW039	(35'-45')
Benzene	< 1
PCE	< 1
TCE	< 1
DCE	< 1
VC	< 1

G4MW034	(40'-45')
Benzene	< 1
PCE	< 1
TCE	< 1
DCE	< 1
VC	< 1

F39D30	(30'-34')	(36'-40')	(42'-46')
Benzene	< 0.5	0.58	1.1
PCE	0.23 J	0.79	< 1
TCE	13	8.8	1.4
DCE	20	4.1	1.2
VC	< 0.5	< 0.5	< 1

G4MW036	(40'-45')
Benzene	< 1
PCE	< 1
TCE	0.38 J
DCE	0.53 J
VC	< 1

G4MW032	(35'-45')
Benzene	0.19 J
PCE	12
TCE	14
DCE	1.9
VC	< 1

F39E07	(30'-34')	(42'-46')
Benzene	< 0.5	0.26 J
PCE	0.28 J	< 0.5
TCE	24	0.25 J
DCE	19	0.49 J
VC	< 0.5	< 0.5

G4MW042	(35'-45')
Benzene	< 1
PCE	< 1
TCE	< 1
DCE	< 1
VC	< 1

F39D25	(30'-34')	(36'-40')	(42'-46')
Benzene	< 0.5	1.4	0.68
PCE	82	6.9	0.21 J
TCE	1,300	270	6.2
DCE	380	190	15
VC	< 0.5 J	0.81 J	< 0.5 J

G4MW045	(20'-30')
Benzene	< 1
PCE	< 1
TCE	< 1
DCE	< 1
VC	< 1

G4MW040	(35'-45')
Benzene	< 1
PCE	< 1
TCE	52
DCE	24
VC	< 1

G4MW038	(35'-45')
Benzene	< 1
PCE	< 1
TCE	< 1
DCE	< 1
VC	< 1

F39D28	(30'-34')	(42'-46')
Benzene	0.26 J	0.47 J
PCE	5.0	< 0.5
TCE	110	< 0.5
DCE	60	< 0.5
VC	< 0.5	< 0.5

G4MW057	(35'-45')
Benzene	< 1
PCE	7.1
TCE	16
DCE	3.2
VC	< 1

G4MW051	(50'-60')
Benzene	0.34 J
PCE	2.2
TCE	380
DCE	260
VC	< 1

F39D27	(30'-34')	(36'-40')	(42'-46')
Benzene	0.40 J	0.21 J	0.89
PCE	0.23 J	< 0.5	< 0.5
TCE	9.5	0.31 J	0.49 J
DCE	10	0.24 J	< 0.5
VC	< 0.5	< 0.5	< 0.5

G4MW055	(88'-98')
Benzene	< 1
PCE	0.25
TCE	0.54
DCE	0.13
VC	< 1

F39E08	(30'-34')	(36'-40')	(42'-46')
Benzene	0.69	0.41 J	0.55
PCE	8.9	1.2	1.5
TCE	14	1.2	2.0
DCE	3.9	0.37 J	0.38 J
VC	< 0.5	< 0.5	< 0.5

G4MW041	(35'-45')
Benzene	< 10
PCE	290
TCE	550
DCE	97
VC	< 10

F39E09	(30'-34')	(36'-40')	(42'-46')
Benzene	0.15 J	2.1	0.44 J
PCE	95	1.5	0.71
TCE	140	6.4	0.67
DCE	30	3.1	0.27 J
VC	< 0.5	< 0.5	< 0.5

G4MW047	(25'-35')
Benzene	0.23 J
PCE	5.9
TCE	3.2
DCE	0.28 J
VC	< 1

G4MW037	(34.5'-44.5')
Benzene	2.1
PCE	< 1
TCE	< 1
DCE	< 1
VC	< 1

F39D26	(33'-35')
Benzene	< 5
PCE	260
TCE	1,100
DCE	220
VC	< 0.5 J

F39B02	(30'-34')	(36'-40')	(42'-46')
Benzene	0.12 J	0.31 J	0.67
PCE	< 0.5	0.61	< 0.5
TCE	< 0.5	2.8	2.1
DCE	< 0.5	0.41 J	1.4
VC	< 0.5 J	< 0.5 J	< 0.5 J

G4MW050	(35'-45')
Benzene	< 1
PCE	< 1
TCE	< 1
DCE	< 1
VC	< 1

F39E10	(30'-34')	(36'-40')	(42'-46')
Benzene	0.18 J	0.87	0.36 J
PCE	0.35 J	0.11 J	0.12 J
TCE	1.4	< 0.5	< 0.5
DCE	0.44 J	< 0.5	< 0.5
VC	< 0.5	< 0.5	< 0.5

G4MW049	(25'-35')
PCE	< 1
TCE	< 1
DCE	< 1
VC	< 1
CF	< 1

LEGEND

- Fencing
- Rail Spur
- Surface Water Drainage
- National Wetlands
- Sanitary Sewer Line
- Manhole
- Monitor Well (deep)
- Temporary (VAP) points
- Approximate Extent of cis-1,2-DCE Regulatory Exceedance
- Approximate Extent of PCE Regulatory Exceedance
- Approximate Extent of TCE Regulatory Exceedance
- 1065 Building Number

NOTES:
1) Monitor wells G4MW010 through G4MW047 sampled in January 2011.
2) Monitor wells G4MW048 through G4MW054 sampled in May 2011.
3) Monitor wells G4MW055 through G4MW057 sampled in August 2011.
4) Monitor well G4MW058 sampled in October 2011.
5) All units reported in micrograms per liter (µg/L).
6) All constituents screened to U.S. EPA Maximum Contaminant Level (MCL) as of June 2018.
7) J – Constituent value was estimated.
8) VOC – Volatile Organic Compounds
9) Data from temporary (VAP) points was not utilized to draw COC contours.

Chemical Name	MCL
Benzene	5 µg/L
Tetrachloroethene (PCE)	5 µg/L
Trichloroethene (TCE)	5 µg/L
cis-1,2-Dichloroethene (DCE)	70 µg/L
Vinyl chloride (VC)	2 µg/L

0 120 240 360 480

SCALE IN FEET

AERIAL SOURCE: ESRI Online Imagery (October 2013).
PROJECTION: NAD83 State Plane Georgia East Feet

FORT STEWART MILITARY RESERVATION, GEORGIA

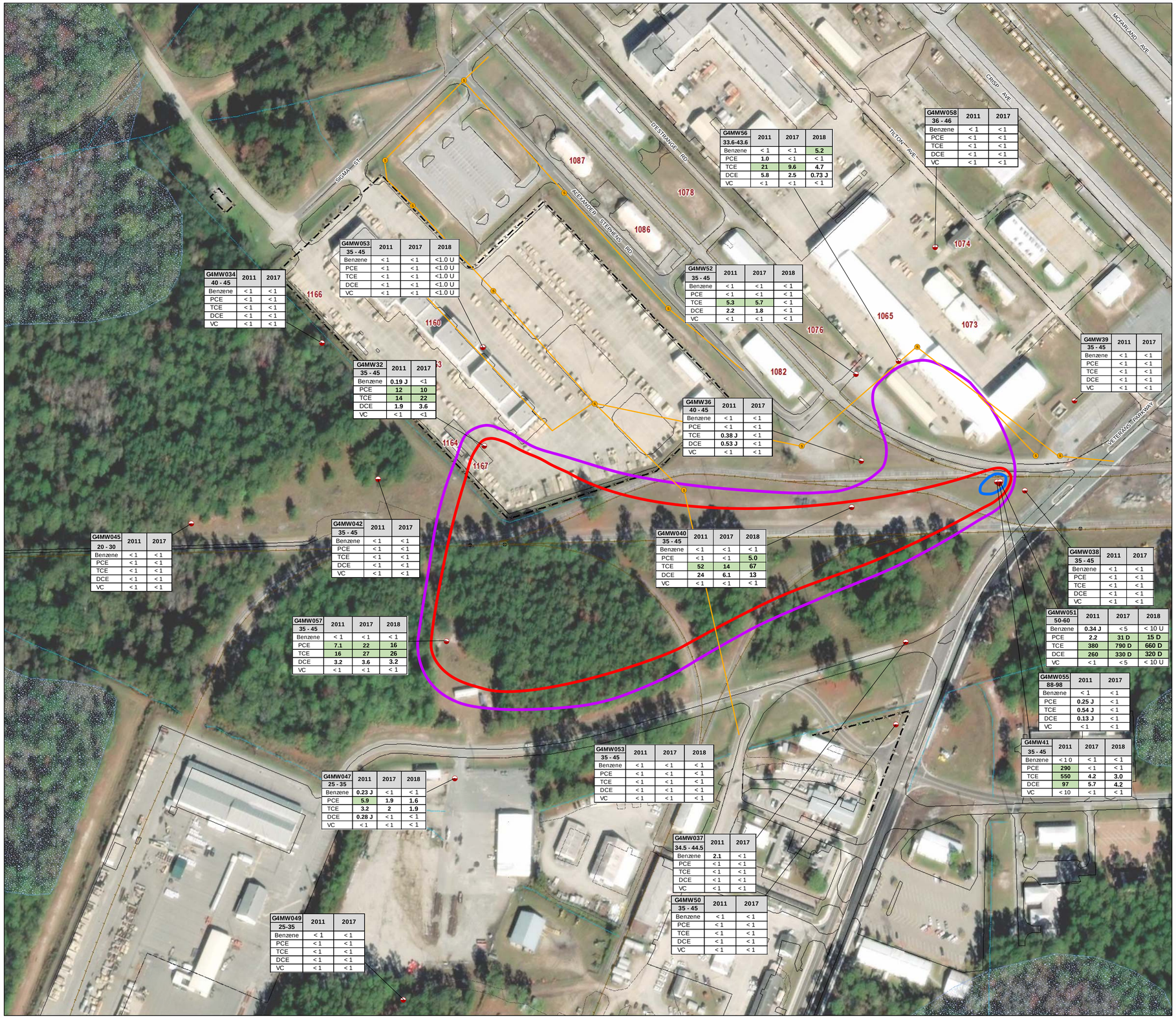
SWMU 39 – DIRECT SUPPORT MAINTENANCE FACILITY CORRECTIVE ACTION PLAN

Deep Zone
Groundwater VOC Sampling Results (2011)

PIKA ARCADIS A JOINT VENTURE

FIGURE
3-2

CITY: Citrix DIV/GROUP: IM/DV LD: K. Sinsabaugh PIC:(T.TALELE) PM:(S.GIBBONS) TM: (S.BOSTIAN/C.ANDERSON)
PROJECT: 10153004.0001.39CAP PATH: Z:\GISProjects_ENVP\PIKA\ftStewart_PIKA\MapDocs\FST39\2018\CAPF3-2 S39_CAP GW VOCs 2011 Deep_Dsize.mxd SAVED: 7/10/2018 BY: ksinsabaugh
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



LEGEND

- Fencing
- Rail Spur
- Surface Water Drainage
- National Wetlands
- Sanitary Sewer Line
- Manhole
- Monitor Well (deep)
- Approximate Extent of cis-1,2-DCE Regulatory Exceedance - 2017
- Approximate Extent of PCE Regulatory Exceedance - 2017
- Approximate Extent of TCE Regulatory Exceedance - 2017
- 1065 Building Number

NOTES:
1) All units reported in micrograms per liter (µg/L).
2) All constituents screened to U.S. EPA Maximum Contaminant Level (MCL) as of June 2018.
3) D - The reported value is from a dilution.
4) J – Constituent value was estimated.
5) VOC – Volatile Organic Compounds

Chemical Name	MCL
Benzene	5 µg/L
Tetrachloroethene (PCE)	5 µg/L
Trichloroethene (TCE)	5 µg/L
cis-1,2-Dichloroethene (DCE)	70 µg/L
Vinyl chloride (VC)	2 µg/L

0 120 240 360 480
SCALE IN FEET

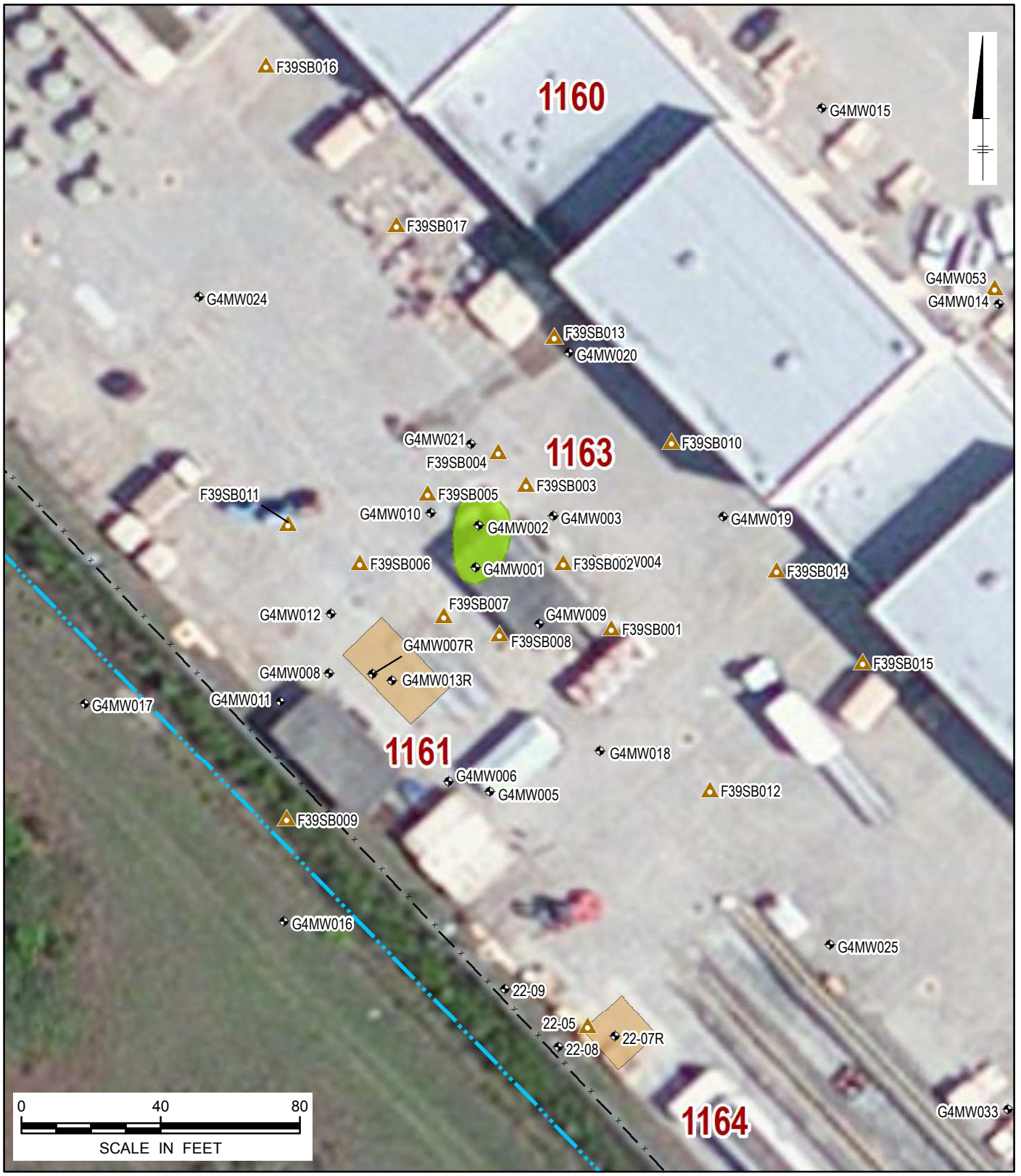
AERIAL SOURCE: ESRI Online Imagery (October 2013).
PROJECTION: NAD83 State Plane Georgia East Feet

FORT STEWART MILITARY RESERVATION, GEORGIA
SWMU 39 – DIRECT SUPPORT MAINTENANCE FACILITY CORRECTIVE ACTION PLAN

Deep Zone
Groundwater VOC Sampling Results (2011, 2017, and 2018)

PIKA ARCADIS A JOINT VENTURE

FIGURE
3-3



AERIAL SOURCE: ESRI Online Imagery (October 2013).
PROJECTION: NAD83 State Plane Georgia East Feet
REFERENCE: SES (2008).

LEGEND

- Surface Water Drainage
- Excavation Area
- Monitor Well (shallow)
- Estimated Extent of LNAPL
- Soil Boring (2010/2011)
- 1161 Building Number

NOTE: Extent of LNAPL is estimated according to water level and product gauging measurements (2008 through 2011).

FORT STEWART MILITARY RESERVATION, GEORGIA

SWMU 39 – DIRECT SUPPORT MAINTENANCE FACILITY CORRECTIVE ACTION PLAN

Estimated Extent of LNAPL

PIKA ARCADIS A JOINT VENTURE

FIGURE **3-4**

F39SB013	(0.5'-1.0')
Benzo(a)anthracene	0.25
Benzo(a)pyrene	0.42
Benzo(b)fluoranthene	0.50
Dibenz(a,h)anthracene	0.068 J
Indeno(1,2,3-cd)pyrene	0.22

F39SB010	(0.5'-1.0')
Benzo(a)anthracene	0.50
Benzo(a)pyrene	0.82
Benzo(b)fluoranthene	1.1
Indeno(1,2,3-cd)pyrene	0.42

F39SB016	(0.5'-1.0')
4-Chlorobenzenamine	0.015

F39SB017	(0.5'-1.0')
1,1'-Biphenyl	0.012
Benzo(a)anthracene	0.070
Benzo(a)pyrene	0.091
Dibenz(a,h)anthracene	0.019

G4MW053	(0.5'-1.0')
No Detections	

F39SB014	(0.5'-1.0')
Benzo(a)anthracene	0.088
Benzo(a)pyrene	0.073
Benzo(b)fluoranthene	0.097

F39SB015	(0.5'-1.0')
4-Chlorobenzenamine	0.068

F39SB009	(0.5'-1.0')
Lead	43

F39SB012	(0.5'-1.0')
No Detections	

Chemical Name	Residential Soil RSL	MCL-Based SSL	Risk-Based SSL
1,1'-Biphenyl	47	---	0.0087
4-Chlorobenzenamine	2.7	---	0.00016
Benzo(a)anthracene	0.16	---	0.0042
Benzo(a)pyrene	0.016	0.24	0.004
Benzo(b)fluoranthene	0.16	---	0.041
Benzo(k)fluoranthene	1.6	---	0.40
Dibenz(a,h)anthracene	0.016	---	0.013
Indeno(1,2,3-cd)pyrene	0.16	---	0.13
Lead	400	14	---

1166 1160 1163 1161 1164 1167

F39SB016 F39SB017 F39SB013 F39SB010 F39SB004 F39SB003 F39SB005 F39SB011 F39SB006 F39SB002 F39SB014 F39SB007 F39SB008 F39SB001 F39SB015 F39SB009 F39SB012 22-05

G4MW015 G4MW024 G4MW020 G4MW053 G4MW014 G4MW021 G4MW019 G4MW022 G4MW017 G4MW018 G4MW016 G4MW025 G4MW023

0 60 120
SCALE IN FEET

AERIAL SOURCE: ESRI Online Imagery (October 2013).
PROJECTION: NAD83 State Plane Georgia East Feet

LEGEND

- Surface Water Drainage
- Excavation Area
- Monitor Well (shallow)
- Soil Boring (2010/2011)
- 1161 Building Number

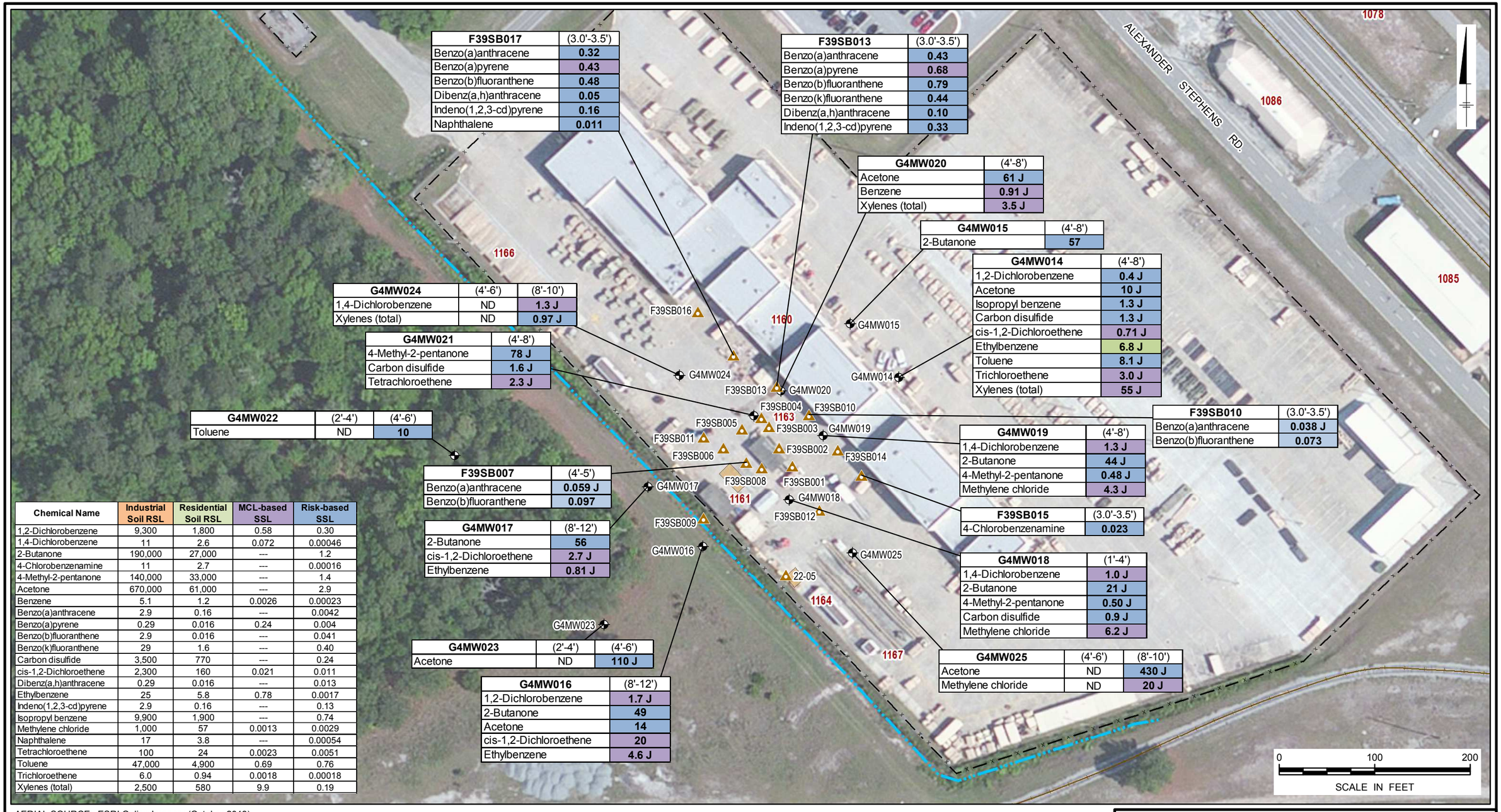
NOTES:
1) F39SB001 through F39SB012 collected in March 2010. Surface soil samples were only collected from F39SB009 through F39SB012.
2) F39SB013, F39SB014, and G4MW053 were collected in April 2011.
3) F39SB015 through F39SB017 collected in May 2011.
4) All concentrations reported in milligrams per kilogram (mg/kg).
5) Only results exceeding the background soil values and screening criteria are shown.
6) Residential Soil RSL applies to samples collected between 0-2 ft bgs.
7) Constituents are screened against the MCL-based SSL. If no MCL-based SSL exist, then they are screened against the Risk-based SSL (USEPA Regional Screening Levels May 2016).
8) All exceedances are highlighted according to highest applicable standard exceeded.
9) Sample depths are reported in feet below ground surface (ft bgs).
10) J – Constituent value was estimated.

FORT STEWART MILITARY RESERVATION, GEORGIA
SWMU 39 – DIRECT SUPPORT MAINTENANCE FACILITY CORRECTIVE ACTION PLAN

Surface Soil Sample Results (2010/2011)

PIKA ARCADIS

FIGURE
3-5



Chemical Name	Industrial Soil RSL	Residential Soil RSL	MCL-based SSL	Risk-based SSL
1,2-Dichlorobenzene	9,300	1,800	0.58	0.30
1,4-Dichlorobenzene	11	2.6	0.072	0.00046
2-Butanone	190,000	27,000	---	1.2
4-Chlorobenzenamine	11	2.7	---	0.00016
4-Methyl-2-pentanone	140,000	33,000	---	1.4
Acetone	670,000	61,000	---	2.9
Benzene	5.1	1.2	0.0026	0.00023
Benzo(a)anthracene	2.9	0.16	---	0.0042
Benzo(a)pyrene	0.29	0.016	0.24	0.004
Benzo(b)fluoranthene	2.9	0.016	---	0.041
Benzo(k)fluoranthene	29	1.6	---	0.40
Carbon disulfide	3,500	770	---	0.24
cis-1,2-Dichloroethene	2,300	160	0.021	0.011
Dibenz(a,h)anthracene	0.29	0.016	---	0.013
Ethylbenzene	25	5.8	0.78	0.0017
Indeno(1,2,3-cd)pyrene	2.9	0.16	---	0.13
Isopropyl benzene	9,900	1,900	---	0.74
Methylene chloride	1,000	57	0.0013	0.0029
Naphthalene	17	3.8	---	0.00054
Tetrachloroethene	100	24	0.0023	0.0051
Toluene	47,000	4,900	0.69	0.76
Trichloroethene	6.0	0.94	0.0018	0.00018
Xylenes (total)	2,500	580	9.9	0.19

AERIAL SOURCE: ESRI Online Imagery (October 2013).
PROJECTION: NAD83 State Plane Georgia East Feet
REFERENCE: SES (2008).

LEGEND

- Surface Water Drainage
- Excavation Area
- Monitor Well (shallow)
- Soil Boring (2010/2011)
- 1161 Building Number

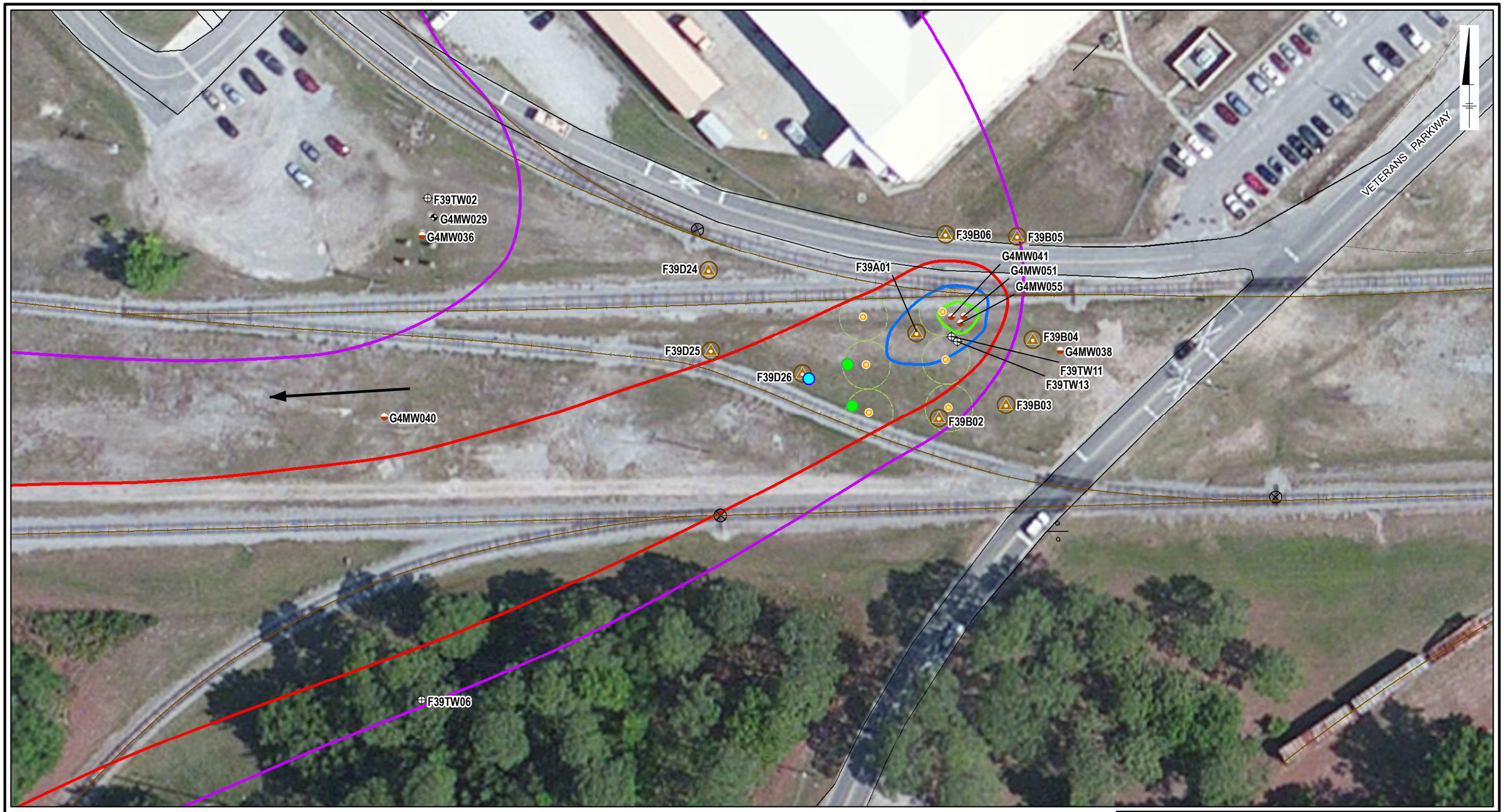
NOTES:
1) F39G4MW014 through F39G4MW021 were collected by SES, April 14-15, 2004.
2) F39G4MW022 through F39G4MW025 were collected by SES, August 26-27, 2004.
3) F39SB001 through F39SB012 collected in March 2010.
4) F39SB013 and F39SB014 collected in April 2011.
5) F39SB015 through F39SB017 collected in May 2011.
6) All concentrations reported in milligrams per kilogram (mg/kg).
7) Only results exceeding the background soil values are shown.
8) Industrial Soil RSL apply to samples collected greater than 2 ft bgs.
9) Constituents are screened against the MCL-based SSL. If no MCL-based SSL exist, then they are screened against the Risk-based SSL (USEPA Regional Screening Levels May 2016).
10) All exceedances are highlighted according to highest applicable standard exceeded.
11) Sample depths are reported in feet below ground surface (ft bgs).
12) J – Constituent value was estimated.
13) ND – Not Detected

FORT STEWART MILITARY RESERVATION, GEORGIA
SWMU 39 – DIRECT SUPPORT MAINTENANCE FACILITY CORRECTIVE ACTION PLAN

Soil Sampling Analytical Results (2010/2011)

PIKA ARCADIS A JOINT VENTURE

FIGURE
3-6



AERIAL SOURCE: ESRI Online Imagery (October 2013).
PROJECTION: NAD83 State Plane Georgia East Feet

LEGEND

- Monitor Well (shallow)
- Monitor Well (deep)
- Monitor Well (temporary)
- Dose Response Well
- MIP Sounding Location (October 2010)
- Proposed Injection Well
- Radius of Influence (15 ft)
- Transport Monitoring Well
- Approximate Extent of Chloroform Regulatory Exceedance
- Approximate Extent of cis-1,2-DCE Regulatory Exceedance
- Approximate Extent of PCE Regulatory Exceedance
- Approximate Extent of TCE Regulatory Exceedance
- Approximate Direction of Groundwater Flow

0 60 120
SCALE IN FEET

FORT STEWART MILITARY RESERVATION, GEORGIA

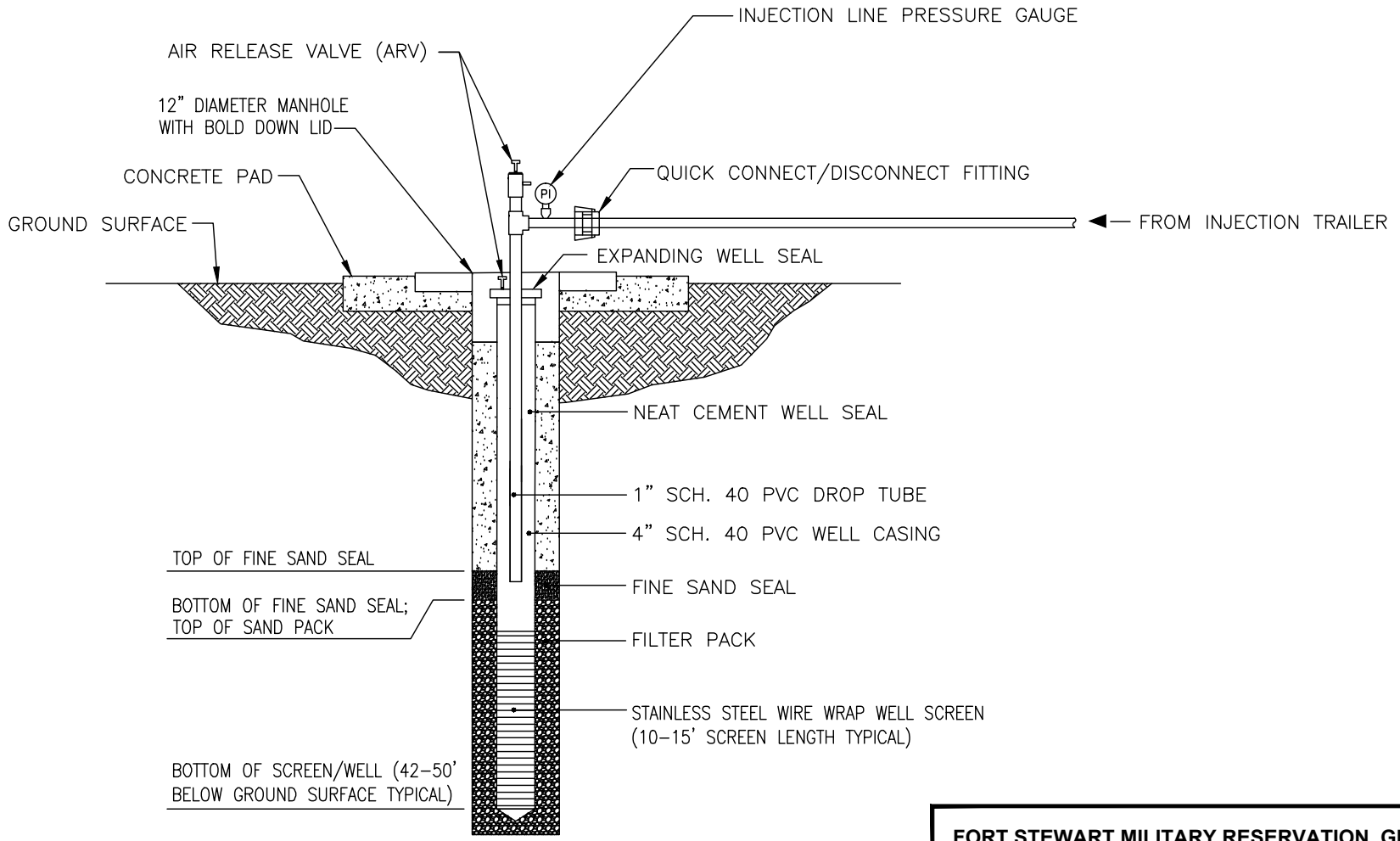
SWMU 39 – DIRECT SUPPORT MAINTENANCE FACILITY CORRECTIVE ACTION PLAN

Deep ERD Injection System

PIKA ARCADIS A JOINT VENTURE

FIGURE
5-1

CITY:(KNOXVILLE) DIV/GROUP:(ENV/GIS) DB:(D.AKENS) LD:(B.ALTOM) PIC:(T.TALELE) PM:(C.BERTZ) APM:(S.BOSTIAN) TM:(C.SPOONER)
PROJECT: GP08HAFS.F15C.DPCSR PATH: G:\GIS\HAAF\MapDocs\H15\2012\CAP\F8-9 H15_CAP WJ Details.dwg LAYOUT: WJ SAVED: 5/1/2012 12:41 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ENV-STANDARD.CTB PLOTTED: 5/1/2012 12:42 PM BY: ALTOM, BRENDA



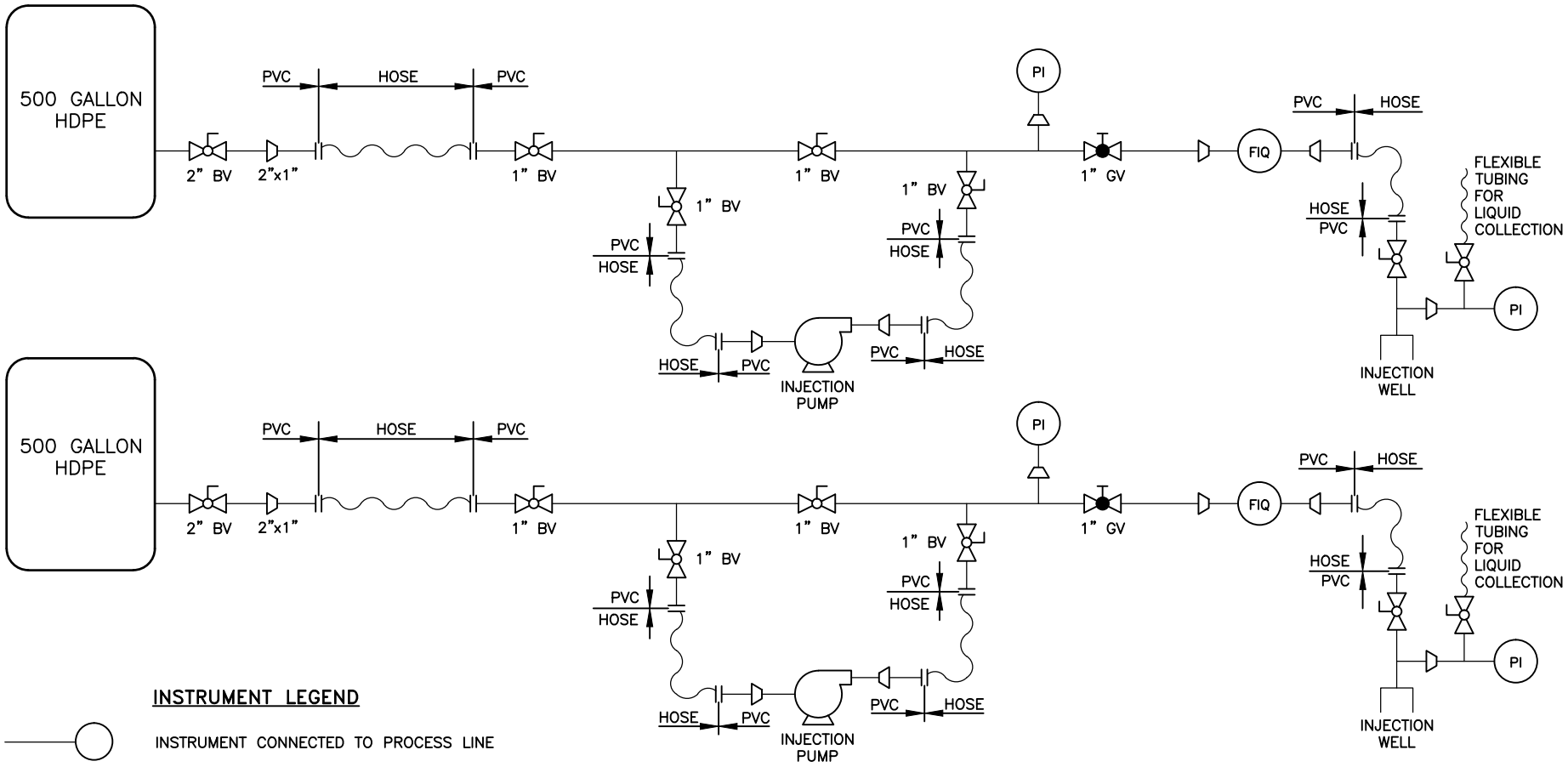
NOT TO SCALE

FORT STEWART MILITARY RESERVATION, GEORGIA
SWMU 39 – DIRECT SUPPORT MAINTENANCE FACILITY

IRZ Injection Well Construction Diagram and Injection Wellhead Tooling

PIKA ARCADIS A JOINT VENTURE

FIGURE
6-1



INSTRUMENT LEGEND

	INSTRUMENT CONNECTED TO PROCESS LINE
	BALL VALVE
	GATE VALVE
PVC PE	PIPE DESIGNATION CHANGE
	FLEXIBLE HOSE
	REDUCER
FM	FLOW METER
PI	PRESSURE INDICATOR
HDPE	HIGH DENSITY POLYETHYLENE

FORT STEWART MILITARY RESERVATION, GEORGIA
SWMU 39 – DIRECT SUPPORT MAINTENANCE FACILITY

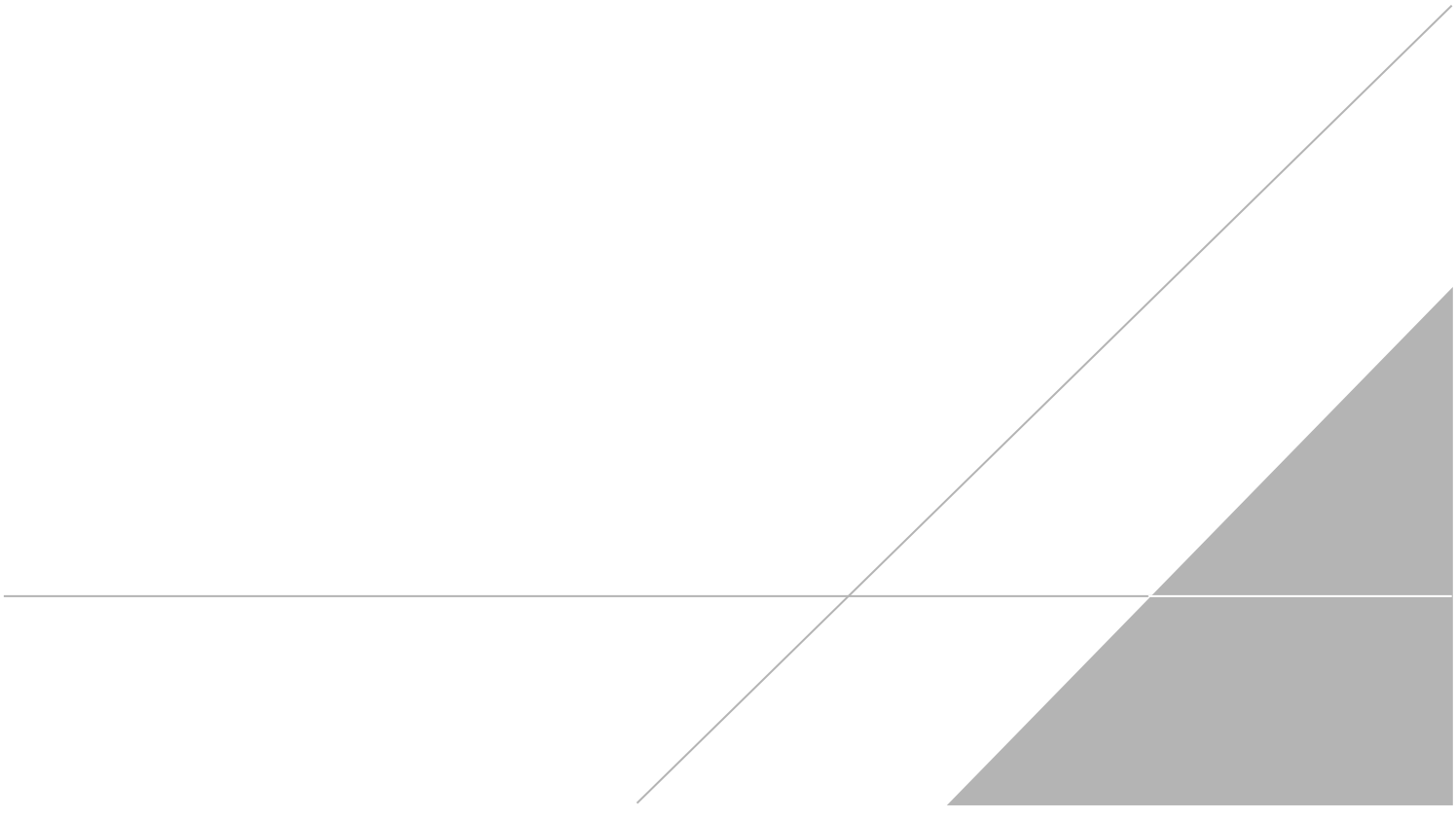
INJECTION PROCESS AND INSTRUMENTATION DIAGRAM

PIKA ARCADIS A JOINT VENTURE

FIGURE
6-2

APPENDIX A

Lab and Data Reports - 2018



DATA VALIDATION CHECKLIST **FORT STEWART**
FST-39

ARCADIS, Inc.
3850 N. Causeway Blvd.
Suite 990
Metairie, LA 70002
Tel. (504) 832-4174
Fax. (504) 832-2145

Sample Team:	ARCADIS
Sample Matrix:	Water
Lab Project Manager:	Bernard Kirkland
SDG Numbers:	680-154053-1
Analyses:	VOCs – 8260B and Metals – 6010C
QA Reporting Level:	ARCADIS, Level II

Environmental Project:
Fort Stewart

Project Number:
101530004.0001.39GWM

Analytical data were evaluated in accordance with applicable USEPA SW-846 method requirements, "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (October 1999), analytical method control criteria, the analytical laboratory Quality Assurance Control Limits, the Hunter Army Airfield Quality Assurance Project Plan (ARCADIS-2014) and professional judgment.

The data verification was performed at a Level II and included review of data package completeness, Laboratory Control Samples and Method Blanks, Matrix Spike Recoveries, and holding time compliance. Laboratory calculations were not verified. Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation. Field sampling documentation was not reviewed.

Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The following samples were included in this data validation:

SDG Number	Sample ID	Sample Date	Parent Sample
680-154053-1	G4MW047	06/14/18	
	G4MW053	06/14/18	
	G4MW057	06/14/18	
	G4MW033	06/14/18	
	G4MW054	06/14/18	
	G4MW019	06/14/18	
	G4MW018	06/14/18	
	G4MW022	06/14/18	
	G4MW052	06/14/18	
	G4MW035	06/14/18	
	G4MW025	06/14/18	
	G4MW017	06/14/18	
	G4MW040	06/14/18	
	G4MW036	06/14/18	
	G4MW051	06/15/18	
	G4MW056	06/15/18	
	G4MW041	06/15/18	
	G4MW039	06/15/18	
	DUP-01	06/15/18	G4MW051
	Trip Blank	06/15/18	

I. GENERAL INFORMATION

ITEMS REVIEWED	REPORTED/REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Chain of Custody		X	X		X		
2. Sampling dates and times		X	X		X		
3. Sample type on COC		X	X		X		
4. Field QC samples		X	X		X		
5. Case Narrative		X	X		X		
6. Sample Receipt Condition		X	X		X		

COMMENTS: Performance was acceptable, with the following exceptions and notes.

The analytical report was complete with the following exceptions or notations.

Comments:

II. VOLATILES

ITEMS REVIEWED	REPORTED/REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Field Blanks/Equipment Blanks	X						X
C. Trip Blanks		X	X		X		
4. Laboratory control sample (LCS) %R		X	X		X		
5. Laboratory control sample duplicate (LCSD) %R		X	X				
6. LCS/LCSD RPD		X	X		X		
7. Matrix spike (MS) %R	X						X
8. MSD %R	X						X
9. MS/MSD RPD	X						X
10. Surrogate Recoveries		X	X		X		
11. Field Duplicate Comparison	X						X

VOCs - volatile organic compounds %R - percent recovery RPD - relative percent difference MSD- Matrix Spike Duplicate

COMMENTS: Performance was acceptable, with the following exceptions and notes.

7-9. Sample G4MW056 was used as the MS/MSD. The recovery of 1,2,4-trimethylbenzene was above the control limit in the MS. The parent sample was non-detect for this compound; therefore, qualification of the data was not warranted. The RPD for dichlorodifluoromethane was above the control limit. The parent sample was qualified as estimated for this compound.

10. Sample DUP-01 was collected as a field duplicate of G4MW051. The RPDs were acceptable at less than 35%.

III. Metals

ITEMS REVIEWED	REPORTED/REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Field Blanks/Equipment Blanks	X					X	
4. Laboratory control sample (LCS) %R		X	X		X		
5. Laboratory control sample duplicate(LCSD) %R	X						X
6. LCS/LCSD RPD	X						X
7. Matrix spike (MS) %R	X						X
8. MSD %R	X						X
9. MS/MSD RPD	X						X
10. Total vs. Dissolved		X	X		X		
11. Field Duplicate Comparison		X	X			X	

%R - percent recovery RPD - relative percent difference MSD- Matrix Spike Duplicate

COMMENTS: Performance was acceptable, with the following exceptions and notes.

11. Sample DUP-01 was collected as a field duplicate of G4MW051. The RPDs were acceptable at non-detect.

DATA VALIDATION QUALIFICATION SUMMARY

Qualifier Definitions:

J – Result is considered to be estimated at the value reported.
UJ – Result is considered not detected but estimated due to QC deficiencies.
UB – Non-detect at the Reporting Limit or at the concentration reported if greater than the RL due to associated blank contamination.
R – Result is qualified as unusable, data point is rejected.

Explanation/Notes:

Sample ID	Parameter	Result	Units	Qualifier	Reason
G4MW056	Dichlorodifluoromethane	<1.0	ug/L	UJ	MS/MSD RPD

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: December 14, 2017

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: 680-154053-1
Client Project/Site: FST-39

For:
ARCADIS U.S., Inc.
801 Corporate Center Drive
Suite 300
Raleigh, North Carolina 27607-5073

Attn: Ms. Shelley Gibbons

Jerry Lanier

Authorized for release by:
6/29/2018 2:18:47 PM

Jerry Lanier, Project Manager I
(912)250-0281
jerry.lanier@testamericainc.com

Table of Contents

Job ID: 680-154053-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: FST-39

Report Number: 680-154053-1

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 06/15/2018; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.6º C and 0.7º C.

VOLATILE ORGANIC COMPOUNDS (GC/MS)

Samples G4MW047 (680-154053-1), G4MW057 (680-154053-3), G4MW033 (680-154053-4), G4MW054 (680-154053-5), G4MW019 (680-154053-6), G4MW018 (680-154053-7), G4MW022 (680-154053-8), G4MW035 (680-154053-10), G4MW025 (680-154053-11), G4MW017 (680-154053-12), G4MW040 (680-154053-13), G4MW051 (680-154053-15), G4MW056 (680-154053-16), G4MW041 (680-154053-17), DUP-01 (680-154053-19) and Trip Blank (680-154053-20) were analyzed for Volatile Organic Compounds (GC/MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 06/26/2018 and 06/27/2018.

The continuing calibration verification (CCV) associated with batch 680-529366 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 closing calibration verification (CCV) analyzed in batch 529366 was outside the method criteria for the 12 hour window by 25 minutes. The data integrity was not impacted and the data has been reported and addressed. All other QC criteria have been met.

(CCVC 680-529366/30)

The CCVIS associated with batch 529484 is failing for Dichlorodifluoromethane. This analyte has been identified as a poor performer. The data has been qualified and reported.

(CCVIS 680-529484/3)

1,2,4-Trimethylbenzene failed the recovery criteria high for the MS of sample G4MW056MS (680-154053-16) in batch 680-529484.

Dichlorodifluoromethane exceeded the RPD limit for the MSD of sample G4MW056MSD (680-154053-16) in batch 680-529484.

Refer to the QC report for details.

Samples G4MW051 (680-154053-15)[10X] and DUP-01 (680-154053-19)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICP) - DISSOLVED

Job ID: 680-154053-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

Samples G4MW053 (680-154053-2), G4MW054 (680-154053-5), G4MW052 (680-154053-9), G4MW036 (680-154053-14), G4MW051 (680-154053-15), G4MW039 (680-154053-18) and DUP-01 (680-154053-19) were analyzed for Metals (ICP) - Dissolved in accordance with EPA SW-846 Method 6010C. The samples were prepared on 06/18/2018 and analyzed on 06/22/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICP)

Samples G4MW053 (680-154053-2), G4MW054 (680-154053-5), G4MW052 (680-154053-9), G4MW036 (680-154053-14), G4MW051 (680-154053-15), G4MW039 (680-154053-18) and DUP-01 (680-154053-19) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 06/18/2018 and analyzed on 06/21/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-154053-1	G4MW047	Water	06/14/18 11:00	06/15/18 16:05
680-154053-2	G4MW053	Water	06/14/18 11:25	06/15/18 16:05
680-154053-3	G4MW057	Water	06/14/18 12:22	06/15/18 16:05
680-154053-4	G4MW033	Water	06/14/18 12:30	06/15/18 16:05
680-154053-5	G4MW054	Water	06/14/18 13:42	06/15/18 16:05
680-154053-6	G4MW019	Water	06/14/18 13:50	06/15/18 16:05
680-154053-7	G4MW018	Water	06/14/18 14:50	06/15/18 16:05
680-154053-8	G4MW022	Water	06/14/18 15:35	06/15/18 16:05
680-154053-9	G4MW052	Water	06/14/18 15:55	06/15/18 16:05
680-154053-10	G4MW035	Water	06/14/18 17:00	06/15/18 16:05
680-154053-11	G4MW025	Water	06/14/18 17:35	06/15/18 16:05
680-154053-12	G4MW017	Water	06/14/18 18:00	06/15/18 16:05
680-154053-13	G4MW040	Water	06/14/18 19:00	06/15/18 16:05
680-154053-14	G4MW036	Water	06/14/18 19:16	06/15/18 16:05
680-154053-15	G4MW051	Water	06/15/18 08:32	06/15/18 16:05
680-154053-16	G4MW056	Water	06/15/18 08:50	06/15/18 16:05
680-154053-17	G4MW041	Water	06/15/18 09:45	06/15/18 16:05
680-154053-18	G4MW039	Water	06/15/18 09:55	06/15/18 16:05
680-154053-19	DUP-01	Water	06/15/18 00:00	06/15/18 16:05
680-154053-20	Trip Blank	Water	06/15/18 00:00	06/15/18 16:05

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL SAV
3010A	Preparation, Total Metals	SW846	TAL SAV
5030B	Purge and Trap	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

GC/MS VOA

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
M	Manual integrated compound.
Q	One or more quality control criteria failed.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
D	The reported value is from a dilution.
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

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)

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW047 — Lab Sample ID: 680-154053-1

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	1.6		1.0	1.0	0.74	ug/L	1		8260B	Total/NA
Trichloroethene	1.9		1.0	1.0	0.48	ug/L	1		8260B	Total/NA

Client Sample ID: G4MW053 — Lab Sample ID: 680-154053-2

No Detections.

Client Sample ID: G4MW057 — Lab Sample ID: 680-154053-3

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.2		1.0	1.0	0.41	ug/L	1		8260B	Total/NA
1,2-Dichloroethene, Total	3.2		2.0	1.0	0.74	ug/L	1		8260B	Total/NA
Tetrachloroethene	16		1.0	1.0	0.74	ug/L	1		8260B	Total/NA
Trichloroethene	26		1.0	1.0	0.48	ug/L	1		8260B	Total/NA

Client Sample ID: G4MW033 — Lab Sample ID: 680-154053-4

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.7		1.0	1.0	0.41	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.51	J M	1.0	1.0	0.37	ug/L	1		8260B	Total/NA
1,2-Dichloroethene, Total	3.3		2.0	1.0	0.74	ug/L	1		8260B	Total/NA
Trichloroethene	4.7		1.0	1.0	0.48	ug/L	1		8260B	Total/NA

Client Sample ID: G4MW054 — Lab Sample ID: 680-154053-5

No Detections.

Client Sample ID: G4MW019 — Lab Sample ID: 680-154053-6

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	6.4		1.0	1.0	0.41	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	2.2		1.0	1.0	0.37	ug/L	1		8260B	Total/NA
1,2-Dichloroethene, Total	8.7		2.0	1.0	0.74	ug/L	1		8260B	Total/NA
Trichloroethene	2.4		1.0	1.0	0.48	ug/L	1		8260B	Total/NA

Client Sample ID: G4MW018 — Lab Sample ID: 680-154053-7

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	7.2		1.0	1.0	0.41	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	2.5		1.0	1.0	0.37	ug/L	1		8260B	Total/NA
1,2-Dichloroethene, Total	9.7		2.0	1.0	0.74	ug/L	1		8260B	Total/NA
Trichloroethene	2.2		1.0	1.0	0.48	ug/L	1		8260B	Total/NA

Client Sample ID: G4MW022 — Lab Sample ID: 680-154053-8

No Detections.

Client Sample ID: G4MW052 — Lab Sample ID: 680-154053-9

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Savannah

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW035 — Lab Sample ID: 680-154053-10

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.6		1.0	1.0	0.41	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	1.2	M	1.0	1.0	0.37	ug/L	1		8260B	Total/NA
1,2-Dichloroethene, Total	4.8		2.0	1.0	0.74	ug/L	1		8260B	Total/NA
Trichloroethene	3.1		1.0	1.0	0.48	ug/L	1		8260B	Total/NA

Client Sample ID: G4MW025 — Lab Sample ID: 680-154053-11

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.4		1.0	1.0	0.41	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	1.1	M	1.0	1.0	0.37	ug/L	1		8260B	Total/NA
1,2-Dichloroethene, Total	4.5		2.0	1.0	0.74	ug/L	1		8260B	Total/NA
Trichloroethene	1.5		1.0	1.0	0.48	ug/L	1		8260B	Total/NA

Client Sample ID: G4MW017 — Lab Sample ID: 680-154053-12

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.0		1.0	1.0	0.41	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	1.2		1.0	1.0	0.37	ug/L	1		8260B	Total/NA
1,2-Dichloroethene, Total	4.2		2.0	1.0	0.74	ug/L	1		8260B	Total/NA
Trichloroethene	0.72	J	1.0	1.0	0.48	ug/L	1		8260B	Total/NA

Client Sample ID: G4MW040 — Lab Sample ID: 680-154053-13

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	13		1.0	1.0	0.41	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	2.0		1.0	1.0	0.37	ug/L	1		8260B	Total/NA
1,2-Dichloroethene, Total	15		2.0	1.0	0.74	ug/L	1		8260B	Total/NA
Tetrachloroethene	5.0		1.0	1.0	0.74	ug/L	1		8260B	Total/NA
Trichloroethene	67		1.0	1.0	0.48	ug/L	1		8260B	Total/NA

Client Sample ID: G4MW036 — Lab Sample ID: 680-154053-14

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Dissolved Arsenic	7.7	J	20	15	6.2	ug/L	1		6010C	Dissolved

Client Sample ID: G4MW051 — Lab Sample ID: 680-154053-15

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	320	D	10	10	4.1	ug/L	10		8260B	Total/NA
1,2-Dichloroethene, Total	320	D	20	10	7.4	ug/L	10		8260B	Total/NA
Tetrachloroethene	15	D	10	10	7.4	ug/L	10		8260B	Total/NA
Trichloroethene	660	D	10	10	4.8	ug/L	10		8260B	Total/NA

Client Sample ID: G4MW056 — Lab Sample ID: 680-154053-16

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Benzene	5.2		1.0	1.0	0.43	ug/L	1		8260B	Total/NA
Chlorobenzene	5.8		1.0	0.50	0.26	ug/L	1		8260B	Total/NA
1,2-Dichlorobenzene	4.8		1.0	1.0	0.37	ug/L	1		8260B	Total/NA
1,3-Dichlorobenzene	0.62	J	1.0	1.0	0.43	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: G4MW056 (Continued) — Lab Sample ID: 680-154053-16

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dichlorobenzene	5.0		1.0	1.0	0.46	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	0.73	J	1.0	1.0	0.41	ug/L	1		8260B	Total/NA
Trichloroethene	4.7		1.0	1.0	0.48	ug/L	1		8260B	Total/NA

Client Sample ID: G4MW041 — Lab Sample ID: 680-154053-17

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	4.2		1.0	1.0	0.41	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	1.6		1.0	1.0	0.37	ug/L	1		8260B	Total/NA
1,2-Dichloroethene, Total	5.9		2.0	1.0	0.74	ug/L	1		8260B	Total/NA
Trichloroethene	3.0		1.0	1.0	0.48	ug/L	1		8260B	Total/NA

Client Sample ID: G4MW039 — Lab Sample ID: 680-154053-18

No Detections.

Client Sample ID: DUP-01 — Lab Sample ID: 680-154053-19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	330	D	10	10	4.1	ug/L	10		8260B	Total/NA
1,2-Dichloroethene, Total	330	D	20	10	7.4	ug/L	10		8260B	Total/NA
Tetrachloroethene	14	D	10	10	7.4	ug/L	10		8260B	Total/NA
Trichloroethene	630	D	10	10	4.8	ug/L	10		8260B	Total/NA

Client Sample ID: Trip Blank — Lab Sample ID: 680-154053-20

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW047
Date Collected: 06/14/18 11:00
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-1
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		06/26/18 13:42	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 13:42	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 13:42	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 13:42	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 13:42	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 13:42	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 13:42	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 13:42	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 13:42	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 13:42	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 13:42	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 13:42	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 13:42	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 13:42	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 13:42	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 13:42	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 13:42	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 13:42	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 13:42	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 13:42	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 13:42	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 13:42	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 13:42	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 13:42	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 13:42	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 13:42	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 13:42	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 13:42	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 13:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		06/26/18 13:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 13:42	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		06/26/18 13:42	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/26/18 13:42	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 13:42	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 13:42	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 13:42	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 13:42	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 13:42	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 13:42	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 13:42	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 13:42	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 13:42	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 13:42	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 13:42	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 13:42	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 13:42	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 13:42	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 13:42	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 13:42	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW047
Date Collected: 06/14/18 11:00
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-1
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 13:42	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 13:42	1
Tetrachloroethene	**1.6**		1.0	1.0	0.74	ug/L		06/26/18 13:42	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 13:42	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 13:42	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 13:42	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 13:42	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 13:42	1
Trichloroethene	**1.9**		1.0	1.0	0.48	ug/L		06/26/18 13:42	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 13:42	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 13:42	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 13:42	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 13:42	1
Vinyl acetate	2.0	U Q	2.0	2.0	0.81	ug/L		06/26/18 13:42	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 13:42	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 13:42	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 13:42	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 13:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*89 - 112*		*06/26/18 13:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*81 - 118*		*06/26/18 13:42*	*1*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*		*06/26/18 13:42*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*06/26/18 13:42*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW053
Date Collected: 06/14/18 11:25
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-2
Matrix: Water

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	15	U	20	15	6.2	ug/L		06/21/18 15:59	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Dissolved Arsenic	15	U	20	15	6.2	ug/L		06/22/18 04:53	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW057
Date Collected: 06/14/18 12:22
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-3
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		06/26/18 14:07	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 14:07	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 14:07	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 14:07	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 14:07	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 14:07	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:07	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 14:07	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 14:07	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 14:07	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 14:07	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 14:07	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 14:07	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 14:07	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:07	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 14:07	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 14:07	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 14:07	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 14:07	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 14:07	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 14:07	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 14:07	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 14:07	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:07	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 14:07	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 14:07	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 14:07	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 14:07	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 14:07	1
cis-1,2-Dichloroethene	**3.2**		1.0	1.0	0.41	ug/L		06/26/18 14:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:07	1
1,2-Dichloroethene, Total	**3.2**		2.0	1.0	0.74	ug/L		06/26/18 14:07	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/26/18 14:07	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 14:07	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 14:07	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:07	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 14:07	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 14:07	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 14:07	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 14:07	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:07	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 14:07	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 14:07	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 14:07	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:07	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 14:07	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 14:07	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 14:07	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 14:07	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW057
Date Collected: 06/14/18 12:22
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-3
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:07	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 14:07	1
Tetrachloroethene	**16**		1.0	1.0	0.74	ug/L		06/26/18 14:07	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 14:07	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:07	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:07	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:07	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 14:07	1
Trichloroethene	**26**		1.0	1.0	0.48	ug/L		06/26/18 14:07	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 14:07	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 14:07	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 14:07	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 14:07	1
Vinyl acetate	2.0	U Q	2.0	2.0	0.81	ug/L		06/26/18 14:07	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 14:07	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 14:07	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 14:07	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 14:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*89 - 112*		*06/26/18 14:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*06/26/18 14:07*	*1*
4-Bromofluorobenzene (Surr)	*97*		*85 - 114*		*06/26/18 14:07*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*06/26/18 14:07*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW033
Date Collected: 06/14/18 12:30
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-4
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		06/26/18 14:32	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 14:32	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 14:32	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 14:32	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 14:32	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 14:32	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:32	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 14:32	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 14:32	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 14:32	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 14:32	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 14:32	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 14:32	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 14:32	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:32	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 14:32	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 14:32	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 14:32	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 14:32	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 14:32	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 14:32	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 14:32	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 14:32	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:32	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 14:32	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 14:32	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 14:32	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 14:32	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 14:32	1
cis-1,2-Dichloroethene	**2.7**		1.0	1.0	0.41	ug/L		06/26/18 14:32	1
trans-1,2-Dichloroethene	**0.51**	**J M**	1.0	1.0	0.37	ug/L		06/26/18 14:32	1
1,2-Dichloroethene, Total	**3.3**		2.0	1.0	0.74	ug/L		06/26/18 14:32	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/26/18 14:32	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 14:32	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 14:32	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:32	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 14:32	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 14:32	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 14:32	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 14:32	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:32	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 14:32	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 14:32	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 14:32	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:32	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 14:32	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 14:32	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 14:32	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 14:32	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW033
Date Collected: 06/14/18 12:30
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-4
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:32	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 14:32	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		06/26/18 14:32	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 14:32	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:32	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:32	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:32	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 14:32	1
Trichloroethene	**4.7**		1.0	1.0	0.48	ug/L		06/26/18 14:32	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 14:32	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 14:32	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 14:32	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 14:32	1
Vinyl acetate	2.0	U Q	2.0	2.0	0.81	ug/L		06/26/18 14:32	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 14:32	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 14:32	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 14:32	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 14:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*89 - 112*		*06/26/18 14:32*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*81 - 118*		*06/26/18 14:32*	*1*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*		*06/26/18 14:32*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*06/26/18 14:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW054
Date Collected: 06/14/18 13:42
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-5
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		06/26/18 14:57	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 14:57	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 14:57	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 14:57	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 14:57	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 14:57	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:57	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 14:57	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 14:57	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 14:57	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 14:57	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 14:57	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 14:57	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 14:57	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:57	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 14:57	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 14:57	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 14:57	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 14:57	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 14:57	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 14:57	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 14:57	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 14:57	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:57	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 14:57	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 14:57	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 14:57	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 14:57	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 14:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		06/26/18 14:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:57	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		06/26/18 14:57	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/26/18 14:57	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 14:57	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 14:57	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:57	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 14:57	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 14:57	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 14:57	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 14:57	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:57	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 14:57	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 14:57	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 14:57	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:57	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 14:57	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 14:57	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 14:57	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 14:57	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW054
Date Collected: 06/14/18 13:42
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-5
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:57	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 14:57	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		06/26/18 14:57	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 14:57	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:57	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 14:57	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 14:57	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 14:57	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 14:57	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 14:57	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 14:57	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 14:57	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 14:57	1
Vinyl acetate	2.0	U Q	2.0	2.0	0.81	ug/L		06/26/18 14:57	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 14:57	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 14:57	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 14:57	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 14:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*89 - 112*		*06/26/18 14:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*06/26/18 14:57*	*1*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*		*06/26/18 14:57*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 119*		*06/26/18 14:57*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	15	U	20	15	6.2	ug/L		06/21/18 16:04	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Dissolved Arsenic	15	U	20	15	6.2	ug/L		06/22/18 05:21	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW019
Date Collected: 06/14/18 13:50
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-6
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		06/26/18 15:22	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 15:22	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 15:22	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 15:22	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 15:22	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 15:22	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 15:22	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 15:22	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 15:22	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 15:22	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 15:22	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 15:22	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 15:22	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 15:22	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 15:22	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 15:22	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 15:22	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 15:22	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 15:22	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 15:22	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 15:22	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 15:22	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 15:22	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 15:22	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 15:22	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 15:22	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 15:22	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 15:22	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 15:22	1
cis-1,2-Dichloroethene	**6.4**		1.0	1.0	0.41	ug/L		06/26/18 15:22	1
trans-1,2-Dichloroethene	**2.2**		1.0	1.0	0.37	ug/L		06/26/18 15:22	1
1,2-Dichloroethene, Total	**8.7**		2.0	1.0	0.74	ug/L		06/26/18 15:22	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/26/18 15:22	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 15:22	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 15:22	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 15:22	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 15:22	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 15:22	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 15:22	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 15:22	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 15:22	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 15:22	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 15:22	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 15:22	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 15:22	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 15:22	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 15:22	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 15:22	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 15:22	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW019
Date Collected: 06/14/18 13:50
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-6
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 15:22	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 15:22	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		06/26/18 15:22	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 15:22	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 15:22	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 15:22	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 15:22	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 15:22	1
Trichloroethene	**2.4**		1.0	1.0	0.48	ug/L		06/26/18 15:22	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 15:22	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 15:22	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 15:22	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 15:22	1
Vinyl acetate	2.0	U Q	2.0	2.0	0.81	ug/L		06/26/18 15:22	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 15:22	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 15:22	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 15:22	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 15:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*89 - 112*		*06/26/18 15:22*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*81 - 118*		*06/26/18 15:22*	*1*
4-Bromofluorobenzene (Surr)	*96*		*85 - 114*		*06/26/18 15:22*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 119*		*06/26/18 15:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW018
Date Collected: 06/14/18 14:50
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-7
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		06/26/18 15:48	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 15:48	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 15:48	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 15:48	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 15:48	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 15:48	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 15:48	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 15:48	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 15:48	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 15:48	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 15:48	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 15:48	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 15:48	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 15:48	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 15:48	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 15:48	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 15:48	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 15:48	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 15:48	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 15:48	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 15:48	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 15:48	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 15:48	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 15:48	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 15:48	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 15:48	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 15:48	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 15:48	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 15:48	1
cis-1,2-Dichloroethene	**7.2**		1.0	1.0	0.41	ug/L		06/26/18 15:48	1
trans-1,2-Dichloroethene	**2.5**		1.0	1.0	0.37	ug/L		06/26/18 15:48	1
1,2-Dichloroethene, Total	**9.7**		2.0	1.0	0.74	ug/L		06/26/18 15:48	1
1,1-Dichloroethene	1.0	U M	1.0	1.0	0.36	ug/L		06/26/18 15:48	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 15:48	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 15:48	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 15:48	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 15:48	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 15:48	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 15:48	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 15:48	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 15:48	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 15:48	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 15:48	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 15:48	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 15:48	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 15:48	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 15:48	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 15:48	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 15:48	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW018
Date Collected: 06/14/18 14:50
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-7
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 15:48	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 15:48	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		06/26/18 15:48	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 15:48	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 15:48	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 15:48	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 15:48	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 15:48	1
Trichloroethene	**2.2**		1.0	1.0	0.48	ug/L		06/26/18 15:48	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 15:48	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 15:48	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 15:48	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 15:48	1
Vinyl acetate	2.0	U Q	2.0	2.0	0.81	ug/L		06/26/18 15:48	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 15:48	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 15:48	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 15:48	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 15:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*89 - 112*		*06/26/18 15:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*06/26/18 15:48*	*1*
4-Bromofluorobenzene (Surr)	*97*		*85 - 114*		*06/26/18 15:48*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 119*		*06/26/18 15:48*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW022
Date Collected: 06/14/18 15:35
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-8
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		06/26/18 16:13	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 16:13	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 16:13	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 16:13	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 16:13	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 16:13	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 16:13	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 16:13	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 16:13	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 16:13	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 16:13	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 16:13	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 16:13	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 16:13	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 16:13	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 16:13	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 16:13	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 16:13	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 16:13	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 16:13	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 16:13	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 16:13	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 16:13	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 16:13	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 16:13	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 16:13	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 16:13	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 16:13	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 16:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		06/26/18 16:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 16:13	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		06/26/18 16:13	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/26/18 16:13	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 16:13	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 16:13	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 16:13	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 16:13	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 16:13	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 16:13	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 16:13	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 16:13	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 16:13	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 16:13	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 16:13	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 16:13	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 16:13	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 16:13	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 16:13	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 16:13	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW022
Date Collected: 06/14/18 15:35
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-8
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 16:13	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 16:13	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		06/26/18 16:13	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 16:13	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 16:13	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 16:13	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 16:13	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 16:13	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 16:13	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 16:13	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 16:13	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 16:13	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 16:13	1
Vinyl acetate	2.0	U Q	2.0	2.0	0.81	ug/L		06/26/18 16:13	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 16:13	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 16:13	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 16:13	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 16:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*89 - 112*		*06/26/18 16:13*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*06/26/18 16:13*	*1*
4-Bromofluorobenzene (Surr)	*96*		*85 - 114*		*06/26/18 16:13*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 119*		*06/26/18 16:13*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW052
Date Collected: 06/14/18 15:55
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-9
Matrix: Water

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	15	U	20	15	6.2	ug/L		06/21/18 16:09	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Dissolved Arsenic	15	U	20	15	6.2	ug/L		06/22/18 05:16	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW035
Date Collected: 06/14/18 17:00
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-10
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		06/26/18 16:38	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 16:38	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 16:38	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 16:38	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 16:38	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 16:38	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 16:38	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 16:38	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 16:38	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 16:38	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 16:38	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 16:38	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 16:38	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 16:38	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 16:38	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 16:38	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 16:38	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 16:38	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 16:38	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 16:38	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 16:38	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 16:38	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 16:38	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 16:38	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 16:38	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 16:38	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 16:38	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 16:38	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 16:38	1
cis-1,2-Dichloroethene	**3.6**		1.0	1.0	0.41	ug/L		06/26/18 16:38	1
trans-1,2-Dichloroethene	**1.2**	**M**	1.0	1.0	0.37	ug/L		06/26/18 16:38	1
1,2-Dichloroethene, Total	**4.8**		2.0	1.0	0.74	ug/L		06/26/18 16:38	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/26/18 16:38	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 16:38	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 16:38	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 16:38	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 16:38	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 16:38	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 16:38	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 16:38	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 16:38	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 16:38	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 16:38	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 16:38	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 16:38	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 16:38	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 16:38	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 16:38	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 16:38	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW035
Date Collected: 06/14/18 17:00
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-10
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 16:38	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 16:38	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		06/26/18 16:38	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 16:38	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 16:38	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 16:38	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 16:38	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 16:38	1
Trichloroethene	**3.1**		1.0	1.0	0.48	ug/L		06/26/18 16:38	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 16:38	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 16:38	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 16:38	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 16:38	1
Vinyl acetate	2.0	U Q	2.0	2.0	0.81	ug/L		06/26/18 16:38	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 16:38	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 16:38	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 16:38	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*89 - 112*		*06/26/18 16:38*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*81 - 118*		*06/26/18 16:38*	*1*
4-Bromofluorobenzene (Surr)	*96*		*85 - 114*		*06/26/18 16:38*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 119*		*06/26/18 16:38*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW025
Date Collected: 06/14/18 17:35
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-11
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		06/26/18 17:03	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 17:03	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 17:03	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 17:03	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 17:03	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 17:03	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:03	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 17:03	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 17:03	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 17:03	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 17:03	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 17:03	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 17:03	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 17:03	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:03	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 17:03	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 17:03	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 17:03	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 17:03	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 17:03	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 17:03	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 17:03	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 17:03	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 17:03	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 17:03	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 17:03	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 17:03	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 17:03	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 17:03	1
cis-1,2-Dichloroethene	**3.4**		1.0	1.0	0.41	ug/L		06/26/18 17:03	1
trans-1,2-Dichloroethene	**1.1**	**M**	1.0	1.0	0.37	ug/L		06/26/18 17:03	1
1,2-Dichloroethene, Total	**4.5**		2.0	1.0	0.74	ug/L		06/26/18 17:03	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/26/18 17:03	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 17:03	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 17:03	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 17:03	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 17:03	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 17:03	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 17:03	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 17:03	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:03	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 17:03	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 17:03	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 17:03	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:03	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 17:03	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 17:03	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 17:03	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 17:03	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW025
Date Collected: 06/14/18 17:35
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-11
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 17:03	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 17:03	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		06/26/18 17:03	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 17:03	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:03	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:03	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 17:03	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 17:03	1
Trichloroethene	**1.5**		1.0	1.0	0.48	ug/L		06/26/18 17:03	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 17:03	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 17:03	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 17:03	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 17:03	1
Vinyl acetate	2.0	U Q	2.0	2.0	0.81	ug/L		06/26/18 17:03	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 17:03	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 17:03	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 17:03	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 17:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*89 - 112*		*06/26/18 17:03*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*06/26/18 17:03*	*1*
4-Bromofluorobenzene (Surr)	*96*		*85 - 114*		*06/26/18 17:03*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 119*		*06/26/18 17:03*	*1*

Client Sample ID: G4MW017
Date Collected: 06/14/18 18:00
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-12
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		06/26/18 17:29	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 17:29	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 17:29	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 17:29	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 17:29	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 17:29	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:29	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 17:29	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 17:29	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 17:29	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 17:29	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 17:29	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 17:29	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 17:29	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:29	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 17:29	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 17:29	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 17:29	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 17:29	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 17:29	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 17:29	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 17:29	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 17:29	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 17:29	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 17:29	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 17:29	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 17:29	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 17:29	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 17:29	1
cis-1,2-Dichloroethene	**3.0**		1.0	1.0	0.41	ug/L		06/26/18 17:29	1
trans-1,2-Dichloroethene	**1.2**		1.0	1.0	0.37	ug/L		06/26/18 17:29	1
1,2-Dichloroethene, Total	**4.2**		2.0	1.0	0.74	ug/L		06/26/18 17:29	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/26/18 17:29	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 17:29	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 17:29	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 17:29	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 17:29	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 17:29	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 17:29	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 17:29	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:29	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 17:29	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 17:29	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 17:29	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:29	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 17:29	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 17:29	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 17:29	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 17:29	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW017
Date Collected: 06/14/18 18:00
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-12
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 17:29	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 17:29	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		06/26/18 17:29	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 17:29	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:29	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:29	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 17:29	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 17:29	1
Trichloroethene	**0.72**	**J**	1.0	1.0	0.48	ug/L		06/26/18 17:29	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 17:29	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 17:29	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 17:29	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 17:29	1
Vinyl acetate	2.0	U Q	2.0	2.0	0.81	ug/L		06/26/18 17:29	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 17:29	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 17:29	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 17:29	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 17:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*89 - 112*		*06/26/18 17:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*06/26/18 17:29*	*1*
4-Bromofluorobenzene (Surr)	*99*		*85 - 114*		*06/26/18 17:29*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 119*		*06/26/18 17:29*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW040
Date Collected: 06/14/18 19:00
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-13
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		06/26/18 17:54	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 17:54	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 17:54	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 17:54	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 17:54	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 17:54	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:54	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 17:54	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 17:54	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 17:54	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 17:54	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 17:54	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 17:54	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 17:54	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:54	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 17:54	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 17:54	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 17:54	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 17:54	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 17:54	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 17:54	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 17:54	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 17:54	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 17:54	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 17:54	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 17:54	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 17:54	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 17:54	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 17:54	1
cis-1,2-Dichloroethene	**13**		1.0	1.0	0.41	ug/L		06/26/18 17:54	1
trans-1,2-Dichloroethene	**2.0**		1.0	1.0	0.37	ug/L		06/26/18 17:54	1
1,2-Dichloroethene, Total	**15**		2.0	1.0	0.74	ug/L		06/26/18 17:54	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/26/18 17:54	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 17:54	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 17:54	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 17:54	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 17:54	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 17:54	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 17:54	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 17:54	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:54	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 17:54	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 17:54	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 17:54	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:54	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 17:54	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 17:54	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 17:54	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 17:54	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW040
Date Collected: 06/14/18 19:00
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-13
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 17:54	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 17:54	1
Tetrachloroethene	**5.0**		1.0	1.0	0.74	ug/L		06/26/18 17:54	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 17:54	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:54	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 17:54	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 17:54	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 17:54	1
Trichloroethene	**67**		1.0	1.0	0.48	ug/L		06/26/18 17:54	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 17:54	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 17:54	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 17:54	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 17:54	1
Vinyl acetate	2.0	U Q	2.0	2.0	0.81	ug/L		06/26/18 17:54	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 17:54	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 17:54	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 17:54	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*89 - 112*		*06/26/18 17:54*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*06/26/18 17:54*	*1*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*		*06/26/18 17:54*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*06/26/18 17:54*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW036
Date Collected: 06/14/18 19:16
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-14
Matrix: Water

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	15	U	20	15	6.2	ug/L		06/21/18 16:14	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Dissolved Arsenic	**7.7**	**J**	20	15	6.2	ug/L		06/22/18 05:26	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW051
Date Collected: 06/15/18 08:32
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-15
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	100	U	100	100	70	ug/L		06/26/18 19:11	10
Benzene	10	U	10	10	4.3	ug/L		06/26/18 19:11	10
Bromobenzene	10	U	10	10	5.0	ug/L		06/26/18 19:11	10
Chlorobromomethane	10	U	10	10	4.5	ug/L		06/26/18 19:11	10
Dichlorobromomethane	10	U	10	10	4.4	ug/L		06/26/18 19:11	10
Bromoform	10	U	10	10	4.3	ug/L		06/26/18 19:11	10
Bromomethane	50	U	50	50	25	ug/L		06/26/18 19:11	10
2-Butanone (MEK)	100	U	100	100	34	ug/L		06/26/18 19:11	10
n-Butylbenzene	10	U	10	10	4.7	ug/L		06/26/18 19:11	10
sec-Butylbenzene	10	U	10	10	4.2	ug/L		06/26/18 19:11	10
tert-Butylbenzene	10	U	10	10	4.5	ug/L		06/26/18 19:11	10
Carbon disulfide	20	U	20	20	4.3	ug/L		06/26/18 19:11	10
Carbon tetrachloride	5.0	U	10	5.0	3.3	ug/L		06/26/18 19:11	10
Chlorobenzene	5.0	U	10	5.0	2.6	ug/L		06/26/18 19:11	10
Chloroethane	50	U	50	50	25	ug/L		06/26/18 19:11	10
Chloroform	10	U	10	10	5.0	ug/L		06/26/18 19:11	10
Chloromethane	10	U	10	10	4.0	ug/L		06/26/18 19:11	10
2-Chlorotoluene	5.0	U	10	5.0	2.7	ug/L		06/26/18 19:11	10
4-Chlorotoluene	10	U	10	10	4.5	ug/L		06/26/18 19:11	10
Chlorodibromomethane	5.0	U	10	5.0	3.2	ug/L		06/26/18 19:11	10
1,2-Dibromo-3-Chloropropane	20	U	50	20	11	ug/L		06/26/18 19:11	10
Ethylene Dibromide	10	U	10	10	4.4	ug/L		06/26/18 19:11	10
Dibromomethane	10	U	10	10	3.5	ug/L		06/26/18 19:11	10
1,2-Dichlorobenzene	10	U	10	10	3.7	ug/L		06/26/18 19:11	10
1,3-Dichlorobenzene	10	U	10	10	4.3	ug/L		06/26/18 19:11	10
1,4-Dichlorobenzene	10	U	10	10	4.6	ug/L		06/26/18 19:11	10
Dichlorodifluoromethane	10	U	10	10	6.0	ug/L		06/26/18 19:11	10
1,1-Dichloroethane	10	U	10	10	3.8	ug/L		06/26/18 19:11	10
1,2-Dichloroethane	10	U M	10	10	5.0	ug/L		06/26/18 19:11	10
cis-1,2-Dichloroethene	**320**	**D**	10	10	4.1	ug/L		06/26/18 19:11	10
trans-1,2-Dichloroethene	10	U	10	10	3.7	ug/L		06/26/18 19:11	10
1,2-Dichloroethene, Total	**320**	**D**	20	10	7.4	ug/L		06/26/18 19:11	10
1,1-Dichloroethene	10	U	10	10	3.6	ug/L		06/26/18 19:11	10
1,2-Dichloropropane	10	U	10	10	6.7	ug/L		06/26/18 19:11	10
1,3-Dichloropropane	10	U	10	10	3.4	ug/L		06/26/18 19:11	10
2,2-Dichloropropane	10	U	10	10	3.7	ug/L		06/26/18 19:11	10
1,1-Dichloropropene	10	U	10	10	3.4	ug/L		06/26/18 19:11	10
cis-1,3-Dichloropropene	10	U	10	10	4.0	ug/L		06/26/18 19:11	10
trans-1,3-Dichloropropene	10	U	10	10	4.2	ug/L		06/26/18 19:11	10
Ethylbenzene	5.0	U	10	5.0	3.3	ug/L		06/26/18 19:11	10
Hexachlorobutadiene	50	U	50	50	25	ug/L		06/26/18 19:11	10
2-Hexanone	50	U	100	50	20	ug/L		06/26/18 19:11	10
Isopropylbenzene	10	U	10	10	3.5	ug/L		06/26/18 19:11	10
4-Isopropyltoluene	10	U	10	10	4.8	ug/L		06/26/18 19:11	10
Methylene Chloride	50	U	50	50	25	ug/L		06/26/18 19:11	10
4-Methyl-2-pentanone (MIBK)	50	U	100	50	21	ug/L		06/26/18 19:11	10
Methyl tert-butyl ether	5.0	U	100	5.0	3.0	ug/L		06/26/18 19:11	10
N-Propylbenzene	10	U	10	10	3.8	ug/L		06/26/18 19:11	10
Styrene	5.0	U	10	5.0	2.7	ug/L		06/26/18 19:11	10

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW051
Date Collected: 06/15/18 08:32
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-15
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	10	U	10	10	3.7	ug/L		06/26/18 19:11	10
1,1,2,2-Tetrachloroethane	10	U	10	10	6.2	ug/L		06/26/18 19:11	10
Tetrachloroethene	**15**	**D**	10	10	7.4	ug/L		06/26/18 19:11	10
Toluene	10	U	10	10	4.8	ug/L		06/26/18 19:11	10
1,2,3-Trichlorobenzene	50	U	50	50	25	ug/L		06/26/18 19:11	10
1,2,4-Trichlorobenzene	50	U	50	50	25	ug/L		06/26/18 19:11	10
1,1,1-Trichloroethane	10	U	10	10	3.7	ug/L		06/26/18 19:11	10
1,1,2-Trichloroethane	5.0	U	10	5.0	3.3	ug/L		06/26/18 19:11	10
Trichloroethene	**660**	**D**	10	10	4.8	ug/L		06/26/18 19:11	10
Trichlorofluoromethane	10	U	10	10	4.2	ug/L		06/26/18 19:11	10
1,2,3-Trichloropropane	10	U	10	10	3.9	ug/L		06/26/18 19:11	10
1,2,4-Trimethylbenzene	10	U	10	10	4.7	ug/L		06/26/18 19:11	10
1,3,5-Trimethylbenzene	5.0	U	10	5.0	3.1	ug/L		06/26/18 19:11	10
Vinyl acetate	20	U Q	20	20	8.1	ug/L		06/26/18 19:11	10
Vinyl chloride	10	U	10	10	5.0	ug/L		06/26/18 19:11	10
o-Xylene	5.0	U	10	5.0	2.3	ug/L		06/26/18 19:11	10
m-Xylene & p-Xylene	10	U	10	10	3.5	ug/L		06/26/18 19:11	10
Xylenes, Total	5.0	U	20	5.0	2.3	ug/L		06/26/18 19:11	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*89 - 112*		*06/26/18 19:11*	*10*
1,2-Dichloroethane-d4 (Surr)	*107*		*81 - 118*		*06/26/18 19:11*	*10*
4-Bromofluorobenzene (Surr)	*95*		*85 - 114*		*06/26/18 19:11*	*10*
Dibromofluoromethane (Surr)	*107*		*80 - 119*		*06/26/18 19:11*	*10*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	15	U	20	15	6.2	ug/L		06/21/18 16:19	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Dissolved Arsenic	15	U	20	15	6.2	ug/L		06/22/18 05:12	1

Client Sample ID: G4MW056
Date Collected: 06/15/18 08:50
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-16
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		06/27/18 05:41	1
Benzene	**5.2**		1.0	1.0	0.43	ug/L		06/27/18 05:41	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/27/18 05:41	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/27/18 05:41	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/27/18 05:41	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/27/18 05:41	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/27/18 05:41	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/27/18 05:41	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/27/18 05:41	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/27/18 05:41	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/27/18 05:41	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/27/18 05:41	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/27/18 05:41	1
Chlorobenzene	**5.8**		1.0	0.50	0.26	ug/L		06/27/18 05:41	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/27/18 05:41	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/27/18 05:41	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/27/18 05:41	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/27/18 05:41	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/27/18 05:41	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/27/18 05:41	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/27/18 05:41	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/27/18 05:41	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/27/18 05:41	1
1,2-Dichlorobenzene	**4.8**		1.0	1.0	0.37	ug/L		06/27/18 05:41	1
1,3-Dichlorobenzene	**0.62**	**J**	1.0	1.0	0.43	ug/L		06/27/18 05:41	1
1,4-Dichlorobenzene	**5.0**		1.0	1.0	0.46	ug/L		06/27/18 05:41	1
Dichlorodifluoromethane	1.0	U Q J1	1.0	1.0	0.60	ug/L		06/27/18 05:41	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/27/18 05:41	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/27/18 05:41	1
cis-1,2-Dichloroethene	**0.73**	**J**	1.0	1.0	0.41	ug/L		06/27/18 05:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		06/27/18 05:41	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		06/27/18 05:41	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/27/18 05:41	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/27/18 05:41	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/27/18 05:41	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/27/18 05:41	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/27/18 05:41	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/27/18 05:41	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/27/18 05:41	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/27/18 05:41	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/27/18 05:41	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/27/18 05:41	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/27/18 05:41	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/27/18 05:41	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/27/18 05:41	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/27/18 05:41	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/27/18 05:41	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/27/18 05:41	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/27/18 05:41	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW056
Date Collected: 06/15/18 08:50
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-16
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/27/18 05:41	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/27/18 05:41	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		06/27/18 05:41	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/27/18 05:41	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/27/18 05:41	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/27/18 05:41	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/27/18 05:41	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/27/18 05:41	1
Trichloroethene	**4.7**		1.0	1.0	0.48	ug/L		06/27/18 05:41	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/27/18 05:41	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/27/18 05:41	1
1,2,4-Trimethylbenzene	1.0	U M J1	1.0	1.0	0.47	ug/L		06/27/18 05:41	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/27/18 05:41	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		06/27/18 05:41	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/27/18 05:41	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/27/18 05:41	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/27/18 05:41	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/27/18 05:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*89 - 112*		*06/27/18 05:41*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*81 - 118*		*06/27/18 05:41*	*1*
4-Bromofluorobenzene (Surr)	*105*		*85 - 114*		*06/27/18 05:41*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 119*		*06/27/18 05:41*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW041
Date Collected: 06/15/18 09:45
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-17
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		06/26/18 18:20	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 18:20	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 18:20	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 18:20	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 18:20	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 18:20	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 18:20	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 18:20	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 18:20	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 18:20	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 18:20	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 18:20	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 18:20	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 18:20	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 18:20	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 18:20	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 18:20	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 18:20	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 18:20	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 18:20	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 18:20	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 18:20	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 18:20	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 18:20	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 18:20	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 18:20	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 18:20	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 18:20	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 18:20	1
cis-1,2-Dichloroethene	**4.2**		1.0	1.0	0.41	ug/L		06/26/18 18:20	1
trans-1,2-Dichloroethene	**1.6**		1.0	1.0	0.37	ug/L		06/26/18 18:20	1
1,2-Dichloroethene, Total	**5.9**		2.0	1.0	0.74	ug/L		06/26/18 18:20	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/26/18 18:20	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 18:20	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 18:20	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 18:20	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 18:20	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 18:20	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 18:20	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 18:20	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 18:20	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 18:20	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 18:20	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 18:20	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 18:20	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 18:20	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 18:20	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 18:20	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 18:20	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW041
Date Collected: 06/15/18 09:45
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-17
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 18:20	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 18:20	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		06/26/18 18:20	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 18:20	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 18:20	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 18:20	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 18:20	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 18:20	1
Trichloroethene	**3.0**		1.0	1.0	0.48	ug/L		06/26/18 18:20	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 18:20	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 18:20	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 18:20	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 18:20	1
Vinyl acetate	2.0	U Q	2.0	2.0	0.81	ug/L		06/26/18 18:20	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 18:20	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 18:20	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 18:20	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 18:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*89 - 112*		*06/26/18 18:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*06/26/18 18:20*	*1*
4-Bromofluorobenzene (Surr)	*97*		*85 - 114*		*06/26/18 18:20*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*06/26/18 18:20*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW039
Date Collected: 06/15/18 09:55
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-18
Matrix: Water

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	15	U	20	15	6.2	ug/L		06/21/18 16:25	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Dissolved Arsenic	15	U	20	15	6.2	ug/L		06/22/18 04:48	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: DUP-01
Date Collected: 06/15/18 00:00
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-19
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	100	U	100	100	70	ug/L		06/26/18 19:36	10
Benzene	10	U	10	10	4.3	ug/L		06/26/18 19:36	10
Bromobenzene	10	U	10	10	5.0	ug/L		06/26/18 19:36	10
Chlorobromomethane	10	U	10	10	4.5	ug/L		06/26/18 19:36	10
Dichlorobromomethane	10	U	10	10	4.4	ug/L		06/26/18 19:36	10
Bromoform	10	U	10	10	4.3	ug/L		06/26/18 19:36	10
Bromomethane	50	U	50	50	25	ug/L		06/26/18 19:36	10
2-Butanone (MEK)	100	U	100	100	34	ug/L		06/26/18 19:36	10
n-Butylbenzene	10	U	10	10	4.7	ug/L		06/26/18 19:36	10
sec-Butylbenzene	10	U	10	10	4.2	ug/L		06/26/18 19:36	10
tert-Butylbenzene	10	U	10	10	4.5	ug/L		06/26/18 19:36	10
Carbon disulfide	20	U	20	20	4.3	ug/L		06/26/18 19:36	10
Carbon tetrachloride	5.0	U	10	5.0	3.3	ug/L		06/26/18 19:36	10
Chlorobenzene	5.0	U	10	5.0	2.6	ug/L		06/26/18 19:36	10
Chloroethane	50	U	50	50	25	ug/L		06/26/18 19:36	10
Chloroform	10	U	10	10	5.0	ug/L		06/26/18 19:36	10
Chloromethane	10	U	10	10	4.0	ug/L		06/26/18 19:36	10
2-Chlorotoluene	5.0	U	10	5.0	2.7	ug/L		06/26/18 19:36	10
4-Chlorotoluene	10	U	10	10	4.5	ug/L		06/26/18 19:36	10
Chlorodibromomethane	5.0	U	10	5.0	3.2	ug/L		06/26/18 19:36	10
1,2-Dibromo-3-Chloropropane	20	U	50	20	11	ug/L		06/26/18 19:36	10
Ethylene Dibromide	10	U	10	10	4.4	ug/L		06/26/18 19:36	10
Dibromomethane	10	U	10	10	3.5	ug/L		06/26/18 19:36	10
1,2-Dichlorobenzene	10	U	10	10	3.7	ug/L		06/26/18 19:36	10
1,3-Dichlorobenzene	10	U	10	10	4.3	ug/L		06/26/18 19:36	10
1,4-Dichlorobenzene	10	U	10	10	4.6	ug/L		06/26/18 19:36	10
Dichlorodifluoromethane	10	U	10	10	6.0	ug/L		06/26/18 19:36	10
1,1-Dichloroethane	10	U	10	10	3.8	ug/L		06/26/18 19:36	10
1,2-Dichloroethane	10	U M	10	10	5.0	ug/L		06/26/18 19:36	10
cis-1,2-Dichloroethene	**330**	**D**	10	10	4.1	ug/L		06/26/18 19:36	10
trans-1,2-Dichloroethene	10	U	10	10	3.7	ug/L		06/26/18 19:36	10
1,2-Dichloroethene, Total	**330**	**D**	20	10	7.4	ug/L		06/26/18 19:36	10
1,1-Dichloroethene	10	U M	10	10	3.6	ug/L		06/26/18 19:36	10
1,2-Dichloropropane	10	U	10	10	6.7	ug/L		06/26/18 19:36	10
1,3-Dichloropropane	10	U	10	10	3.4	ug/L		06/26/18 19:36	10
2,2-Dichloropropane	10	U	10	10	3.7	ug/L		06/26/18 19:36	10
1,1-Dichloropropene	10	U	10	10	3.4	ug/L		06/26/18 19:36	10
cis-1,3-Dichloropropene	10	U	10	10	4.0	ug/L		06/26/18 19:36	10
trans-1,3-Dichloropropene	10	U	10	10	4.2	ug/L		06/26/18 19:36	10
Ethylbenzene	5.0	U	10	5.0	3.3	ug/L		06/26/18 19:36	10
Hexachlorobutadiene	50	U	50	50	25	ug/L		06/26/18 19:36	10
2-Hexanone	50	U	100	50	20	ug/L		06/26/18 19:36	10
Isopropylbenzene	10	U	10	10	3.5	ug/L		06/26/18 19:36	10
4-Isopropyltoluene	10	U	10	10	4.8	ug/L		06/26/18 19:36	10
Methylene Chloride	50	U	50	50	25	ug/L		06/26/18 19:36	10
4-Methyl-2-pentanone (MIBK)	50	U	100	50	21	ug/L		06/26/18 19:36	10
Methyl tert-butyl ether	5.0	U	100	5.0	3.0	ug/L		06/26/18 19:36	10
N-Propylbenzene	10	U	10	10	3.8	ug/L		06/26/18 19:36	10
Styrene	5.0	U	10	5.0	2.7	ug/L		06/26/18 19:36	10

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: DUP-01
Date Collected: 06/15/18 00:00
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-19
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	10	U	10	10	3.7	ug/L		06/26/18 19:36	10
1,1,2,2-Tetrachloroethane	10	U	10	10	6.2	ug/L		06/26/18 19:36	10
Tetrachloroethene	**14**	**D**	10	10	7.4	ug/L		06/26/18 19:36	10
Toluene	10	U	10	10	4.8	ug/L		06/26/18 19:36	10
1,2,3-Trichlorobenzene	50	U	50	50	25	ug/L		06/26/18 19:36	10
1,2,4-Trichlorobenzene	50	U	50	50	25	ug/L		06/26/18 19:36	10
1,1,1-Trichloroethane	10	U	10	10	3.7	ug/L		06/26/18 19:36	10
1,1,2-Trichloroethane	5.0	U	10	5.0	3.3	ug/L		06/26/18 19:36	10
Trichloroethene	**630**	**D**	10	10	4.8	ug/L		06/26/18 19:36	10
Trichlorofluoromethane	10	U	10	10	4.2	ug/L		06/26/18 19:36	10
1,2,3-Trichloropropane	10	U	10	10	3.9	ug/L		06/26/18 19:36	10
1,2,4-Trimethylbenzene	10	U	10	10	4.7	ug/L		06/26/18 19:36	10
1,3,5-Trimethylbenzene	5.0	U	10	5.0	3.1	ug/L		06/26/18 19:36	10
Vinyl acetate	20	U Q	20	20	8.1	ug/L		06/26/18 19:36	10
Vinyl chloride	10	U	10	10	5.0	ug/L		06/26/18 19:36	10
o-Xylene	5.0	U	10	5.0	2.3	ug/L		06/26/18 19:36	10
m-Xylene & p-Xylene	10	U	10	10	3.5	ug/L		06/26/18 19:36	10
Xylenes, Total	5.0	U	20	5.0	2.3	ug/L		06/26/18 19:36	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*89 - 112*		*06/26/18 19:36*	*10*
1,2-Dichloroethane-d4 (Surr)	*104*		*81 - 118*		*06/26/18 19:36*	*10*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*		*06/26/18 19:36*	*10*
Dibromofluoromethane (Surr)	*105*		*80 - 119*		*06/26/18 19:36*	*10*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	15	U	20	15	6.2	ug/L		06/21/18 16:40	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Dissolved Arsenic	15	U	20	15	6.2	ug/L		06/22/18 05:07	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: Trip Blank
Date Collected: 06/15/18 00:00
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-20
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		06/26/18 11:36	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 11:36	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 11:36	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 11:36	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 11:36	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 11:36	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 11:36	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 11:36	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 11:36	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 11:36	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 11:36	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 11:36	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 11:36	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 11:36	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 11:36	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 11:36	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 11:36	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 11:36	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 11:36	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 11:36	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 11:36	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 11:36	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 11:36	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 11:36	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 11:36	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 11:36	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 11:36	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 11:36	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 11:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		06/26/18 11:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 11:36	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		06/26/18 11:36	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/26/18 11:36	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 11:36	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 11:36	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 11:36	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 11:36	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 11:36	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 11:36	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 11:36	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 11:36	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 11:36	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 11:36	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 11:36	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 11:36	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 11:36	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 11:36	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 11:36	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 11:36	1

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: Trip Blank
Date Collected: 06/15/18 00:00
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-20
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 11:36	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 11:36	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		06/26/18 11:36	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 11:36	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 11:36	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 11:36	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 11:36	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 11:36	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 11:36	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 11:36	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 11:36	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 11:36	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 11:36	1
Vinyl acetate	2.0	U Q	2.0	2.0	0.81	ug/L		06/26/18 11:36	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 11:36	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 11:36	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 11:36	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 11:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*89 - 112*		*06/26/18 11:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*81 - 118*		*06/26/18 11:36*	*1*
4-Bromofluorobenzene (Surr)	*99*		*85 - 114*		*06/26/18 11:36*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 119*		*06/26/18 11:36*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(89-112)	(81-118)	(85-114)	(80-119)
680-154053-1	G4MW047	104	98	98	102
680-154053-3	G4MW057	103	100	97	102
680-154053-4	G4MW033	102	99	98	102
680-154053-5	G4MW054	104	100	98	103
680-154053-6	G4MW019	101	101	96	104
680-154053-7	G4MW018	103	102	97	104
680-154053-8	G4MW022	102	102	96	106
680-154053-10	G4MW035	104	104	96	104
680-154053-11	G4MW025	104	102	96	103
680-154053-12	G4MW017	103	100	99	101
680-154053-13	G4MW040	104	102	98	102
680-154053-15	G4MW051	101	107	95	107
680-154053-16	G4MW056	100	110	105	103
680-154053-16 MS	G4MW056	101	107	104	103
680-154053-16 MSD	G4MW056	98	103	100	99
680-154053-17	G4MW041	104	102	97	102
680-154053-19	DUP-01	103	104	98	105
680-154053-20	Trip Blank	102	94	99	98
LCS 680-529366/3	Lab Control Sample	101	106	98	105
LCS 680-529484/4	Lab Control Sample	97	108	96	106
LCSD 680-529366/4	Lab Control Sample Dup	100	107	99	105
LCSD 680-529484/5	Lab Control Sample Dup	100	106	98	103
MB 680-529366/7	Method Blank	101	99	97	101
MB 680-529484/9	Method Blank	102	100	94	102

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

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

Lab Sample ID: MB 680-529366/7
Matrix: Water
Analysis Batch: 529366

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		06/26/18 11:03	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 11:03	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 11:03	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 11:03	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 11:03	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 11:03	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 11:03	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/26/18 11:03	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 11:03	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 11:03	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 11:03	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/26/18 11:03	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 11:03	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/26/18 11:03	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 11:03	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 11:03	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 11:03	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/26/18 11:03	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/26/18 11:03	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/26/18 11:03	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/26/18 11:03	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/26/18 11:03	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 11:03	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 11:03	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/26/18 11:03	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/26/18 11:03	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/26/18 11:03	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 11:03	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/26/18 11:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		06/26/18 11:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 11:03	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		06/26/18 11:03	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/26/18 11:03	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/26/18 11:03	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 11:03	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 11:03	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/26/18 11:03	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/26/18 11:03	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 11:03	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 11:03	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 11:03	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/26/18 11:03	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 11:03	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 11:03	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 11:03	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/26/18 11:03	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/26/18 11:03	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/26/18 11:03	1

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

Lab Sample ID: MB 680-529366/7
Matrix: Water
Analysis Batch: 529366

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		06/26/18 11:03	1
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 11:03	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/26/18 11:03	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		06/26/18 11:03	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 11:03	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 11:03	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/26/18 11:03	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/26/18 11:03	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/26/18 11:03	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		06/26/18 11:03	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/26/18 11:03	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/26/18 11:03	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/26/18 11:03	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/26/18 11:03	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		06/26/18 11:03	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/26/18 11:03	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/26/18 11:03	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/26/18 11:03	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/26/18 11:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*89 - 112*		*06/26/18 11:03*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*81 - 118*		*06/26/18 11:03*	*1*
4-Bromofluorobenzene (Surr)	*97*		*85 - 114*		*06/26/18 11:03*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 119*		*06/26/18 11:03*	*1*

Lab Sample ID: LCS 680-529366/3
Matrix: Water
Analysis Batch: 529366

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	250	227		ug/L		91	39 - 160
Benzene	50.0	49.1		ug/L		98	79 - 120
Bromobenzene	50.0	48.0		ug/L		96	80 - 120
Chlorobromomethane	50.0	50.5		ug/L		101	78 - 123
Dichlorobromomethane	50.0	50.0		ug/L		100	79 - 125
Bromoform	50.0	49.5		ug/L		99	66 - 130
Bromomethane	50.0	51.9		ug/L		104	53 - 141
2-Butanone (MEK)	250	249		ug/L		100	56 - 143
n-Butylbenzene	50.0	49.6		ug/L		99	75 - 128
sec-Butylbenzene	50.0	48.8		ug/L		98	77 - 126
tert-Butylbenzene	50.0	48.9		ug/L		98	78 - 124
Carbon disulfide	50.0	48.3		ug/L		97	64 - 133
Carbon tetrachloride	50.0	49.3		ug/L		99	72 - 136
Chlorobenzene	50.0	48.4		ug/L		97	82 - 118
Chloroethane	50.0	47.0		ug/L		94	60 - 138
Chloroform	50.0	50.4		ug/L		101	79 - 124
Chloromethane	50.0	41.6		ug/L		83	50 - 139

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

Lab Sample ID: LCS 680-529366/3
Matrix: Water
Analysis Batch: 529366

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chlorotoluene	50.0	48.9		ug/L		98	79 - 122
4-Chlorotoluene	50.0	49.2		ug/L		98	78 - 122
Chlorodibromomethane	50.0	51.4		ug/L		103	74 - 126
1,2-Dibromo-3-Chloropropane	50.0	46.9		ug/L		94	62 - 128
Ethylene Dibromide	50.0	49.4		ug/L		99	75 - 127
Dibromomethane	50.0	50.5		ug/L		101	79 - 123
1,2-Dichlorobenzene	50.0	48.5		ug/L		97	80 - 119
1,3-Dichlorobenzene	50.0	48.2		ug/L		96	80 - 119
1,4-Dichlorobenzene	50.0	47.7		ug/L		95	79 - 118
Dichlorodifluoromethane	50.0	36.5		ug/L		73	32 - 152
1,1-Dichloroethane	50.0	51.2		ug/L		102	77 - 125
1,2-Dichloroethane	50.0	54.8		ug/L		110	73 - 128
cis-1,2-Dichloroethene	50.0	53.7		ug/L		107	78 - 123
trans-1,2-Dichloroethene	50.0	52.1		ug/L		104	75 - 124
1,2-Dichloroethene, Total	100	106		ug/L		106	79 - 121
1,1-Dichloroethene	50.0	50.0		ug/L		100	71 - 131
1,2-Dichloropropane	50.0	51.5		ug/L		103	78 - 122
1,3-Dichloropropane	50.0	49.5		ug/L		99	80 - 119
2,2-Dichloropropane	50.0	58.8		ug/L		118	60 - 139
1,1-Dichloropropene	50.0	49.8		ug/L		100	79 - 125
cis-1,3-Dichloropropene	50.0	54.1		ug/L		108	75 - 124
trans-1,3-Dichloropropene	50.0	51.6		ug/L		103	73 - 127
Ethylbenzene	50.0	49.3		ug/L		99	79 - 121
Hexachlorobutadiene	50.0	52.4		ug/L		105	66 - 134
2-Hexanone	250	237		ug/L		95	57 - 139
Isopropylbenzene	50.0	48.9		ug/L		98	72 - 131
4-Isopropyltoluene	50.0	50.1		ug/L		100	77 - 127
Methylene Chloride	50.0	50.5		ug/L		101	74 - 124
4-Methyl-2-pentanone (MIBK)	250	238		ug/L		95	67 - 130
Methyl tert-butyl ether	50.0	50.8		ug/L		102	71 - 124
N-Propylbenzene	50.0	50.2		ug/L		100	76 - 126
Styrene	50.0	45.6		ug/L		91	78 - 123
1,1,1,2-Tetrachloroethane	50.0	47.7		ug/L		95	78 - 124
1,1,2,2-Tetrachloroethane	50.0	48.6		ug/L		97	71 - 121
Tetrachloroethene	50.0	49.9		ug/L		100	74 - 129
Toluene	50.0	49.4		ug/L		99	80 - 121
1,2,3-Trichlorobenzene	50.0	50.1		ug/L		100	69 - 129
1,2,4-Trichlorobenzene	50.0	50.0		ug/L		100	69 - 130
1,1,1-Trichloroethane	50.0	51.9		ug/L		104	74 - 131
1,1,2-Trichloroethane	50.0	52.1		ug/L		104	80 - 119
Trichloroethene	50.0	49.3		ug/L		99	79 - 123
Trichlorofluoromethane	50.0	48.7		ug/L		97	65 - 141
1,2,3-Trichloropropane	50.0	49.6		ug/L		99	73 - 122
1,2,4-Trimethylbenzene	50.0	48.6	M	ug/L		97	76 - 124
1,3,5-Trimethylbenzene	50.0	48.4		ug/L		97	75 - 124
Vinyl acetate	100	136		ug/L		136	54 - 146
Vinyl chloride	50.0	43.5		ug/L		87	58 - 137
o-Xylene	50.0	49.2		ug/L		98	78 - 122

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

Lab Sample ID: LCS 680-529366/3
Matrix: Water
Analysis Batch: 529366

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
m-Xylene & p-Xylene			50.0	49.5		ug/L		99	80 - 121		
Xylenes, Total			100	98.7		ug/L		99	79 - 121		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*106*		*81 - 118*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*
Dibromofluoromethane (Surr)	*105*		*80 - 119*

Lab Sample ID: LCSD 680-529366/4
Matrix: Water
Analysis Batch: 529366

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	231		ug/L		93	39 - 160	2	20
Benzene			50.0	49.6		ug/L		99	79 - 120	1	20
Bromobenzene			50.0	47.6		ug/L		95	80 - 120	1	20
Chlorobromomethane			50.0	51.0		ug/L		102	78 - 123	1	20
Dichlorobromomethane			50.0	50.5		ug/L		101	79 - 125	1	20
Bromoform			50.0	48.0		ug/L		96	66 - 130	3	20
Bromomethane			50.0	52.6		ug/L		105	53 - 141	1	20
2-Butanone (MEK)			250	251		ug/L		101	56 - 143	1	20
n-Butylbenzene			50.0	51.8		ug/L		104	75 - 128	4	20
sec-Butylbenzene			50.0	49.2		ug/L		98	77 - 126	1	20
tert-Butylbenzene			50.0	48.8		ug/L		98	78 - 124	0	20
Carbon disulfide			50.0	48.9		ug/L		98	64 - 133	1	20
Carbon tetrachloride			50.0	50.9		ug/L		102	72 - 136	3	20
Chlorobenzene			50.0	48.3		ug/L		97	82 - 118	0	20
Chloroethane			50.0	49.3		ug/L		99	60 - 138	5	20
Chloroform			50.0	52.1		ug/L		104	79 - 124	3	20
Chloromethane			50.0	42.0		ug/L		84	50 - 139	1	20
2-Chlorotoluene			50.0	48.9		ug/L		98	79 - 122	0	20
4-Chlorotoluene			50.0	48.6		ug/L		97	78 - 122	1	20
Chlorodibromomethane			50.0	51.7		ug/L		103	74 - 126	1	20
1,2-Dibromo-3-Chloropropane			50.0	49.3		ug/L		99	62 - 128	5	20
Ethylene Dibromide			50.0	49.0		ug/L		98	75 - 127	1	20
Dibromomethane			50.0	50.3		ug/L		101	79 - 123	0	20
1,2-Dichlorobenzene			50.0	49.9		ug/L		100	80 - 119	3	20
1,3-Dichlorobenzene			50.0	49.0		ug/L		98	80 - 119	2	20
1,4-Dichlorobenzene			50.0	48.1		ug/L		96	79 - 118	1	20
Dichlorodifluoromethane			50.0	36.5		ug/L		73	32 - 152	0	20
1,1-Dichloroethane			50.0	53.5		ug/L		107	77 - 125	4	20
1,2-Dichloroethane			50.0	56.2		ug/L		112	73 - 128	2	20
cis-1,2-Dichloroethene			50.0	55.0		ug/L		110	78 - 123	2	20
trans-1,2-Dichloroethene			50.0	52.5		ug/L		105	75 - 124	1	20
1,2-Dichloroethene, Total			100	108		ug/L		108	79 - 121	2	20
1,1-Dichloroethene			50.0	49.7		ug/L		99	71 - 131	1	20
1,2-Dichloropropane			50.0	52.0		ug/L		104	78 - 122	1	20

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

Lab Sample ID: LCSD 680-529366/4
Matrix: Water
Analysis Batch: 529366

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
1,3-Dichloropropane	50.0	51.3		ug/L		103	80 - 119	4	20
2,2-Dichloropropane	50.0	59.9		ug/L		120	60 - 139	2	20
1,1-Dichloropropene	50.0	50.5		ug/L		101	79 - 125	2	20
cis-1,3-Dichloropropene	50.0	55.1		ug/L		110	75 - 124	2	20
trans-1,3-Dichloropropene	50.0	52.6		ug/L		105	73 - 127	2	20
Ethylbenzene	50.0	48.8		ug/L		98	79 - 121	1	20
Hexachlorobutadiene	50.0	53.8		ug/L		108	66 - 134	3	20
2-Hexanone	250	240		ug/L		96	57 - 139	1	20
Isopropylbenzene	50.0	49.3		ug/L		99	72 - 131	1	20
4-Isopropyltoluene	50.0	51.7		ug/L		103	77 - 127	3	20
Methylene Chloride	50.0	50.9		ug/L		102	74 - 124	1	20
4-Methyl-2-pentanone (MIBK)	250	238		ug/L		95	67 - 130	0	20
Methyl tert-butyl ether	50.0	50.3		ug/L		101	71 - 124	1	20
N-Propylbenzene	50.0	49.6		ug/L		99	76 - 126	1	20
Styrene	50.0	46.2		ug/L		92	78 - 123	1	20
1,1,1,2-Tetrachloroethane	50.0	48.4		ug/L		97	78 - 124	1	20
1,1,2,2-Tetrachloroethane	50.0	47.4		ug/L		95	71 - 121	2	20
Tetrachloroethene	50.0	50.3		ug/L		101	74 - 129	1	20
Toluene	50.0	49.9		ug/L		100	80 - 121	1	20
1,2,3-Trichlorobenzene	50.0	51.0		ug/L		102	69 - 129	2	20
1,2,4-Trichlorobenzene	50.0	51.3		ug/L		103	69 - 130	3	20
1,1,1-Trichloroethane	50.0	51.9		ug/L		104	74 - 131	0	20
1,1,2-Trichloroethane	50.0	50.4		ug/L		101	80 - 119	3	20
Trichloroethene	50.0	50.2		ug/L		100	79 - 123	2	20
Trichlorofluoromethane	50.0	49.4		ug/L		99	65 - 141	1	20
1,2,3-Trichloropropane	50.0	47.7		ug/L		95	73 - 122	4	20
1,2,4-Trimethylbenzene	50.0	48.1	M	ug/L		96	76 - 124	1	20
1,3,5-Trimethylbenzene	50.0	48.7		ug/L		97	75 - 124	1	20
Vinyl acetate	100	136		ug/L		136	54 - 146	1	20
Vinyl chloride	50.0	44.2		ug/L		88	58 - 137	2	20
o-Xylene	50.0	48.2		ug/L		96	78 - 122	2	20
m-Xylene & p-Xylene	50.0	49.4		ug/L		99	80 - 121	0	20
Xylenes, Total	100	97.6		ug/L		98	79 - 121	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*107*		*81 - 118*
4-Bromofluorobenzene (Surr)	*99*		*85 - 114*
Dibromofluoromethane (Surr)	*105*		*80 - 119*

Lab Sample ID: MB 680-529484/9
Matrix: Water
Analysis Batch: 529484

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		06/27/18 01:05	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		06/27/18 01:05	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		06/27/18 01:05	1

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

Lab Sample ID: MB 680-529484/9
Matrix: Water
Analysis Batch: 529484

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		06/27/18 01:05	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		06/27/18 01:05	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		06/27/18 01:05	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		06/27/18 01:05	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		06/27/18 01:05	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/27/18 01:05	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		06/27/18 01:05	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		06/27/18 01:05	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		06/27/18 01:05	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		06/27/18 01:05	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		06/27/18 01:05	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		06/27/18 01:05	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		06/27/18 01:05	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		06/27/18 01:05	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		06/27/18 01:05	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		06/27/18 01:05	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		06/27/18 01:05	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		06/27/18 01:05	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		06/27/18 01:05	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		06/27/18 01:05	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		06/27/18 01:05	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		06/27/18 01:05	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		06/27/18 01:05	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		06/27/18 01:05	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		06/27/18 01:05	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		06/27/18 01:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		06/27/18 01:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		06/27/18 01:05	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		06/27/18 01:05	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		06/27/18 01:05	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		06/27/18 01:05	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		06/27/18 01:05	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		06/27/18 01:05	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		06/27/18 01:05	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		06/27/18 01:05	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		06/27/18 01:05	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		06/27/18 01:05	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		06/27/18 01:05	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		06/27/18 01:05	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		06/27/18 01:05	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		06/27/18 01:05	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		06/27/18 01:05	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		06/27/18 01:05	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		06/27/18 01:05	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		06/27/18 01:05	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		06/27/18 01:05	1
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/27/18 01:05	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		06/27/18 01:05	1

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

Lab Sample ID: MB 680-529484/9
Matrix: Water
Analysis Batch: 529484

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		06/27/18 01:05	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		06/27/18 01:05	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/27/18 01:05	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		06/27/18 01:05	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		06/27/18 01:05	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		06/27/18 01:05	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		06/27/18 01:05	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		06/27/18 01:05	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		06/27/18 01:05	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		06/27/18 01:05	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		06/27/18 01:05	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		06/27/18 01:05	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		06/27/18 01:05	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		06/27/18 01:05	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		06/27/18 01:05	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		06/27/18 01:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*89 - 112*		*06/27/18 01:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*06/27/18 01:05*	*1*
4-Bromofluorobenzene (Surr)	*94*		*85 - 114*		*06/27/18 01:05*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*06/27/18 01:05*	*1*

Lab Sample ID: LCS 680-529484/4
Matrix: Water
Analysis Batch: 529484

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	250	237		ug/L		95	39 - 160
Benzene	50.0	49.3		ug/L		99	79 - 120
Bromobenzene	50.0	46.9		ug/L		94	80 - 120
Chlorobromomethane	50.0	50.5		ug/L		101	78 - 123
Dichlorobromomethane	50.0	50.1		ug/L		100	79 - 125
Bromoform	50.0	47.4		ug/L		95	66 - 130
Bromomethane	50.0	49.2		ug/L		98	53 - 141
2-Butanone (MEK)	250	255		ug/L		102	56 - 143
n-Butylbenzene	50.0	49.2		ug/L		98	75 - 128
sec-Butylbenzene	50.0	47.7		ug/L		95	77 - 126
tert-Butylbenzene	50.0	48.2		ug/L		96	78 - 124
Carbon disulfide	50.0	47.7		ug/L		95	64 - 133
Carbon tetrachloride	50.0	48.8		ug/L		98	72 - 136
Chlorobenzene	50.0	47.6		ug/L		95	82 - 118
Chloroethane	50.0	47.9		ug/L		96	60 - 138
Chloroform	50.0	50.0		ug/L		100	79 - 124
Chloromethane	50.0	40.5		ug/L		81	50 - 139
2-Chlorotoluene	50.0	47.5		ug/L		95	79 - 122
4-Chlorotoluene	50.0	47.9		ug/L		96	78 - 122
Chlorodibromomethane	50.0	52.1		ug/L		104	74 - 126

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

Lab Sample ID: LCS 680-529484/4
Matrix: Water
Analysis Batch: 529484

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromo-3-Chloropropane	50.0	50.8		ug/L		102	62 - 128
Ethylene Dibromide	50.0	51.0		ug/L		102	75 - 127
Dibromomethane	50.0	51.7		ug/L		103	79 - 123
1,2-Dichlorobenzene	50.0	49.4		ug/L		99	80 - 119
1,3-Dichlorobenzene	50.0	48.1		ug/L		96	80 - 119
1,4-Dichlorobenzene	50.0	48.4		ug/L		97	79 - 118
Dichlorodifluoromethane	50.0	34.2	M	ug/L		68	32 - 152
1,1-Dichloroethane	50.0	52.1		ug/L		104	77 - 125
1,2-Dichloroethane	50.0	55.1		ug/L		110	73 - 128
cis-1,2-Dichloroethene	50.0	51.1		ug/L		102	78 - 123
trans-1,2-Dichloroethene	50.0	50.3		ug/L		101	75 - 124
1,2-Dichloroethene, Total	100	101		ug/L		101	79 - 121
1,1-Dichloroethene	50.0	49.3		ug/L		99	71 - 131
1,2-Dichloropropane	50.0	53.0		ug/L		106	78 - 122
1,3-Dichloropropane	50.0	51.4		ug/L		103	80 - 119
2,2-Dichloropropane	50.0	46.0		ug/L		92	60 - 139
1,1-Dichloropropene	50.0	50.0		ug/L		100	79 - 125
cis-1,3-Dichloropropene	50.0	52.8		ug/L		106	75 - 124
trans-1,3-Dichloropropene	50.0	50.0		ug/L		100	73 - 127
Ethylbenzene	50.0	47.1		ug/L		94	79 - 121
Hexachlorobutadiene	50.0	50.4		ug/L		101	66 - 134
2-Hexanone	250	250		ug/L		100	57 - 139
Isopropylbenzene	50.0	46.7		ug/L		93	72 - 131
4-Isopropyltoluene	50.0	50.0		ug/L		100	77 - 127
Methylene Chloride	50.0	50.7		ug/L		101	74 - 124
4-Methyl-2-pentanone (MIBK)	250	250		ug/L		100	67 - 130
Methyl tert-butyl ether	50.0	52.3		ug/L		105	71 - 124
N-Propylbenzene	50.0	48.6		ug/L		97	76 - 126
Styrene	50.0	45.2		ug/L		90	78 - 123
1,1,1,2-Tetrachloroethane	50.0	48.0		ug/L		96	78 - 124
1,1,2,2-Tetrachloroethane	50.0	47.2		ug/L		94	71 - 121
Tetrachloroethene	50.0	48.3		ug/L		97	74 - 129
Toluene	50.0	49.6		ug/L		99	80 - 121
1,2,3-Trichlorobenzene	50.0	51.1		ug/L		102	69 - 129
1,2,4-Trichlorobenzene	50.0	50.7		ug/L		101	69 - 130
1,1,1-Trichloroethane	50.0	50.7		ug/L		101	74 - 131
1,1,2-Trichloroethane	50.0	51.9		ug/L		104	80 - 119
Trichloroethene	50.0	50.7		ug/L		101	79 - 123
Trichlorofluoromethane	50.0	47.2		ug/L		94	65 - 141
1,2,3-Trichloropropane	50.0	48.9		ug/L		98	73 - 122
1,2,4-Trimethylbenzene	50.0	47.0	M	ug/L		94	76 - 124
1,3,5-Trimethylbenzene	50.0	47.2		ug/L		94	75 - 124
Vinyl acetate	100	116		ug/L		116	54 - 146
Vinyl chloride	50.0	43.1		ug/L		86	58 - 137
o-Xylene	50.0	47.6		ug/L		95	78 - 122
m-Xylene & p-Xylene	50.0	47.1		ug/L		94	80 - 121
Xylenes, Total	100	94.7		ug/L		95	79 - 121

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

Lab Sample ID: LCS 680-529484/4
Matrix: Water
Analysis Batch: 529484

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

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	*97*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*108*		*81 - 118*
4-Bromofluorobenzene (Surr)	*96*		*85 - 114*
Dibromofluoromethane (Surr)	*106*		*80 - 119*

Lab Sample ID: LCSD 680-529484/5
Matrix: Water
Analysis Batch: 529484

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	239		ug/L		96	39 - 160	1	20
Benzene			50.0	49.8		ug/L		100	79 - 120	1	20
Bromobenzene			50.0	48.2		ug/L		96	80 - 120	3	20
Chlorobromomethane			50.0	50.5		ug/L		101	78 - 123	0	20
Dichlorobromomethane			50.0	49.6		ug/L		99	79 - 125	1	20
Bromoform			50.0	48.3		ug/L		97	66 - 130	2	20
Bromomethane			50.0	50.6		ug/L		101	53 - 141	3	20
2-Butanone (MEK)			250	257		ug/L		103	56 - 143	1	20
n-Butylbenzene			50.0	50.0		ug/L		100	75 - 128	2	20
sec-Butylbenzene			50.0	49.6		ug/L		99	77 - 126	4	20
tert-Butylbenzene			50.0	49.2		ug/L		98	78 - 124	2	20
Carbon disulfide			50.0	48.1		ug/L		96	64 - 133	1	20
Carbon tetrachloride			50.0	49.9		ug/L		100	72 - 136	2	20
Chlorobenzene			50.0	48.8		ug/L		98	82 - 118	3	20
Chloroethane			50.0	47.6		ug/L		95	60 - 138	1	20
Chloroform			50.0	50.1		ug/L		100	79 - 124	0	20
Chloromethane			50.0	41.6		ug/L		83	50 - 139	3	20
2-Chlorotoluene			50.0	49.1		ug/L		98	79 - 122	3	20
4-Chlorotoluene			50.0	49.5		ug/L		99	78 - 122	3	20
Chlorodibromomethane			50.0	51.2		ug/L		102	74 - 126	2	20
1,2-Dibromo-3-Chloropropane			50.0	50.2		ug/L		100	62 - 128	1	20
Ethylene Dibromide			50.0	50.5		ug/L		101	75 - 127	1	20
Dibromomethane			50.0	50.4		ug/L		101	79 - 123	2	20
1,2-Dichlorobenzene			50.0	49.0		ug/L		98	80 - 119	1	20
1,3-Dichlorobenzene			50.0	48.5		ug/L		97	80 - 119	1	20
1,4-Dichlorobenzene			50.0	49.1		ug/L		98	79 - 118	2	20
Dichlorodifluoromethane			50.0	36.5	M	ug/L		73	32 - 152	7	20
1,1-Dichloroethane			50.0	51.0		ug/L		102	77 - 125	2	20
1,2-Dichloroethane			50.0	54.3		ug/L		109	73 - 128	1	20
cis-1,2-Dichloroethene			50.0	52.0		ug/L		104	78 - 123	2	20
trans-1,2-Dichloroethene			50.0	50.8		ug/L		102	75 - 124	1	20
1,2-Dichloroethene, Total			100	103		ug/L		103	79 - 121	1	20
1,1-Dichloroethene			50.0	48.7		ug/L		97	71 - 131	1	20
1,2-Dichloropropane			50.0	52.6		ug/L		105	78 - 122	1	20
1,3-Dichloropropane			50.0	51.3		ug/L		103	80 - 119	0	20
2,2-Dichloropropane			50.0	45.3		ug/L		91	60 - 139	1	20
1,1-Dichloropropene			50.0	49.7		ug/L		99	79 - 125	1	20
cis-1,3-Dichloropropene			50.0	53.0		ug/L		106	75 - 124	1	20

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

Lab Sample ID: LCSD 680-529484/5
Matrix: Water
Analysis Batch: 529484

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
trans-1,3-Dichloropropene			50.0	49.8		ug/L		100	73 - 127	0	20
Ethylbenzene			50.0	49.1		ug/L		98	79 - 121	4	20
Hexachlorobutadiene			50.0	52.3		ug/L		105	66 - 134	4	20
2-Hexanone			250	245		ug/L		98	57 - 139	2	20
Isopropylbenzene			50.0	48.6		ug/L		97	72 - 131	4	20
4-Isopropyltoluene			50.0	50.7		ug/L		101	77 - 127	1	20
Methylene Chloride			50.0	50.9		ug/L		102	74 - 124	0	20
4-Methyl-2-pentanone (MIBK)			250	243		ug/L		97	67 - 130	3	20
Methyl tert-butyl ether			50.0	51.5		ug/L		103	71 - 124	2	20
N-Propylbenzene			50.0	50.0		ug/L		100	76 - 126	3	20
Styrene			50.0	45.4		ug/L		91	78 - 123	0	20
1,1,1,2-Tetrachloroethane			50.0	48.7		ug/L		97	78 - 124	1	20
1,1,2,2-Tetrachloroethane			50.0	47.3		ug/L		95	71 - 121	0	20
Tetrachloroethene			50.0	47.8		ug/L		96	74 - 129	1	20
Toluene			50.0	50.0		ug/L		100	80 - 121	1	20
1,2,3-Trichlorobenzene			50.0	50.7		ug/L		101	69 - 129	1	20
1,2,4-Trichlorobenzene			50.0	50.2		ug/L		100	69 - 130	1	20
1,1,1-Trichloroethane			50.0	51.3		ug/L		103	74 - 131	1	20
1,1,2-Trichloroethane			50.0	51.8		ug/L		104	80 - 119	0	20
Trichloroethene			50.0	50.4		ug/L		101	79 - 123	1	20
Trichlorofluoromethane			50.0	48.7		ug/L		97	65 - 141	3	20
1,2,3-Trichloropropane			50.0	49.3		ug/L		99	73 - 122	1	20
1,2,4-Trimethylbenzene			50.0	48.5	M	ug/L		97	76 - 124	3	20
1,3,5-Trimethylbenzene			50.0	48.6		ug/L		97	75 - 124	3	20
Vinyl acetate			100	113		ug/L		113	54 - 146	2	20
Vinyl chloride			50.0	43.9		ug/L		88	58 - 137	2	20
o-Xylene			50.0	48.2		ug/L		96	78 - 122	1	20
m-Xylene & p-Xylene			50.0	49.1		ug/L		98	80 - 121	4	20
Xylenes, Total			100	97.3		ug/L		97	79 - 121	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*106*		*81 - 118*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*
Dibromofluoromethane (Surr)	*103*		*80 - 119*

Lab Sample ID: 680-154053-16 MS
Matrix: Water
Analysis Batch: 529484

Client Sample ID: G4MW056
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	10	U	250	209		ug/L		84	39 - 160
Benzene	5.2		50.0	50.0		ug/L		89	79 - 120
Bromobenzene	1.0	U	50.0	46.1		ug/L		92	80 - 120
Chlorobromomethane	1.0	U	50.0	48.6		ug/L		97	78 - 123
Dichlorobromomethane	1.0	U	50.0	49.6		ug/L		99	79 - 125
Bromoform	1.0	U	50.0	44.3		ug/L		89	66 - 130
Bromomethane	5.0	U	50.0	38.3		ug/L		77	53 - 141

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

Lab Sample ID: 680-154053-16 MS
Matrix: Water
Analysis Batch: 529484

Client Sample ID: G4MW056
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Butanone (MEK)	10	U	250	224		ug/L		90	56 - 143
n-Butylbenzene	1.0	U	50.0	51.4		ug/L		103	75 - 128
sec-Butylbenzene	1.0	U	50.0	48.8		ug/L		98	77 - 126
tert-Butylbenzene	1.0	U	50.0	49.0		ug/L		98	78 - 124
Carbon disulfide	2.0	U	50.0	49.5		ug/L		99	64 - 133
Carbon tetrachloride	0.50	U	50.0	52.7		ug/L		105	72 - 136
Chlorobenzene	5.8		50.0	48.7		ug/L		86	82 - 118
Chloroethane	5.0	U	50.0	48.1		ug/L		96	60 - 138
Chloroform	1.0	U	50.0	50.9		ug/L		102	79 - 124
Chloromethane	1.0	U	50.0	42.1		ug/L		84	50 - 139
2-Chlorotoluene	0.50	U	50.0	48.0		ug/L		96	79 - 122
4-Chlorotoluene	1.0	U	50.0	48.5		ug/L		97	78 - 122
Chlorodibromomethane	0.50	U	50.0	48.6		ug/L		97	74 - 126
1,2-Dibromo-3-Chloropropane	2.0	U	50.0	46.2		ug/L		92	62 - 128
Ethylene Dibromide	1.0	U	50.0	47.0		ug/L		94	75 - 127
Dibromomethane	1.0	U	50.0	49.1		ug/L		98	79 - 123
1,2-Dichlorobenzene	4.8		50.0	48.9		ug/L		88	80 - 119
1,3-Dichlorobenzene	0.62	J	50.0	48.7		ug/L		96	80 - 119
1,4-Dichlorobenzene	5.0		50.0	47.7		ug/L		85	79 - 118
Dichlorodifluoromethane	1.0	U Q J1	50.0	38.8		ug/L		78	32 - 152
1,1-Dichloroethane	1.0	U	50.0	52.2		ug/L		104	77 - 125
1,2-Dichloroethane	1.0	U M	50.0	55.9		ug/L		112	73 - 128
cis-1,2-Dichloroethene	0.73	J	50.0	51.7		ug/L		102	78 - 123
trans-1,2-Dichloroethene	1.0	U	50.0	51.8		ug/L		104	75 - 124
1,2-Dichloroethene, Total	1.0	U	100	104		ug/L		104	79 - 121
1,1-Dichloroethene	1.0	U	50.0	51.4		ug/L		103	71 - 131
1,2-Dichloropropane	1.0	U	50.0	52.0		ug/L		104	78 - 122
1,3-Dichloropropane	1.0	U	50.0	48.4		ug/L		97	80 - 119
2,2-Dichloropropane	1.0	U	50.0	36.1		ug/L		72	60 - 139
1,1-Dichloropropene	1.0	U	50.0	52.5		ug/L		105	79 - 125
cis-1,3-Dichloropropene	1.0	U	50.0	48.9		ug/L		98	75 - 124
trans-1,3-Dichloropropene	1.0	U	50.0	46.5		ug/L		93	73 - 127
Ethylbenzene	0.50	U	50.0	49.2		ug/L		98	79 - 121
Hexachlorobutadiene	5.0	U	50.0	49.7		ug/L		99	66 - 134
2-Hexanone	5.0	U	250	223		ug/L		89	57 - 139
Isopropylbenzene	1.0	U	50.0	48.9		ug/L		98	72 - 131
4-Isopropyltoluene	1.0	U	50.0	53.0		ug/L		106	77 - 127
Methylene Chloride	5.0	U	50.0	49.4		ug/L		99	74 - 124
4-Methyl-2-pentanone (MIBK)	5.0	U	250	224		ug/L		90	67 - 130
Methyl tert-butyl ether	0.50	U	50.0	50.5		ug/L		101	71 - 124
N-Propylbenzene	1.0	U	50.0	49.4		ug/L		99	76 - 126
Styrene	0.50	U	50.0	44.1		ug/L		88	78 - 123
1,1,1,2-Tetrachloroethane	1.0	U	50.0	47.7		ug/L		95	78 - 124
1,1,2,2-Tetrachloroethane	1.0	U	50.0	45.9		ug/L		92	71 - 121
Tetrachloroethene	1.0	U	50.0	49.0		ug/L		98	74 - 129
Toluene	1.0	U	50.0	49.2		ug/L		98	80 - 121
1,2,3-Trichlorobenzene	5.0	U	50.0	47.0		ug/L		94	69 - 129
1,2,4-Trichlorobenzene	5.0	U	50.0	47.8		ug/L		96	69 - 130

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

Lab Sample ID: 680-154053-16 MS
Matrix: Water
Analysis Batch: 529484

Client Sample ID: G4MW056
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	1.0	U	50.0	53.6		ug/L		107	74 - 131
1,1,2-Trichloroethane	0.50	U	50.0	48.4		ug/L		97	80 - 119
Trichloroethene	4.7		50.0	54.0		ug/L		99	79 - 123
Trichlorofluoromethane	1.0	U	50.0	51.2		ug/L		102	65 - 141
1,2,3-Trichloropropane	1.0	U	50.0	46.2		ug/L		92	73 - 122
1,2,4-Trimethylbenzene	1.0	U M J1	50.0	63.4	J1	ug/L		127	76 - 124
1,3,5-Trimethylbenzene	0.50	U	50.0	48.9		ug/L		98	75 - 124
Vinyl acetate	2.0	U	100	99.6		ug/L		100	54 - 146
Vinyl chloride	1.0	U	50.0	44.5		ug/L		89	58 - 137
o-Xylene	0.50	U	50.0	48.7		ug/L		97	78 - 122
m-Xylene & p-Xylene	1.0	U	50.0	48.8		ug/L		98	80 - 121
Xylenes, Total	0.50	U	100	97.5		ug/L		98	79 - 121

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*107*		*81 - 118*
4-Bromofluorobenzene (Surr)	*104*		*85 - 114*
Dibromofluoromethane (Surr)	*103*		*80 - 119*

Lab Sample ID: 680-154053-16 MSD
Matrix: Water
Analysis Batch: 529484

Client Sample ID: G4MW056
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	212		ug/L		85	39 - 160	1	20
Benzene	5.2		50.0	48.3		ug/L		86	79 - 120	3	20
Bromobenzene	1.0	U	50.0	44.4		ug/L		89	80 - 120	4	20
Chlorobromomethane	1.0	U	50.0	47.7		ug/L		95	78 - 123	2	20
Dichlorobromomethane	1.0	U	50.0	48.3		ug/L		97	79 - 125	3	20
Bromoform	1.0	U	50.0	44.6		ug/L		89	66 - 130	1	20
Bromomethane	5.0	U	50.0	44.9		ug/L		90	53 - 141	16	20
2-Butanone (MEK)	10	U	250	220		ug/L		88	56 - 143	2	20
n-Butylbenzene	1.0	U	50.0	49.1		ug/L		98	75 - 128	5	20
sec-Butylbenzene	1.0	U	50.0	47.6		ug/L		95	77 - 126	2	20
tert-Butylbenzene	1.0	U	50.0	47.3		ug/L		95	78 - 124	4	20
Carbon disulfide	2.0	U	50.0	48.3		ug/L		97	64 - 133	3	20
Carbon tetrachloride	0.50	U	50.0	51.0		ug/L		102	72 - 136	3	20
Chlorobenzene	5.8		50.0	47.3		ug/L		83	82 - 118	3	20
Chloroethane	5.0	U	50.0	46.3		ug/L		93	60 - 138	4	20
Chloroform	1.0	U	50.0	49.0		ug/L		98	79 - 124	4	20
Chloromethane	1.0	U	50.0	41.3		ug/L		83	50 - 139	2	20
2-Chlorotoluene	0.50	U	50.0	46.8		ug/L		94	79 - 122	2	20
4-Chlorotoluene	1.0	U	50.0	46.6		ug/L		93	78 - 122	4	20
Chlorodibromomethane	0.50	U	50.0	48.0		ug/L		96	74 - 126	1	20
1,2-Dibromo-3-Chloropropane	2.0	U	50.0	47.6		ug/L		95	62 - 128	3	20
Ethylene Dibromide	1.0	U	50.0	46.4		ug/L		93	75 - 127	1	20
Dibromomethane	1.0	U	50.0	47.3		ug/L		95	79 - 123	4	20
1,2-Dichlorobenzene	4.8		50.0	49.0		ug/L		89	80 - 119	0	20

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

Lab Sample ID: 680-154053-16 MSD
Matrix: Water
Analysis Batch: 529484

Client Sample ID: G4MW056
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-Dichlorobenzene	0.62	J	50.0	46.7		ug/L		92	80 - 119	4	20
1,4-Dichlorobenzene	5.0		50.0	47.5		ug/L		85	79 - 118	0	20
Dichlorodifluoromethane	1.0	U Q J1	50.0	26.4	J1	ug/L		53	32 - 152	38	20
1,1-Dichloroethane	1.0	U	50.0	50.7		ug/L		101	77 - 125	3	20
1,2-Dichloroethane	1.0	U M	50.0	53.4		ug/L		107	73 - 128	5	20
cis-1,2-Dichloroethene	0.73	J	50.0	50.6		ug/L		100	78 - 123	2	20
trans-1,2-Dichloroethene	1.0	U	50.0	50.2		ug/L		100	75 - 124	3	20
1,2-Dichloroethene, Total	1.0	U	100	101		ug/L		101	79 - 121	3	20
1,1-Dichloroethene	1.0	U	50.0	49.9		ug/L		100	71 - 131	3	20
1,2-Dichloropropane	1.0	U	50.0	50.4		ug/L		101	78 - 122	3	20
1,3-Dichloropropane	1.0	U	50.0	48.0		ug/L		96	80 - 119	1	20
2,2-Dichloropropane	1.0	U	50.0	33.4		ug/L		67	60 - 139	8	20
1,1-Dichloropropene	1.0	U	50.0	50.6		ug/L		101	79 - 125	4	20
cis-1,3-Dichloropropene	1.0	U	50.0	48.6		ug/L		97	75 - 124	1	20
trans-1,3-Dichloropropene	1.0	U	50.0	44.8		ug/L		90	73 - 127	4	20
Ethylbenzene	0.50	U	50.0	47.1		ug/L		94	79 - 121	4	20
Hexachlorobutadiene	5.0	U	50.0	49.7		ug/L		99	66 - 134	0	20
2-Hexanone	5.0	U	250	217		ug/L		87	57 - 139	3	20
Isopropylbenzene	1.0	U	50.0	46.8		ug/L		94	72 - 131	4	20
4-Isopropyltoluene	1.0	U	50.0	50.5		ug/L		101	77 - 127	5	20
Methylene Chloride	5.0	U	50.0	48.3		ug/L		97	74 - 124	2	20
4-Methyl-2-pentanone (MIBK)	5.0	U	250	221		ug/L		88	67 - 130	1	20
Methyl tert-butyl ether	0.50	U	50.0	48.7		ug/L		97	71 - 124	4	20
N-Propylbenzene	1.0	U	50.0	47.1		ug/L		94	76 - 126	5	20
Styrene	0.50	U	50.0	43.3		ug/L		87	78 - 123	2	20
1,1,1,2-Tetrachloroethane	1.0	U	50.0	46.3		ug/L		93	78 - 124	3	20
1,1,2,2-Tetrachloroethane	1.0	U	50.0	45.2		ug/L		90	71 - 121	2	20
Tetrachloroethene	1.0	U	50.0	46.2		ug/L		92	74 - 129	6	20
Toluene	1.0	U	50.0	47.3		ug/L		95	80 - 121	4	20
1,2,3-Trichlorobenzene	5.0	U	50.0	47.9		ug/L		96	69 - 129	2	20
1,2,4-Trichlorobenzene	5.0	U	50.0	47.0		ug/L		94	69 - 130	2	20
1,1,1-Trichloroethane	1.0	U	50.0	52.0		ug/L		104	74 - 131	3	20
1,1,2-Trichloroethane	0.50	U	50.0	47.3		ug/L		95	80 - 119	2	20
Trichloroethene	4.7		50.0	52.9		ug/L		96	79 - 123	2	20
Trichlorofluoromethane	1.0	U	50.0	49.7		ug/L		99	65 - 141	3	20
1,2,3-Trichloropropane	1.0	U	50.0	45.2		ug/L		90	73 - 122	2	20
1,2,4-Trimethylbenzene	1.0	U M J1	50.0	61.9		ug/L		124	76 - 124	2	20
1,3,5-Trimethylbenzene	0.50	U	50.0	46.2		ug/L		92	75 - 124	6	20
Vinyl acetate	2.0	U	100	95.0		ug/L		95	54 - 146	5	20
Vinyl chloride	1.0	U	50.0	43.8		ug/L		88	58 - 137	2	20
o-Xylene	0.50	U	50.0	46.8		ug/L		94	78 - 122	4	20
m-Xylene & p-Xylene	1.0	U	50.0	47.4		ug/L		95	80 - 121	3	20
Xylenes, Total	0.50	U	100	94.2		ug/L		94	79 - 121	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*103*		*81 - 118*
4-Bromofluorobenzene (Surr)	*100*		*85 - 114*

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

Lab Sample ID: 680-154053-16 MSD
Matrix: Water
Analysis Batch: 529484

Client Sample ID: G4MW056
Prep Type: Total/NA

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*99*		*80 - 119*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-528291/1-A
Matrix: Water
Analysis Batch: 529005

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 528291

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	15	U	20	15	6.2	ug/L		06/21/18 14:41	1

Lab Sample ID: LCS 680-528291/2-A
Matrix: Water
Analysis Batch: 529005

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 528291

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	103		ug/L		103	87 - 113

Lab Sample ID: MB 680-528269/1-A
Matrix: Water
Analysis Batch: 529005

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 528269

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Dissolved Arsenic	15	U	20	15	6.2	ug/L		06/22/18 04:15	1

Lab Sample ID: LCS 680-528269/2-A
Matrix: Water
Analysis Batch: 529005

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 528269

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Arsenic	100	103		ug/L		103	87 - 113

GC/MS VOA

Analysis Batch: 529366

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-154053-1	G4MW047	Total/NA	Water	8260B	
680-154053-3	G4MW057	Total/NA	Water	8260B	
680-154053-4	G4MW033	Total/NA	Water	8260B	
680-154053-5	G4MW054	Total/NA	Water	8260B	
680-154053-6	G4MW019	Total/NA	Water	8260B	
680-154053-7	G4MW018	Total/NA	Water	8260B	
680-154053-8	G4MW022	Total/NA	Water	8260B	
680-154053-10	G4MW035	Total/NA	Water	8260B	
680-154053-11	G4MW025	Total/NA	Water	8260B	
680-154053-12	G4MW017	Total/NA	Water	8260B	
680-154053-13	G4MW040	Total/NA	Water	8260B	
680-154053-15	G4MW051	Total/NA	Water	8260B	
680-154053-17	G4MW041	Total/NA	Water	8260B	
680-154053-19	DUP-01	Total/NA	Water	8260B	
680-154053-20	Trip Blank	Total/NA	Water	8260B	
MB 680-529366/7	Method Blank	Total/NA	Water	8260B	
LCS 680-529366/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-529366/4	Lab Control Sample Dup	Total/NA	Water	8260B	

Analysis Batch: 529484

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-154053-16	G4MW056	Total/NA	Water	8260B	
MB 680-529484/9	Method Blank	Total/NA	Water	8260B	
LCS 680-529484/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-529484/5	Lab Control Sample Dup	Total/NA	Water	8260B	
680-154053-16 MS	G4MW056	Total/NA	Water	8260B	
680-154053-16 MSD	G4MW056	Total/NA	Water	8260B	

Metals

Prep Batch: 528269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-154053-2	G4MW053	Dissolved	Water	3005A	
680-154053-5	G4MW054	Dissolved	Water	3005A	
680-154053-9	G4MW052	Dissolved	Water	3005A	
680-154053-14	G4MW036	Dissolved	Water	3005A	
680-154053-15	G4MW051	Dissolved	Water	3005A	
680-154053-18	G4MW039	Dissolved	Water	3005A	
680-154053-19	DUP-01	Dissolved	Water	3005A	
MB 680-528269/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-528269/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 528291

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-154053-2	G4MW053	Total/NA	Water	3010A	
680-154053-5	G4MW054	Total/NA	Water	3010A	
680-154053-9	G4MW052	Total/NA	Water	3010A	
680-154053-14	G4MW036	Total/NA	Water	3010A	
680-154053-15	G4MW051	Total/NA	Water	3010A	
680-154053-18	G4MW039	Total/NA	Water	3010A	

Metals (Continued)

Prep Batch: 528291 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-154053-19	DUP-01	Total/NA	Water	3010A	
MB 680-528291/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-528291/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 529005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-154053-2	G4MW053	Dissolved	Water	6010C	528269
680-154053-2	G4MW053	Total/NA	Water	6010C	528291
680-154053-5	G4MW054	Dissolved	Water	6010C	528269
680-154053-5	G4MW054	Total/NA	Water	6010C	528291
680-154053-9	G4MW052	Dissolved	Water	6010C	528269
680-154053-9	G4MW052	Total/NA	Water	6010C	528291
680-154053-14	G4MW036	Dissolved	Water	6010C	528269
680-154053-14	G4MW036	Total/NA	Water	6010C	528291
680-154053-15	G4MW051	Dissolved	Water	6010C	528269
680-154053-15	G4MW051	Total/NA	Water	6010C	528291
680-154053-18	G4MW039	Dissolved	Water	6010C	528269
680-154053-18	G4MW039	Total/NA	Water	6010C	528291
680-154053-19	DUP-01	Dissolved	Water	6010C	528269
680-154053-19	DUP-01	Total/NA	Water	6010C	528291
MB 680-528269/1-A	Method Blank	Total Recoverable	Water	6010C	528269
MB 680-528291/1-A	Method Blank	Total/NA	Water	6010C	528291
LCS 680-528269/2-A	Lab Control Sample	Total Recoverable	Water	6010C	528269
LCS 680-528291/2-A	Lab Control Sample	Total/NA	Water	6010C	528291

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: G4MW047
Date Collected: 06/14/18 11:00
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	529366	06/26/18 13:42	Y1S	TAL SAV
	Instrument ID: CMSP2									

Client Sample ID: G4MW053
Date Collected: 06/14/18 11:25
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-2
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	50 mL	528269	06/18/18 13:56	AJR	TAL SAV
Dissolved	Analysis	6010C		1			529005	06/22/18 04:53	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	528291	06/18/18 15:21	AJR	TAL SAV
Total/NA	Analysis	6010C		1			529005	06/21/18 15:59	BCB	TAL SAV
	Instrument ID: ICPE									

Client Sample ID: G4MW057
Date Collected: 06/14/18 12:22
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-3
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	529366	06/26/18 14:07	Y1S	TAL SAV
	Instrument ID: CMSP2									

Client Sample ID: G4MW033
Date Collected: 06/14/18 12:30
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	529366	06/26/18 14:32	Y1S	TAL SAV
	Instrument ID: CMSP2									

Client Sample ID: G4MW054
Date Collected: 06/14/18 13:42
Date Received: 06/15/18 16:05

Lab Sample ID: 680-154053-5
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	529366	06/26/18 14:57	Y1S	TAL SAV
	Instrument ID: CMSP2									
Dissolved	Prep	3005A			50 mL	50 mL	528269	06/18/18 13:56	AJR	TAL SAV
Dissolved	Analysis	6010C		1			529005	06/22/18 05:21	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	528291	06/18/18 15:21	AJR	TAL SAV

Client Sample ID: G4MW054 — **Lab Sample ID: 680-154053-5**
Date Collected: 06/14/18 13:42 — **Matrix: Water**
Date Received: 06/15/18 16:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	6010C		1			529005	06/21/18 16:04	BCB	TAL SAV
	Instrument ID: ICPE									

Client Sample ID: G4MW019 — **Lab Sample ID: 680-154053-6**
Date Collected: 06/14/18 13:50 — **Matrix: Water**
Date Received: 06/15/18 16:05

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	529366	06/26/18 15:22	Y1S	TAL SAV
	Instrument ID: CMSP2									

Client Sample ID: G4MW018 — **Lab Sample ID: 680-154053-7**
Date Collected: 06/14/18 14:50 — **Matrix: Water**
Date Received: 06/15/18 16:05

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	529366	06/26/18 15:48	Y1S	TAL SAV
	Instrument ID: CMSP2									

Client Sample ID: G4MW022 — **Lab Sample ID: 680-154053-8**
Date Collected: 06/14/18 15:35 — **Matrix: Water**
Date Received: 06/15/18 16:05

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	529366	06/26/18 16:13	Y1S	TAL SAV
	Instrument ID: CMSP2									

Client Sample ID: G4MW052 — **Lab Sample ID: 680-154053-9**
Date Collected: 06/14/18 15:55 — **Matrix: Water**
Date Received: 06/15/18 16:05

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	528269	06/18/18 13:56	AJR	TAL SAV
Dissolved	Analysis	6010C		1			529005	06/22/18 05:16	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	528291	06/18/18 15:21	AJR	TAL SAV
Total/NA	Analysis	6010C		1			529005	06/21/18 16:09	BCB	TAL SAV
	Instrument ID: ICPE									

Client Sample ID: G4MW035

Lab Sample ID: 680-154053-10

Date Collected: 06/14/18 17:00

Matrix: Water

Date Received: 06/15/18 16:05

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	529366	06/26/18 16:38	Y1S	TAL SAV
	Instrument ID: CMSP2									

Client Sample ID: G4MW025

Lab Sample ID: 680-154053-11

Date Collected: 06/14/18 17:35

Matrix: Water

Date Received: 06/15/18 16:05

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	529366	06/26/18 17:03	Y1S	TAL SAV
	Instrument ID: CMSP2									

Client Sample ID: G4MW017

Lab Sample ID: 680-154053-12

Date Collected: 06/14/18 18:00

Matrix: Water

Date Received: 06/15/18 16:05

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	529366	06/26/18 17:29	Y1S	TAL SAV
	Instrument ID: CMSP2									

Client Sample ID: G4MW040

Lab Sample ID: 680-154053-13

Date Collected: 06/14/18 19:00

Matrix: Water

Date Received: 06/15/18 16:05

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	529366	06/26/18 17:54	Y1S	TAL SAV
	Instrument ID: CMSP2									

Client Sample ID: G4MW036

Lab Sample ID: 680-154053-14

Date Collected: 06/14/18 19:16

Matrix: Water

Date Received: 06/15/18 16:05

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	528269	06/18/18 13:56	AJR	TAL SAV
Dissolved	Analysis	6010C		1			529005	06/22/18 05:26	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	528291	06/18/18 15:21	AJR	TAL SAV
Total/NA	Analysis	6010C		1			529005	06/21/18 16:14	BCB	TAL SAV
	Instrument ID: ICPE									

Client Sample ID: G4MW051

Lab Sample ID: 680-154053-15

Date Collected: 06/15/18 08:32

Matrix: Water

Date Received: 06/15/18 16:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	5 mL	5 mL	529366	06/26/18 19:11	Y1S	TAL SAV
	Instrument ID: CMSP2									
Dissolved	Prep	3005A			50 mL	50 mL	528269	06/18/18 13:56	AJR	TAL SAV
Dissolved	Analysis	6010C		1			529005	06/22/18 05:12	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	528291	06/18/18 15:21	AJR	TAL SAV
Total/NA	Analysis	6010C		1			529005	06/21/18 16:19	BCB	TAL SAV
	Instrument ID: ICPE									

Client Sample ID: G4MW056

Lab Sample ID: 680-154053-16

Date Collected: 06/15/18 08:50

Matrix: Water

Date Received: 06/15/18 16:05

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	529484	06/27/18 05:41	JLK	TAL SAV
	Instrument ID: CMSP2									

Client Sample ID: G4MW041

Lab Sample ID: 680-154053-17

Date Collected: 06/15/18 09:45

Matrix: Water

Date Received: 06/15/18 16:05

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	529366	06/26/18 18:20	Y1S	TAL SAV
	Instrument ID: CMSP2									

Client Sample ID: G4MW039

Lab Sample ID: 680-154053-18

Date Collected: 06/15/18 09:55

Matrix: Water

Date Received: 06/15/18 16:05

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	528269	06/18/18 13:56	AJR	TAL SAV
Dissolved	Analysis	6010C		1			529005	06/22/18 04:48	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	528291	06/18/18 15:21	AJR	TAL SAV
Total/NA	Analysis	6010C		1			529005	06/21/18 16:25	BCB	TAL SAV
	Instrument ID: ICPE									

Client Sample ID: DUP-01

Lab Sample ID: 680-154053-19

Date Collected: 06/15/18 00:00

Matrix: Water

Date Received: 06/15/18 16:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	5 mL	5 mL	529366	06/26/18 19:36	Y1S	TAL SAV

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Client Sample ID: DUP-01

Lab Sample ID: 680-154053-19

Date Collected: 06/15/18 00:00

Matrix: Water

Date Received: 06/15/18 16:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	5 mL	5 mL	529366	06/26/18 19:36	Y1S	TAL SAV
	Instrument ID: CMSP2									
Dissolved	Prep	3005A			50 mL	50 mL	528269	06/18/18 13:56	AJR	TAL SAV
Dissolved	Analysis	6010C		1			529005	06/22/18 05:07	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	528291	06/18/18 15:21	AJR	TAL SAV
Total/NA	Analysis	6010C		1			529005	06/21/18 16:40	BCB	TAL SAV
	Instrument ID: ICPE									

Client Sample ID: Trip Blank

Lab Sample ID: 680-154053-20

Date Collected: 06/15/18 00:00

Matrix: Water

Date Received: 06/15/18 16:05

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	529366	06/26/18 11:36	Y1S	TAL SAV
	Instrument ID: CMSP2									

Laboratory References:

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

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912.354.7858 Fax:

681-Atlanta

Chain of Custody Record

681-Atlanta

266596

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Scott Bostian	Site Contact: Scott Bostian	Date: 6/15/18	COC No:
Company Name: ARCADIS	Tel/Fax: ~~919 417 2643~~	Lab Contact: Jerry Lanier	Carrier: ARCADIS	1 of 2 COCs
Address: 801 Corporate Center Dr. STE300	Analysis Turnaround Time			Sampler:
City/State/Zip: Raleigh, NC 27607	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 919 415 2291	TAT if different from Below: Standard			Walk-in Client:
Fax:	X 2 weeks			Lab Sampling:
Project Name: Ft Stewart FST-39	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
PO # 10153004.0001.39 GWM	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOCs 8260	Total Arsenic	Dissolved Arsenic	Sample Specific Notes:
64MW047	6/14/18	1100	G	GW	3	N	N	3			
64MW053	↓	1125	G	GW	2	Y	N		1	1	
64MW057		1222	G	GW	3	N	N	3			
64MW033		1230	G	GW	3	N	N	3			
64MW054		1342	G	GW	5	Y	N	3	1	1	
64MW019		1350	G	GW	3	N	N	3			
64MW018		1450	G	GW	3	N	N	3			
64MW022		1535	G	GW	3	N	N	3			
64MW052		1555	G	GW	2	Y	N		1	1	
64MW035		1700	G	GW	3	N	N	3			
64MW025		1735	G	GW	3	N	N	3			
64MW017	↓	1800	G	GW	3	N	N	3			
								2	4	4	

680-154053 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

1.3/1.2 CO.7/CO.6

Custody Seals Intact: ☑ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	6/15/18			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Company: TASAV	Date/Time: 6/15/18 1600

6/29/2018

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912.354.7858 Fax:

681-Atlanta 6800-15405J

Chain of Custody Record

266595

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other: 681-Atlanta

Client Contact	Project Manager: Scott Bastian	Site Contact: Scott Bastian	Date: 6/15/18	COC No:
Company Name: ARCADIS	Tel/Fax: 919 415 2291	Lab Contact: Jerry Lanier	Carrier: ARCADES	2 of 2 COCs
Address: 801 Corporate Center Dr, STE 300	Analysis Turnaround Time			Sampler:
City/State/Zip: Raleigh, NC 27607	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 919 415 2291	TAT if different from Below			Walk-in Client:
Fax:	☐ 2 weeks Standard			Lab Sampling:
Project Name: Ft Stewart FST-39	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
PO # 10153004.0001.396WM	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOCs 8260	Total Arsenic	Dissolved Arsenic	Sample Specific Notes:
64MW040	6/14/18	1900	G	GW	3	N	N	3			
64MW036	6/14/18	1916	G	GW	2	Y	N		1	1	
64MW051	6/15/18	0832	G	GW	5	Y	N	3	1	1	
64MW056	6/15/18	0850	G	GW	9	N	Y	9			MS/MSD
64MW041	6/15/18	0945	G	GW	3	N	N	3			
64MW039	6/15/18	0955	G	GW	2	Y	N		1	1	
Dup-01	6/15/18	--	G	GW	5	Y	N	3	1	1	
Trip Blank	--	--	--	W	2	N	N	2			

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

1.3/1.2 Q.7/Q.6

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temp. (°C): Obs'd:	Corr'd:	Therm ID No.:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADES				
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				TOSR	6/15/18 1605

6/29/2018

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 680-154053-1

Login Number: 154053

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?	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.	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: ARCADIS U.S., Inc.
Project/Site: FST-39

TestAmerica Job ID: 680-154053-1

Laboratory: TestAmerica Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Georgia	State Program	4	N/A	06-30-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

APPENDIX B

Technical Product Information

SoakEase™

Absorbent material for immediate response or minimal product.

Application

- **Passive LNAPL Recovery.**

Description

- 36 in Canister
- Absorbent Socks for 2 and 4 in Canisters

SoakEase™ is a product-selective absorbent sock housed inside a stainless steel canister. It is used as a passive collection system for free phase product such as jet fuel, gasoline or diesel fuel from 2 in and larger recovery wells, monitoring wells and recovery trenches.

The SoakEase™ can be used as a bailer for periodic product removal or as a dedicated system for a more continuous method of recovery. Prior to dedicating the SoakEase™, it is recommended that excess free product be removed by bailing with the SoakEase™.

To use SoakEase™ as a bailer, an absorbent sock is placed in the stainless steel canister; a cord is attached to the support loop and then lowered through the product layer. The full length of the sock should come into contact with the product for greater recovery. Immediately, the SoakEase™ will begin absorbing product at a rate of approximately 0.1 gallon per second, depending on the product viscosity. After some time, the SoakEase™ should be raised from the well; the sock removed from the canister and disposed of in accordance with regulations.

To use the SoakEase™ as a dedicated system, determine the amount of product present and the water table fluctuation using the PWI interface meter (TR-921). When these have been determined, the SoakEase™ may be installed to accommodate level changes up to 36 in.

Tech Tip: *The product absorption rate is determined by the viscosity of the product and can vary depending on site conditions. The SoakEase™ is designed to be used with hydrocarbon-based products. The user must determine the necessary replacement schedule by gauging site conditions. The socks can be squeezed out and reused. Approximately 80% of the original absorption can be recovered.*

SPECIFICATIONS		
Size Designation	**2 in**	**4 in**
Outside Diameter	1.7 in	3.5 in
Length	36 in	
Weight (Net)	3.0 lb	6.0 lb
Canister Material	Stainless Steel Type 304, perforated	
Absorbent Sock Material	Polypropylene fibrous material contained in a white fabric sock	
Rated Absorption		
2 in Socks	3 US gal per case (1 qt per 2" sock)	
4 in Socks	9 US gal per case (3 qt per 4" sock)	
Incompatibility	Slight degradation may occur if exposed to strong oxidizing agents	
Warning	Not recommended for use with aggressive fluids, including strong acids, strong bases, oxidizers and hazardous materials	
Reaction time	Immediate	

ORDERING INFORMATION		
TB2-101	2 in Canister	2 lb
TB2-110	2 in SoakEase™ Refill (case of 12)	4 lb
TB4-101	4 in Canister	3 lb
TB4-110	4 in SoakEase™ Refill (case of 12)	7 lb

APPENDIX C

Design Calculations

Deep Interval - 30 to 40 ft bgs					
Total Porosity =	30%	%	Estimated		
Mobile Porosity =	10%	%	Estimated		
Injection Well Screened Interval =	10	ft	Given		
Designed Radius of Influence =	15	ft	Design		
Volume of Solution Injected =	707	ft^3			
Volume of Solution Injected =	5,290	gal		10%	Estimated
Volume of Solution Injected =	848	ft^3		12%	Estimated
Volume of Solution Injected =	6,340	gal			
Volume of Solution Injected =	1060	ft^3		15%	Estimated
Volume of Solution Injected =	7,930	gal			
Volume of Solution Injected =	1202	ft^3		17%	Estimated
Volume of Solution Injected =	8,990	gal			

Total Interval - 30 to 40 ft bgs					
Total Porosity =	30%	%	Estimated		
Mobile Porosity =	10%	%	Estimated		
Injection Well Screened Interval =	10	ft	Given		
Designed Radius of Influence =	20	ft	Design		
Volume of Solution Injected =	1257	ft^3			
Volume of Solution Injected =	9,400	gal		10%	Estimated
Volume of Solution Injected =	1508	ft^3		12%	Estimated
Volume of Solution Injected =	11,280	gal			
Volume of Solution Injected =	1885	ft^3		15%	Estimated
Volume of Solution Injected =	14,100	gal			
Volume of Solution Injected =	2136	ft^3		17%	Estimated
Volume of Solution Injected =	15,980	gal			

Deep Interval - 30 to 40 ft bgs					
Total Porosity =	30%	%	Estimated		
Mobile Porosity =	10%	%	Estimated		
Injection Well Screened Interval =	10	ft	Given		
Designed Radius of Influence =	10	ft	Design		
Volume of Solution Injected =	314	ft^3			
Volume of Solution Injected =	2,350	gal		10%	Estimated
Volume of Solution Injected =	377	ft^3		12%	Estimated
Volume of Solution Injected =	2,820	gal			
Volume of Solution Injected =	471	ft^3		15%	Estimated
Volume of Solution Injected =	3,520	gal			
Volume of Solution Injected =	534	ft^3		17%	Estimated
Volume of Solution Injected =	3,990	gal			

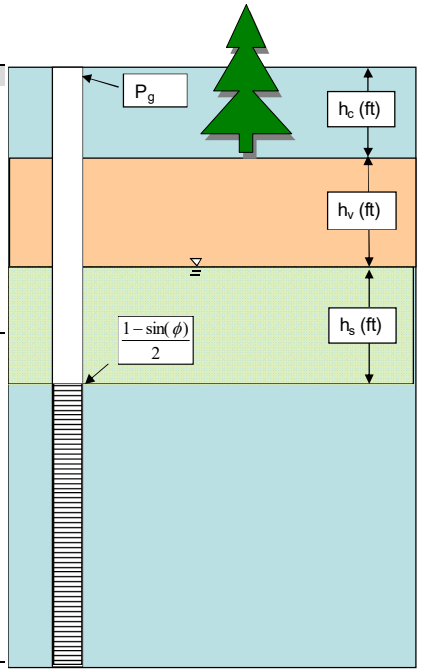
Shallow Interval Fluorescein Dye Calculations: Assumes θ_m = 10%

Desired injection concentration =	40	mg/L						
Volume to be injected =	5,290	gal						
Total mass of dye needed =	1.8	lbs						
If porosity actually =	10%	Volume to be injected =	5,290	gal	Dye needed:	1.8	lbs	$72
If porosity actually =	12%	Volume to be injected =	6,340	gal	Dye needed:	2.1	lbs	$84
If porosity actually =	15%	Volume to be injected =	7,930	gal	Dye needed:	2.6	lbs	$104
Fluorescein Dye Cost:	$40	lb						

Injection Rate for EVO/Dye			
Volume of injection solution =	5,290	gal	Assumes 10% migratory porosity
Injection Flow Rate =	0.5	gpm	Estimated
Time required to cycle one full volume =	176.3	hour	
	22.1	days	
Volume of injection solution =	6,340	gal	Assumes 12% migratory porosity
Time required to cycle one full volume =	211.3333	hour	
Volume of injection solution =	7,930	gal	Assumes 15% migratory porosity
Time required to cycle one full volume =	264.3	hour	
Volume of injection solution =	8,990	gal	Assumes 17% migratory porosity
Time required to cycle one full volume =	299.7	hour	

Injection Pressure Calculations
30 to 40

Design Elements	Quantity	Units	Notes
Well Construction and Aquifer Parameters			
Vadose Zone Lithology	Fine Sand		
Saturated Zone Lithology	Fine Sand		
Height of Well Casing (h_c)	**0**	ft	**USER INPUT**
Height of vadose zone (h_v)	**7**	ft	**USER INPUT**
Static Water Column Height Above Screen (h_s)	**23**	ft	**USER INPUT**
Unit weight of water (U_{ww})	62.4	lbs/ft^3	Assumed
Unit weight of soil in vadose zone [1] (U_{sv})	130	lbs/ft^3	Assumed - See supporting tab
Unit weight of soil in saturated zone [1] (U_{ss})	150	lbs/ft^3	Assumed - See supporting tab
Stress Calculations			
Overburden Stress (σ_s)	30.3	psi	$\sigma_s=h_v \cdot U_{wsv}+h_s \cdot U_{wss}$
Static Water Column Pressure Above Screen	10.0	psi	$P=(h_s)*U_{ww}$
Effective Stress	20.3	psi	$\sigma_e=\sigma_s-P$
Friction Angle Φ (degrees) [2]	25		
(1-sinΦ)	0.6		
Allowable Stress at Top of Screen [3] (Pmax)	5.9	psi	$Pmax=(1-\sin\Phi)\sigma_e*0.5$
Maximum Allowable Change in Head (Δhmax) (measured using pressure transducer installed at bottom of well)	13.5	ft of water	$\Delta hmax=Pmax*2.31$
Safety Factor	**20%**		**USER INPUT**
Maximum Allowable Gage Pressure at Well Head	**2.4**	psi	$Pg=(P_{max}-(h_v+h_c)*U_{wwj}/(1+SF)$



Note:
1 --- Typical unit weight for compacted soil, see supporting tab
2 --- Values obtain from supporting tab
3 --- Equation 13.43 from Remediation Hydraulics*
*the 0.5 included within this formula pertains to a calculation related to Mohr's circle. Do not remove from the calculation.

Reference:
Payne, Quinnan & Potter (2008). Remediation Hydraulics, Chapter 13, CRC Press.

1.64 g/cm3
102.336 lbs/ft3

silty sands 20.5 kN/m3 130.503 lbs/ft^3 geotechdata.com

149.5

30 to 40

Trial 1				Trial 2				Trial 3			
Mobile Porosity =	8%		estimated	Mobile Porosity =	10%		estimated	Mobile Porosity =	12%		estimated
Hydraulic Conductivity =	0.86	ft/d		Hydraulic Conductivity =	0.86	ft/d		Hydraulic Conductivity =	0.86	ft/d	
Hydraulic Gradient =	0.007	ft/ft		Hydraulic Gradient =	0.007	ft/ft		Hydraulic Gradient =	0.007	ft/ft	
Seepage Velocity =	0.07525	ft/d	Calculated	Seepage Velocity =	0.0602	ft/d	Calculated	Seepage Velocity =	0.050167	ft/d	Calculated
Effective Velocity =	0.00602	ft/d	Calculated	Effective Velocity =	0.00602	ft/d	Calculated	Effective Velocity =	0.00602	ft/d	Calculated

Constraint: Need seepage and effective groundwater velocities determined within 60 days of stopping injection
Assume: Center of mass for effective velocity calculation is at injection well head

Distance to Observation Well based on Seepage Velocity =	5	ft		Distance to Observation Well based on Seepage Velocity =	4	ft		Distance to Observation Well based on Seepage Velocity =	4	ft
Distance to Observation Well based on Effective Velocity =	1	ft		Distance to Observation Well based on Effective Velocity =	1	ft		Distance to Observation Well based on Effective Velocity =	1	ft

DATA SOURCES

The slug test analysis calculated hydraulic conductivity values that ranged from 10-3 to 10-5 centimeters per second (cm/sec):
4/15/2015
SWMU 39 RFI Report
Fort Stewart, Georgia

§ G4MW038 – 6.6×10-5 cm/sec – 35 ft bgs to 45 ft bgs		0.19 ft/day
§ G4MW040 – 1.6×10-4 cm/sec – 35 ft bgs to 45 ft bgs		0.45 ft/day
§ G4MW042 – 1.5×10-4 cm/sec – 35 ft bgs to 45 ft bgs		0.43 ft/day
§ G4MW043 – 1.1×10-3 cm/sec – 14 ft bgs to 24 ft bgs		3.12 ft/day
§ G4MW047 – 3.5×10-5 cm/sec – 25 ft bgs to 35 ft bgs		0.10 ft/day
AVERAGE		0.86 ft/day

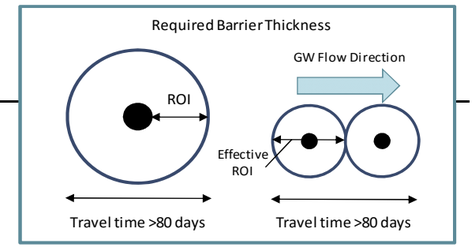
The slug test results are consistent with the typical hydraulic conductivity range (10-2 to 10-5 cm/sec) for silty sand (Freeze and Cherry 1979).

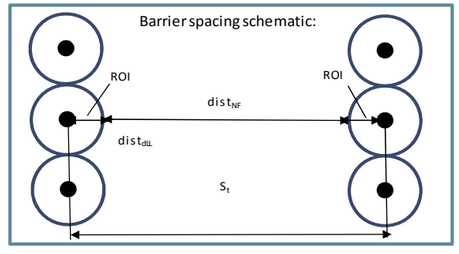
May 2011 data

G4MW051 to G4MW034 water level decrease	10.1	ft
G4MW051 to G4MW034 distance	1440	ft
GRADIENT	0.007013889	ft/ft

ERD Conceptual Design Tool

Design Elements	Quantity	Units	Notes
Contaminant, Hydraulic, and Aquifer Data			
Lithology	Fine Sand		
Targeted Contaminant	Trichloroethene		
Mobile Porosity (θ_m)	**10%**		Assumed - Validated by Tracer Test
θ_m Range	10-20%		**To guide estimated values, actual data from tracer study should be used when available
Total Porosity (θ_t)	38%		Assumed - See supporting tab
Immobile Porosity (θ_i)	28%		$\theta_i=\theta_t-\theta_m$
Bulk Density (ρ_b)	1.64	g/cm^3	$\rho_b=(1-\theta_t)*2.65$
Fraction Organic Carbon (f_{OC})	**0.001**	kg/kg	**Assumed, default value 0.001**
K_{OC}	64.57	L/kg	Assumed - See supporting tab
K_d	0.06		$K_d = K_{OC}*f_{OC}$
Average GW Contaminant Concentration $[C]_{GW}$ =	**1000**	µg/L	**Design Parameter**
Cleanup Goal $[C]_{CL}$=	**5**	µg/L	**Design Parameter**
Hydraulic Gradient (i)	**0.007**		**Design Parameter**
Hydraulic Conductivity (K_H)	**0.86**	ft/d	**Design Parameter**
GW Velocity (V_{GW})	0.06	ft/d	$V_{GW} = K_H*i/\theta_m$ - used if no tracer data available
GW Velocity (V_{GW})		ft/d	**Design Parameter, leave blank if no tracer data available**
Well Information			
Radius of Influence (ROI)	**15**	ft	**Design Parameter - use effective radius if using back to back injection wells**
Screened Interval (h)	**10**	ft	**Design Parameter**
On-center Injection Well Spacing (S_{IW})	30	ft	S_{IW}=ROI*2
Travel time through injection zone	498.3388704	days	
Total Number of Injection wells (N_{inj})	**6**		**Design Parameter**
Injection and Substrate Loading Information			
Required injection volume per foot of screen (V_{inj}/ft)	529	gal	$V_{inj}/ft = (\pi*ROI^2*h*\theta_m*7.48)/h$
Per well total required injection volume (V_{inj})	5,287	gal	$V_{inj} = V_{inj}/ft*h$
Per well soil weight (SW)	72,666	lb	$SW=\rho_b*V_{inj}*(3.79*2.21)$
EVO Loading (L_{EVO})	0.0024	wt/wt	See EVO Loading Tab
Bench Test EVO Loading (BL_{EVO})		wt/wt	**Design Parameter, leave blank if no site specific test data available**
Per well EVO demand (D_{EVO})	174	lb	$D_{EVO}=L_{EVO}*SW$
Per well EVO volume (V_{EVO})	21	gal	$V_{EVO}=D_{EVO}*8.2$
Calculated EVO Injection Solution Strength (%EVO)	0.40%		$\%EVO=V_{EVO}/V_{inj}$
Targeted EVO Injection Solution Strenght (T%EVO)	2.0%		Based on ARCADIS Experience
Adjusted per well EVO solution strength (Adj_{EVO})	2.0%	gal	Adj_{EVO}=max(%EVO,T%EVO)
Adjusted per well EVO volume (EVO)	106	gal	$EVO=Adj_{EVO}*V_{inj}$
Per well water requirement (H_2O/W)	5,182	gal	$H_2O/W = V_{inj}$ - EVO
Total Volume per injection event	31,724	gal	$N_{inj} * V_{inj}$
Total EVO per injection event	634	gal	$N_{inj} * EVO$
Transect Spacing & Timeframe (Pre-determined Distance)			
Transect Spacing (S_T)	**40**	ft	**USER ENTER**
Sorption Retardation (Rf_{OC})	1.3		$Rf_{OC} = 1+\rho_b/\theta_i*K_d$
Porosity Retardation (Rf_θ)	3.8		$Rf_\theta = 1+\theta_i/\theta_m$
Pore Flushes Required (NF)	20.1		$NF = \ln([C]_{GW}/[C]_{CL})*R$ R=dominant retardation factor (R_{foc} or Rf_θ)
Distance for Pore Flush ($dist_{NF}$)	10	ft	$distNF=S_T-2*ROI$
Groundwater Travel Time for one Pore Flush (t_{GW})	0.5	yr	$t_{GW}=dist_{NF}/V_{GW}/365$ - uses calculated velocity if no tracer velocity data available
Years to Cleanup (t_{goal})	9.2	yr	$t_{goal} = t_{GW}*NF$





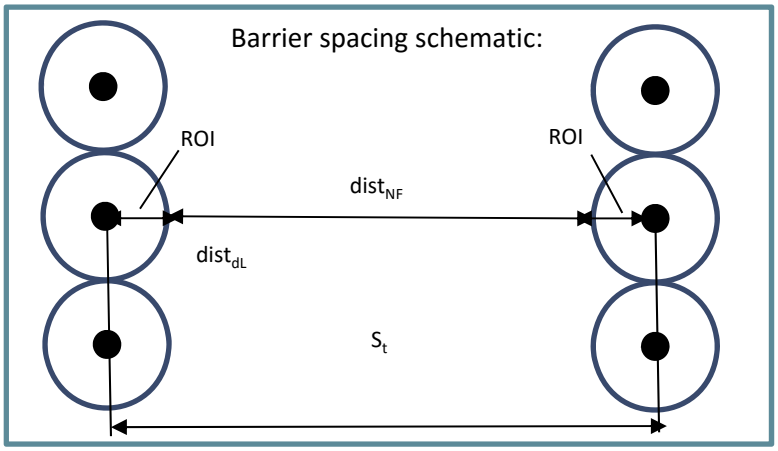
Transect Spacing & Timeframe (Pre-determined Timeframe)			
Years to Cleanup (t_{goal})	**20.0**	yr	**USER ENTER**
Sorption Retardation (Rf_{OC})	1.5		$Rf_{OC} = 1+\rho_b/\theta_i*K_d$
Porosity Retardation (Rf_{θ})	3.8		$Rf_{\theta} = 1+\theta_i/\theta_m$
Pore Flushes Required (NF)	20.1		$NF = \ln([C]_{GW}/[C]_{CL})*R$ R=dominant retardation factor (R_{foc} or Rf_{θ})
Groundwater Travel Time for one Pore Flush (t_{GW})	1.0	yr	t_{goal}/NF
Distance for Pore Flush ($dist_{NF}$)	22	ft	$dist_{NF}=t_{GW}*V_{GW}*365$ - uses calculated velocity if no tracer velocity data available
Transect Spacing (S_T)	52	ft	$S_T = 2*ROI+dist_{NF}$

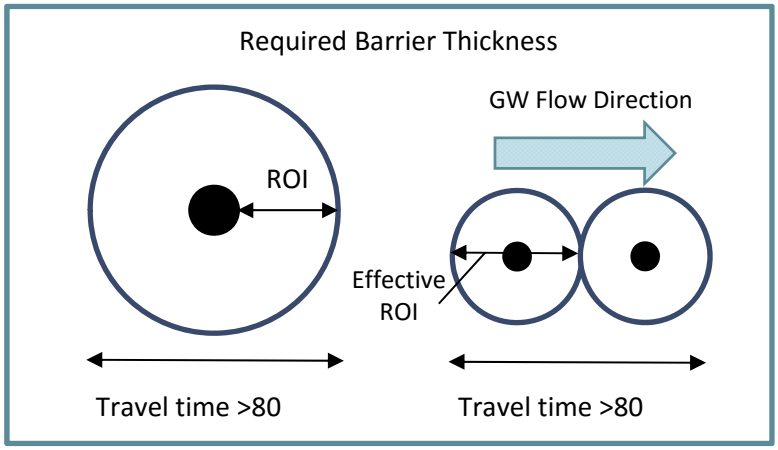
Source: Table 2.3, Remediation Hydraulics, pg 34

Material	Range of typical Total Porosities (θ) (m^3/m^3)	For ERD Design Tool: Porosity (θ) (m^3/m^3)	Range of Mobile Porosity (θ) (m^3/m^3)
Gravel	24 - 38	35%	15-30%
Coarse Sand	31 - 46	35%	10-25%
Fine Sand	26 - 53	38%	10-20%
Silt	34 - 61	40%	5-15%
Clay	34 - 60	45%	2-10%
Saprolite	---	40%	2-15%
Bedrock 1	---	5%	0.5-3%
Bedrock 2	---	10%	1-5%
Bedrock 3	---	15%	1-10%
Bedrock 4	---	20%	1-15%
Bedrock 5	---	25%	1-20%

Compound	CASRN	Molecular Weight	Henry's Law Constant atm·m^3/mol	Temperature/pH for Henry's Law Constant	Log K_{oc}	K_{oc}
Tetrachloroethene	127-18-4	165.83	0.0153	-	2.42	263.03
Trichloroethene	79-01-6	131.39	0.0091	-	1.81	64.57
cis-1, 2-Dichloroethene	156-59-2	96.94	0.00408	24°C	1.62	41.69
trans-1,2-Dichloroethene	156-60-5	96.94	0.00674	25°C	1.77	58.88
1,1-Dichloroethene	75-35-4	96.94	0.021	-	1.81	64.57
Vinyl Chloride	75-01-4	62.50	2.78E-02	-	0.39	2.45
Carbon Tetrachloride	56-23-5	153.82	0.024	20°C	2.35	223.87
Chloroform	67-66-3	119.38	0.0032	25°C	1.64	43.65
Chloroethane	75-00-3	64.52	0.0085	25°C	0.51	3.24
1,1,2,2-Tetrachloroethane	79-34-5	167.85	4.56E-04	25°C	2.07	117.49
1,1,1-Trichloroethane	71-55-6	133.40	0.0162	25°C	2.18	151.36
1,1,2-Trichloroethane	79-00-5	133.40	9.09E-04	25°C	1.75	56.23
1,1-Dichloroethane	75-34-3	98.96	0.00587	25°C	1.48	30.20
1,2-Dichloroethane	107-06-2	98.96	9.80E-04	25°C	1.15	14.13

Sources: Montgomery, J. H., and L. M. Welkom, (1990), Groundwater Chemicals Desk Reference, Lewis Publishers, Chelsea, Michigan.
Montgomery, J. H., (1991), Groundwater Chemicals Desk Reference, Volume 2, Lewis Publishers, Chelsea, Michigan.


Barrier spacing schematic:
ROI
ROI
dist$_{NF}$
dist$_{dL}$
S$_t$


Required Barrier Thickness
GW Flow Direction
ROI
Effective
ROI
Travel time >80
Travel time >80

Soil Type	ORM (wt oil / wt soil)
Clay	0.0095
Silt	0.0061
Fine Sand	0.0024
Coarse Sand	0.0004
Gravel	0.0002

APPENDIX D

EOS Material Safety Data Sheets

EOS Remediation, LLC

EOS 450 EOS LS EOS PRO EOS XR

SAFETY DATA SHEET

Section 1: Identification	
Product Name:	**EOS 450, EOS LS, EOS Pro, EOS XR**
Chemical Description:	Mixture; vegetable oil emulsion
Manufacturer:	EOS Remediation 1101 Nowell Road Raleigh, NC 27607 (P): 919-873-2204 www.eosremediation.com
Recommended Use:	Groundwater bioremediation (environmental applications)
Restricted Use:	Not for human consumption.
24-Hour Emergency Contact:	ChemTel: United States (P): 800-255-3924 ChemTel: International (P): 813-248-0585

Section 2: Hazard(s) Identification	
Hazard Classification:	Irritant (skin and eye)
Signal Word:	Warning
Hazard Statement(s):	Potential eye and skin irritant.
Pictograms:	
Precautionary Statement(s):	Not for human consumption. Do not store near excessive heat or oxidizers. Avoid contact with eyes and skin. Wear protective gloves and eye protection.

Section 3: Composition/Information on Ingredients		
Common Name(s)	**CAS NO.**	**% by Weight**
Soybean Oil*	8001-22-7	45-60
Emulsifiers Trade Secret[1,2]	Proprietary	1-10
Soluble Substrates Trade Secret[1,2]	Proprietary	4-8
Organic Substrate Trade Secret[1]	Proprietary	0-10
Food Additives/Preservatives Trade Secret[1]	Proprietary	0.1-1
Nutrients/Extracts Trade Secret[1,2]	Proprietary	0-1
Water	7732-18-5	10-49.9

1 – The precise composition of this product is proprietary information. A more complete disclosure will be provided to a physician in the event of a medical emergency.
2 – The soluble substrates and emulsifiers are generally recognized as safe for food contact.
* - Percentage of soybean oil varies by product.

Section 4: First-Aid Measures	
Routes of Exposure	**Emergency First-Aid Procedures**
Inhalation	Remove to fresh air.
Eye Contact	Flush with water for 15 minutes; if irritation persists see a physician.
Skin Contact	Wash with mild soap and water.
Ingestion	Product is non-toxic. If nausea occurs, induce vomiting and seek medical attention.

Section 5: Fire-Fighting Measures	
Extinguishing Media:	CO_2, foam, dry chemical Note: Water, fog and foam may cause frothing and spattering.
Special Fire Fighting Procedures:	Wear self-contained breathing apparatus and chemical resistant clothing. Use water spray to cool fire exposed containers.
Fire Hazard(s):	Burning will cause oxides of carbon.

Section 6: Accidental Release Measures	
Personal Precautions:	Avoid contact with eyes and skin. Do not consume.
Emergency Procedures:	N/A
Methods & Materials used for Containment:	Compatible granular absorbent
Cleanup Procedures:	Spread compatible granular absorbent over spill area and sweep using broom and pan; dispose in appropriate receptacle. Clean area with water.

Section 7: Handling and Storage	
Safe Handling & Storage:	Do not store near excessive heat or oxidizers.
Other Precautions:	Consumption of food and beverages should be prevented in work area where product is being used. After handling product, always wash hands and face thoroughly with soap and water before eating, drinking, or smoking.

Section 8: Exposure Controls/Personal Protection		
Exposure Limits		
OSHA PEL:	NE	
ACGIH TLV:	NE	
NIOSH REL:	NE	
Personal Protective Measures		
Respiratory Protection:	Not normally required. P95 respirator if aerosols might be generated.	
Hand Protection:	Protective gloves are recommended	
Eye Protection:	Recommended	
Engineering Measures:	Local exhaust ventilation if aerosols are generated	
Hygiene Measures:	Wash promptly with soap & water if skin becomes irritated from contact.	
Other Protection:	Wear appropriate clothing to prevent skin contact.	

Section 9: Physical and Chemical Properties			
Appearance:	White Liquid	Explosive Limits:	NE
Odor:	Vegetable Oil	Vapor Pressure:	NE
Odor Threshold:	NE	Vapor Density:	Heavier than air
pH:	Neutral	Relative Density:	0.96-0.98
Melting Point/Freezing Point:	Liquid at room temperature	Solubility:	Dispersible
Boiling Point:	212°F (100°C)	Partition coefficient:	NE
Flash Point:	>300°F (149°C)	Auto-ignition Temperature:	NE
Evaporation Rate:	NE	Decomposition Temperature:	N/A
Flammability (solid, gas):	NE	Viscosity:	500-1500 cP

NE – Not Established

Section 10: Stability and Reactivity	
Stability:	Stable
Incompatibility:	Strong acids and oxidizers
Hazardous Decomposition Products:	Thermal decomposition may produce oxides of carbon
Hazardous Reactions/Polymerization:	Will not occur
Conditions to Avoid:	None known

Section 11: Toxicological Information		
Likely Routes of Exposure:		Ingestion, dermal and eye contact
Signs and Symptoms of Exposure:		None known
Health Hazards		
	Acute:	Potential eye and skin irritant
	Chronic:	None known
Carcinogenicity		
	NTP:	No
	IARC:	No
	OSHA:	No

Section 12: Ecological Information (non-mandatory)
There is no data on the ecotoxicity of this product.

Section 13: Disposal Considerations (non-mandatory)	
Waste Disposal Methods:	Dispose of according to Federal and local regulations for non-hazardous waste. Recycle, if practical.

Section 14: Transport Information (non-mandatory)
The product is not covered by international regulation on the transport of dangerous goods.
No transport warning required.

Section 15: Regulatory Information (non-mandatory)
N/A

Section 16: Other Information	
Date of Preparation:	29 May 2014
Last Modified Date:	5 September 2014
The information contained herein is based on available data and is believed to be correct. However, EOS Remediation, LLC makes no warranty, expressed or implied, regarding the accuracy of this data or the results to be obtained thereof. This information and product are furnished on the condition that the person receiving them shall make his/her own determination as to the suitability of the product for his/her particular purpose.	

APPENDIX E

Field Log Examples

ARCADIS Design & Consultancy for natural and built assets

Water Sampling Log

Project _____ Project No. _____

Site Location _____ Date _____

Well No. _____ Replicate No. _____ Weather _____

Sample ID _____

Label Time _____

Sampling Personnel _____

Purge Data

Measuring Point (describe) _____

Sounded Well Depth (ft bmp) _____

Depth to Water (ft bmp) _____

Water Column in Well (ft) _____

Casing Diameter _____

Gallons in Well _____

Gallons Purged

Prior to Sampling _____

Pump Intake

Setting (ft bmp) _____

Pumping Rate (gpm) _____

Evacuation Method _____

Sampling Method _____

Pump Time On _____ Off _____

Field Parameters

	I	1V	2V	3V
Color				
Odor				
Appearance				
Temperature (°C)				
Conductivity (mS/cm^{c})				
DO (mg/L)				
pH (s.u.)				
ORP (mV)				
Turbidity (NTU)				
Time				
DTW (ft bmp)				

Remarks: _____

Parameters	Container Type	No.	Preservative

PID Reading _____

Well Casing Volumes

Gal./Ft.	$1^{1/4}$" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	$1^{1/2}$" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

INJECTION LOG

Enhanced Reductive Dechlorination Implementation
SWMU 39, Fort Stewart, Georgia

Date _____

Field Personnel _____

Injection Well ID	pH (s.u.)	Raw EVO (gallons)	Water Volume (gallons)	Solution Strength (water:EVO)	Pressure at Pump (psi)	Pressure at Wellhead (psi)	Injection Start Time	Injection Finish Time	Delivery Method	Notes/ Observations
Totals:										

Notes:
1 pail = 5 gallons
1 gallon of water = 8.345 pounds

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