Corrective Measures Effectiveness Report
Seventh Year Long-Term Monitoring
Former Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

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LIST OF ACRONYMS

1,1-DCE	1,1-dichloroethene
ADEM	Alabama Department of Environmental Management
ASTM	ASTM International
CA	Cleanup Agreement
cis-1,2-DCE	cis-1,2-dichloroethene
CMER	Corrective Measures Effectiveness Report
CMIR	Corrective Measures Implementation Report
COC	Chemical of concern
Draft CMIR	*Draft Corrective Measures Implementation Report, Former Small Weapons Repair Shop, Parcel 66(7)*
EBS	Environmental Baseline Study
ESE	Environmental Science & Engineering, Inc.
Final CMIP	*Final Corrective Measures Implementation Plan, Former Small Weapons Repair Shop, Parcel 66(7)*
Final CMIP Addendum	*Tech Memo Addendum* to the *Final CMIP*
IT	IT Corporation
LTM	Long-term monitoring
LUC	Land use control
LUCER	Land use control effectiveness report
McClellan	Former Fort McClellan
MDA	McClellan Development Authority
MES	Matrix Environmental Services, LLC
PDB	Passive Diffusion Bag
QA	Quality Assurance
QAP	*Quality Assurance Plan*
RBTL	Risk-Based Target Level
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI	Remedial Investigation
SAP	*Installation-Wide Sampling and Analysis Plan*
Shaw	Shaw Environmental, Inc.
SI	Site Investigation
Site	Former Small Weapons Repair Shop, Parcel 66(7)
TCE	Trichloroethene
trans-1,2-DCE	trans-1,2-dichloroethene
VOC	Volatile organic compound

EXECUTIVE SUMMARY

The purpose of this Corrective Measures Effectiveness Report (CMER) is to document the effectiveness of the remedial action for contaminated groundwater at the Former Small Weapons Repair Shop, Parcel 66(7) (Site), located at the former Fort McClellan (McClellan) in Anniston, Alabama, during the seventh year of Long-Term Monitoring (LTM) from May 2017 to February 2018. This report was prepared by Matrix Environmental Services, LLC (MES) on behalf of the McClellan Development Authority (MDA).

Groundwater samples were collected from four residuum wells, three transition wells, and one bedrock well in May 2017, August 2017, November 2017, and February 2018. Groundwater samples during the seventh year LTM were analyzed for the chemicals of concern (COCs) (cis-1,2-dichloroethene (DCE), trichloroethene (TCE), and vinyl chloride and their degradation products (1,1-DCE and trans-1,2-DCE) by EPA Method SW8260B. The groundwater sample results were compared to the groundskeeper risk-based target levels (RBTLs) to assess progress of the corrective measures at the Site.

Groundwater was encountered at the Site at shallow depths for all four rounds of LTM, with groundwater flowing radially outward from the site.

Only vinyl chloride exceeded the groundskeeper RBTLs during the seventh year of LTM, in residuum wells PPMP-66-MW02RR and PPMP66-MW06R, and in transition well PPMP-66-MW23R. All three of the wells are located in the vicinity of the estimated source area, south and southwest of the former Building 335. The lateral extent of vinyl chloride remained static in both the residuum and transition groundwater zones, compared to the baseline sampling event.

Groundwater data from the seventh year of LTM indicate that the corrective measures have been effective in reducing the COCs concentrations compared to the baseline sampling event. During the seventh year of LTM, the vinyl chloride plume for both the residuum and transition groundwater zones remained in the vicinity of the estimated source area.

To further assist the reduction in VOCs, the MDA plans to implement an additional insitu chemical oxidation (ISCO) event. The MDA believes the original application of potassium permanganate to bedrock of the treatment area may have reached the limit of effectiveness and additional treatment to reduce VOC concentrations below RBTLs is necessary. The MDA recently submitted an Underground Injection Control (UIC) permit application. Prior to implementing the additional remedy, and as described in a letter to the Department dated April 11, 2017, the MDA will submit a *Second Addendum to the Final Corrective Measures Implementation Plan* for the Former Small Weapons Repair Shop, Parcel 66(7).

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1.0 INTRODUCTION

The purpose of this CMER is to document the effectiveness of the remedial action for contaminated groundwater at the Former Small Weapons Repair Shop, Parcel 66(7) (Site), located at the former Fort McClellan (McClellan) in Anniston, Alabama, during the seventh year of LTM from May 2017 to February 2018. Figure 1-1 shows a site map of McClellan and Figure 1-2 shows a parcel location map of the Site. This report was prepared by MES on behalf of the MDA.

1.1 Report Purpose and Objectives

This CMER summarizes groundwater monitoring data collected from May 2017 to February 2018, to evaluate the effectiveness of corrective measures as outlined in the *Final Corrective Measures Implementation Plan, Former Small Weapons Repair Shop, Parcel 66(7) (Final CMIP)* (MES, 2007) and the *Tech Memo Addendum* to the *Final CMIP (Final CMIP Addendum)* (MES, 2009). Objectives for these monitoring events and this CMER include:

- Describe the activities performed at the Site during the seventh year of LTM.
- Summarize environmental sampling data from previous investigations and monitoring events and present analytical results for the May 2017 to February 2018 monitoring events.
- Compare the current results of the groundwater samples to historical groundwater results to evaluate the effectiveness of the corrective measures for COCs in groundwater at the Site.
- Compare the results to risk-based target levels (RBTLs) to assess whether continued monitoring of the corrective measures is necessary.

1.2 Report Organization

This CMER is organized as follows:

- Section 1.0 - summarizes the project background, purpose of the CMER, and report organization.
- Section 2.0 - presents a summary of the Site characterization.
- Section 3.0 - describes the activities conducted during the seventh year of LTM.
- Section 4.0 - presents the results of the seventh year of LTM.
- Section 5.0 - presents the summary, conclusions, and recommendations.
- Section 6.0 - provides the references cited in this report.
- Tables that support the CMER.
- Figures that support the CMER.
- Appendix A contains the Groundwater Sampling Documentation.
- Appendix B contains the Chain-of-Custody Forms.
- Appendix C contains the Analytical Data in tabular form and includes the laboratory data sheets.
- Appendix D contains the Data Quality Summary.

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2.0 SITE CHARACTERIZATION

This section summarizes the Site description and physical setting, land use, previous investigations, and corrective measures activities performed at the Site.

2.1 Site Description

The Site consists of 1.15 acres and is located in the central portion of McClellan at the intersection of Pappy Dunn Blvd and Fremont Road (Figure 1-2). Two buildings (Buildings 335 and 336) were located within the parcel boundary of the Site. Building 335 formerly housed the Small Weapons Repair Shop where weapons used for training exercises were stored, disassembled, and cleaned using various solvents. It is reported that the main part of Building 335 was used primarily for Tank Repair (IT Corporation [IT], 2002). Building 336, located just east of Building 335, historically was used as boiler plant and as a paint storage area.

The Small Weapons Repair Shop was built in 1941, although it is not known when operations began at this location. The operation was moved to the Consolidated Maintenance Facility (Building 350) in approximately 1991. From 1991 to circa 2003, Building 335 was used by the Alabama National Guard for boiler plant storage (Environmental Science & Engineering, Inc. [ESE], 1998). The history of the Site is described in more detail in the *Final CMIP* (MES, 2007).

Drainage ditches border the Site along Pappy Dunn Blvd to the north and Fremont Road to the west. Buildings 335 and 336 were removed from the Site in 2007 (MES, 2012).

2.2 Land Use and Land Use Controls

The proposed future land use for the Site is a light industrial and business park. Based on the presence of volatile organic compounds (VOC) in groundwater, MDA has implemented land use controls (LUCs) to limit exposure to groundwater. LUCs include a prohibition on consumptive use or direct contact with groundwater and installation of any well for extraction of groundwater for purposes of consumptive or other uses within the covenant boundary. In accordance with the Cleanup Agreement (CA) and Alabama Uniform Environmental Covenants Act, Code of Alabama 1975, §§ 35-19-1 to 35-19-14 and the Alabama Department of Environmental Management (ADEM) Admin Code r. 335-5, effective May 26, 2009, MDA filed Environmental Covenant No. FY 12-07.00 in Calhoun County Probate on March 7, 2013, which documents the LUCs. A copy of the recorded Environmental Covenant No. FY 12-07.00 was included as a slip page to the Department for incorporation into the Corrective Measures Implementation Report (CMIR) dated January 10, 2013. MDA will administer and enforce the LUCs and certify, after inspection, that the LUCs are in place in an Annual Land Use Controls Effectiveness Report (LUCER).

2.3 Summary of Previous Investigations

Investigative activities at the Site were conducted in multiple phases from 1998 to 2004 by several contractors to the Army and the JPA, including: ESE, IT, (formerly Shaw Environmental, Inc. currently APTIM), and MES. The previous investigations included:

- *1998 Environmental Baseline Study (EBS)* (ESE, 1998)
- *1999 Site Investigation (SI)* (IT, 2002)
- *2002 Remedial Investigation (RI)* (IT, 2002)
- *2004 RCRA Facility Investigation (RFI)* (MES, 2006)

These investigations led to the development of a Corrective Measures Implementation Plan in 2007 to address VOCs in the groundwater.

2.4 2010/2011 Corrective Measures Implementation

Based on the data assessment presented in the *Final CMIP* (MES, 2007) and *Final CMIP Addendum* (MES, 2009), cis-1,2-DCE, TCE, and vinyl chloride in groundwater were determined to be human health COCs at the Site. No ecological COCs were identified in media at the Site.

From October 2010 to February 2011, corrective measures were implemented at the Site as outlined in the *Final CMIP* (MES, 2007) and *Final CMIP Addendum* (MES, 2009) to reduce concentrations of VOCs in groundwater at the Site to levels acceptable for industrial use. Details of the corrective measures activities are documented in the *Draft Corrective Measures Implementation Report (CMIR), Former Small Weapons Repair Shop, Parcel 66(7)* (*Draft CMIR*) (MES, 2012).

Corrective measures activities included: 1) the abandonment of groundwater monitoring wells PPMP-66-MW02, PPMP-66-MW06, PPMP-66-MW12, PPMP-66-MW18, PPMP-66-MW23, and PPMP-66-MW24 located in the target treatment area, 2) anhydrous quicklime blending into the soil of the target treatment area to reduce residual COCs concentrations in the soil that may provide a source of contaminants to the groundwater plume, 3) direct application of solid potassium permanganate to the exposed bedrock during quicklime mixing activities to promote the chemical oxidation of the COCs in groundwater, 4) site restoration and re-vegetation, and 5) replacement of the residuum and transition groundwater monitoring wells in the target treatment area, that were previously abandoned, for use in LTM.

3.0 SUMMARY OF SEVENTH YEAR OF LTM ACTIVITIES

To meet the recommended actions outlined in the *Final CMIP* (MES, 2007) and the *Final CMIP Addendum* (MES, 2009) and provide data to evaluate the long-term performance of the corrective measures, groundwater at the Site was monitored on a quarterly basis during the seventh year of LTM following the implementation of corrective measures at the Site. The following activities were performed during the seventh year of LTM:

- Collected groundwater samples and groundwater level measurements from four residuum wells, three transition wells, and one bedrock well during four rounds of sampling conducted from May 2017 to February 2018.
- Analyzed the groundwater samples for the COCs (cis-1,2-DCE, TCE, and vinyl chloride) and their degradation products (1,1-DCE and trans-1,2-DCE) by EPA Method SW8260B.

3.1 Groundwater Sampling

Since the completion of the corrective measures performed at the Site in 2010 (see Section 2.4 for details), groundwater samples have been collected from eight LTM wells (listed below) on a quarterly basis.

Residuum Wells	Transition Wells	Bedrock Wells
PPMP-66-MW02RR	PPMP-66-MW17	PPMP-66-MW08
PPMP-66-MW06R	PPMP-66-MW23R	
PPMP-66-MW16	PPMP-66-MW24R	
PPMP-66-MW18R		

During the seventh year of LTM, groundwater samples were collected in May 2017, August 2017, November 2017, and February 2018.

3.1.1 Sampling Method

Passive Diffusion Bags (PDBs) were deployed in the LTM wells at the Site immediately following the previous sampling event. The PDBs are allowed to soak until the next sampling event, then removed from the monitoring well, and sampled. VOC vials are filled with contents of the PDB by piercing the lower end with a disposable, small-diameter discharge tube and allowing water to flow from the PDB into the VOC vials.

Laboratory-supplied sample bottles were filled, labeled, placed in a chilled cooler, and shipped under chain-of-custody procedures to EMAX Laboratories, Torrance, California. The chain-of-custody forms for the groundwater samples collected during the May 2017 to February 2018 sampling events are provided in Appendix B. The groundwater samples were analyzed for the COCs (cis-1,2-DCE, TCE, and vinyl chloride) and 1,1-DCE and trans-1,2-DCE using Method SW8260B (EPA, 1986).

Groundwater levels were measured to the nearest hundredth of a foot using a Solinst™ water level indicator and recorded. New PDBs, filled with ASTM International (ASTM) Type 1

deionized water were deployed following the water level measurements. The PDBs remained suspended in the LTM wells until the next scheduled sampling event. The monitoring well sample collection documentation is provided in Appendix A.

3.2 Management of Investigation Derived Waste

The aqueous investigation derived waste generated during the groundwater sampling was collected in a 55-gallon drum stored on-site, including the left-over water in the PDBs. The used, empty PDBs were placed in trash dumpsters for disposal.

3.3 Data Quality Review

MES reviewed the analytical data for the groundwater samples collected during the May 2017 to February 2018 monitoring events. The data quality review was performed in accordance with the *Quality Assurance Plan (QAP)* (MES, 2004) to assess compliance with the Quality Assurance (QA) objectives, and to assess hard copy and electronic deliverable consistency and integrity. Appendix C presents the analytical data collected during the May 2017 to February 2018 monitoring events.

3.4 Deviations from Planned LTM Activities

LTM activities were performed in accordance with the *Final CMIP Addendum* (MES, 2009). No deviations occurred during the four quarterly monitoring events.

4.0 RESULTS OF SEVENTH YEAR OF LTM ACTIVITIES

The activities conducted at the Site during the seventh year of LTM from May 2017 to February 2018 are presented in the following subsections.

4.1 Groundwater Sampling

This section discusses the results of the groundwater sampling events at the Site.

4.1.1 Groundwater Elevations

Groundwater elevations measured during the May 2017 to February 2018 groundwater sampling events are presented in Table 4-1. Figures 4-1 to 4-4 shows groundwater elevations and potentiometric elevations for the residuum groundwater zone for the May 2017 to February 2018 sampling events. Transition groundwater wells are located only in the source area and additionally are co-located with residuum wells, thus not providing any additional potentiometric elevation information. For this reason, no transition potentiometric maps were constructed. Furthermore, potentiometric groundwater maps were not constructed for the bedrock zone due to the limited number of LTM wells.

Groundwater was encountered at the Site at shallow depths for all four rounds during the seventh year of LTM. During the seventh year of LTM, groundwater in the residuum and transition zones appeared to flow radially from the site (Figures 4-1 to 4-4) and is consistent with past data.

To further aid in assessing groundwater flow at the Site, horizontal and vertical hydraulic gradients were calculated using the groundwater measurements during the seventh year of LTM, and are presented in Tables 4-2 and 4-3, respectively. The hydraulic gradients in the residuum, bedrock, and transition zones were low indicating a relatively flat water table, which is consistent with historical horizontal gradients calculated at the Site.

4.1.2 Groundwater Field Parameter Results

Field screening parameters, i.e., pH, conductivity, dissolved oxygen, turbidity, etc., are typically used by field personnel to assess when a well has been adequately purged and a representative groundwater sample can be collected. However, because PDBs were used for groundwater sampling at the Site, field screening parameters were not measured.

4.1.3 Analytical Data and Data Quality Review

The analytical data for the May 2017 to February 2018 monitoring events are provided in Appendix C. Samples were analyzed for VOCs by Method SW8260B. MES reviewed the analytical data in accordance with the *QAP* (MES, 2004). Based on the data quality review, the analytical data generated for these monitoring events are adequate to fulfill program objectives and are suitable for preparation of this report.

4.1.5 Summary of Groundwater Analytical Results

The analytical results for the groundwater samples collected during the seventh year of LTM are shown in Table 4-4. The historical analytical results from previous sampling events are also shown in Table 4-4.

VOC concentrations detected in the groundwater samples were compared to the groundskeeper RBTLs in Table 4-4. One COC (vinyl chloride) exceeded the groundskeeper RBTL in three groundwater wells from samples collected during the seventh year of LTM.

Samples collected from the LTM wells were used to 1) evaluate the effectiveness of the corrective measures, and 2) evaluate contaminant concentration changes over time that occurred in response to the corrective measures, and 3) assess the long-term performance of the corrective measures in reducing contaminant concentrations.

4.1.6 Concentration Trends Over Time

Figures 4-4 to 4-8 show the trends in concentrations over time for the COCs. As indicated in the trend figures and Table 4-4, wells PPMP-66-MW02RR, PPMP-66-MW06R, PPMP-66-MW23R, and PPMP-66-MW24R showed small fluctuations in concentrations during the seventh year of monitoring compared to the prior year.

The COC concentrations in wells PPMP-66-MW08, PPMP-66-MW16, PPMP-66-MW17, PPMP-66-MW18R, and PMP-66-MW24R were less than the groundskeeper RBTLs during this reporting period.

4.1.7 Distribution of Corrective Action COCs in Groundwater

Figures 4-9 and 4-10 present the estimated lateral extent of TCE and vinyl chloride concentrations exceeding the groundskeeper RBTLs for the residuum and transition groundwater zones at the Site for the baseline September/October 2010 sampling event. Figures 4-11 to 4-18 present the estimated lateral extent of TCE and vinyl chloride concentrations exceeding the groundskeeper RBTLs for the residuum and transition groundwater zones at the Site for the seventh year of LTM. The concentrations of vinyl chloride exceeding the groundskeeper RBTL in groundwater during this reporting period was located south and southwest of former Building 335.

During the seventh year of LTM, the vinyl chloride plume for both the residuum and transition groundwater zones remained in the vicinity of the estimated source area. The lateral extent of vinyl chloride exceeding groundskeeper RBTLs has reduced to two residuum wells and one transition well located to the south and southwest of former Building 335. PPMP-66-MW06R had vinyl chloride concentrations above groundskeeper RBTLs for two monitoring events (August 2017 and February 2018). Vinyl chloride concentrations were above groundskeeper RBTLs for all four events in monitoring wells PPMP-66-MW02RR and PPMP-66-MW23R.

5.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This section summarizes the activities performed and the results from groundwater monitoring during the seventh year of LTM at the Site, and presents conclusions and recommendations.

5.1 Summary of Activities

Activities conducted at the Site included:

- Collected quarterly groundwater samples and groundwater level measurements from four residuum wells, three transition wells, and one bedrock well from May 2017 to February 2018.
- Analyzed the groundwater samples for the COCs (cis-1,2-DCE, TCE, and vinyl chloride) and their degradation products (1,1-DCE and trans-1,2-DCE) by EPA Method SW8260B.
- Compared the results to RBTLs to assess progress of the corrective measures at the Site.

5.2 Summary of Results

Results from the seventh year of LTM at the Site indicate the following:

- Groundwater was encountered at the Site at shallow depths and the direction of flow was radially from the site.
- One of the three COCs (vinyl chloride) exceeded the groundskeeper RBTL in groundwater collected during the seventh year of LTM from May 2017 to February 2018.
- Vinyl chloride concentrations exceeding the groundskeeper RBTL during the seventh year of LTM were found in groundwater from two residuum wells and one transition well located in the vicinity of the estimated source area.
- The overall trend in Site groundwater COCs showed small fluctuations during the seventh year of LTM compared to the prior year.

5.3 Conclusions and Recommendations

Groundwater data from the seventh year of LTM indicates that the corrective measures have been effective in reducing the COC concentrations as compared to the baseline sampling event. During the seventh year of LTM, the vinyl chloride plume for both the residuum and transition groundwater zones remained in the vicinity of the estimated source area.

To further assist the reduction in VOCs, the MDA plans to implement an additional insitu chemical oxidation (ISCO) event. Based on the data from the last couple of years, the MDA believes the original application of potassium permanganate to the bedrock of the treatment area may have reached the limit of effectiveness and additional treatment to reduce VOC concentrations below RBTLs is necessary.

The MDA submitted an Underground Injection Control (UIC) permit application. Prior to implementing the additional remedy, and as described in a letter to the Department dated April 11, 2017, the MDA will submit a *Second Addendum to the Final Corrective Measures Implementation Plan* for the Former Small Weapons Repair Shop, Parcel 66(7).

6.0 REFERENCES

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Tables

Table 4-1: Groundwater Elevations, Seventh Year LTM
Small Weapons Repair Shop, Parcel 66(7), McClellan, Anniston, Alabama

Well Location	Well Type	Ground Elevation (feet msl)	TOC Elevation (feet msl)	Date Measured	Well Depth (feet BTOC)	Depth to Water (feet BTOC)	Groundwater Elevation (feet msl)
May 2017 Sampling Event							
PPMP-66-MW01	residuum	780.10	782.12	5/18/17	26.03	6.18	775.94
PPMP-66-MW02RR	residuum	780.59	780.37	5/18/17	23.50	3.49	776.88
PPMP-66-MW03	residuum	781.11	780.74	5/18/17	28.00	5.29	775.45
PPMP-66-MW04	residuum	779.99	781.90	5/18/17	26.50	5.20	776.70
PPMP-66-MW06R	residuum	781.45	781.41	5/18/17	27.80	4.01	777.40
PPMP-66-MW07	residuum	782.41	782.17	5/18/17	28.65	5.92	776.25
PPMP-66-MW08	bedrock	780.89	780.66	5/18/17	73.90	4.52	776.14
PPMP-66-MW09	bedrock	781.14	780.88	5/18/17	74.75	4.97	775.91
PPMP-66-MW10	bedrock	779.79	782.01	5/18/17	77.41	7.31	774.70
PPMP-66-MW11	bedrock	781.10	780.89	5/18/17	84.35	4.00	776.89
PPMP-66-MW13	bedrock	781.93	781.65	5/18/17	74.03	5.10	776.55
PPMP-66-MW14	residuum	781.92	781.70	5/18/17	20.71	5.68	776.02
PPMP-66-MW16	residuum	780.86	780.47	5/18/17	12.75	4.53	775.94
PPMP-66-MW17	transition	781.63	781.29	5/18/17	17.71	4.89	776.40
PPMP-66-MW18R	residuum	781.68	781.25	5/18/17	15.00	3.38	777.87
PPMP-66-MW21	residuum	780.78	780.44	5/18/17	14.40	4.08	776.36
PPMP-66-MW22	transition	780.79	780.44	5/18/17	24.65	4.28	776.16
PPMP-66-MW23R	transition	781.12	780.87	5/18/17	29.25	4.51	776.36
PPMP-66-MW24R	transition	781.57	781.20	5/18/17	34.15	5.04	776.16
August 2017 Sampling Event							
PPMP-66-MW01	residuum	780.10	782.12	8/7/17	26.03	5.80	776.32
PPMP-66-MW02RR	residuum	780.59	780.37	8/7/17	23.50	3.12	777.25
PPMP-66-MW03	residuum	781.11	780.74	8/7/17	28.27	4.89	775.85
PPMP-66-MW04	residuum	779.99	781.90	8/7/17	26.40	4.82	777.08
PPMP-66-MW06R	residuum	781.45	781.41	8/7/17	27.80	3.98	777.43
PPMP-66-MW07	residuum	782.41	782.17	8/7/17	28.65	5.48	776.69
PPMP-66-MW08	bedrock	780.89	780.66	8/7/17	73.90	4.09	776.57
PPMP-66-MW09	bedrock	781.14	780.88	8/7/17	74.80	4.49	776.39
PPMP-66-MW10	bedrock	779.79	782.01	8/7/17	77.40	6.70	775.31
PPMP-66-MW11	bedrock	781.10	780.89	8/7/17	84.35	3.43	777.46
PPMP-66-MW13	bedrock	781.93	781.65	8/7/17	74.30	4.75	776.90
PPMP-66-MW14	residuum	781.92	781.70	8/7/17	20.71	5.21	776.49
PPMP-66-MW16	residuum	780.86	780.47	8/7/17	12.75	4.21	776.26
PPMP-66-MW17	transition	781.63	781.29	8/7/17	17.71	4.48	776.81
PPMP-66-MW18R	residuum	781.68	781.25	8/7/17	15.00	3.01	778.24
PPMP-66-MW21	residuum	780.78	780.44	8/7/17	14.40	0.40	780.04
PPMP-66-MW22	transition	780.79	780.44	8/7/17	24.71	3.89	776.55
PPMP-66-MW23R	transition	781.12	780.87	8/7/17	29.25	4.16	776.71
PPMP-66-MW24R	transition	781.57	781.20	8/7/17	34.15	4.42	776.78
November 2017 Sampling Event							
PPMP-66-MW01	residuum	780.10	782.12	11/20/17	26.03	6.05	776.07
PPMP-66-MW02RR	residuum	780.59	780.37	11/20/17	23.50	3.09	777.28
PPMP-66-MW03	residuum	781.11	780.74	11/20/17	28.27	5.24	775.50
PPMP-66-MW04	residuum	779.99	781.90	11/20/17	26.40	6.17	775.73
PPMP-66-MW06R	residuum	781.45	781.41	11/20/17	27.80	4.06	777.35
PPMP-66-MW07	residuum	782.41	782.17	11/20/17	28.65	6.02	776.15
PPMP-66-MW08	bedrock	780.89	780.66	11/20/17	73.90	4.78	775.88
PPMP-66-MW09	bedrock	781.14	780.88	11/20/17	74.80	4.98	775.90
PPMP-66-MW10	bedrock	779.79	782.01	11/20/17	77.40	6.91	775.10

Table 4-1: Groundwater Elevations, Seventh Year LTM
Small Weapons Repair Shop, Parcel 66(7), McClellan, Anniston, Alabama

Well Location	Well Type	Ground Elevation (feet msl)	TOC Elevation (feet msl)	Date Measured	Well Depth (feet BTOC)	Depth to Water (feet BTOC)	Groundwater Elevation (feet msl)
PPMP-66-MW11	bedrock	781.10	780.89	11/20/17	84.35	5.25	775.64
PPMP-66-MW13	bedrock	781.93	781.65	11/20/17	74.30	5.35	776.30
PPMP-66-MW14	residuum	781.92	781.70	11/20/17	20.71	8.78	772.92
PPMP-66-MW16	residuum	780.86	780.47	11/20/17	12.75	3.04	777.43
PPMP-66-MW17	transition	781.63	781.29	11/20/17	17.71	4.66	776.63
PPMP-66-MW18R	residuum	781.68	781.25	11/20/17	15.00	2.03	779.22
PPMP-66-MW21	residuum	780.78	780.44	11/20/17	14.40	0.06	780.38
PPMP-66-MW22	transition	780.79	780.44	11/20/17	24.71	4.54	775.90
PPMP-66-MW23R	transition	781.12	780.87	11/20/17	29.25	3.95	776.92
PPMP-66-MW24R	transition	781.57	781.20	11/20/17	34.15	4.98	776.22
February 2018 Sampling Event							
PPMP-66-MW01	residuum	780.10	782.12	2/8/18	26.03	4.81	777.31
PPMP-66-MW02RR	residuum	780.59	780.37	2/8/18	23.50	3.04	777.33
PPMP-66-MW03	residuum	781.11	780.74	2/8/18	28.27	4.40	776.34
PPMP-66-MW04	residuum	779.99	781.90	2/8/18	26.40	4.59	777.31
PPMP-66-MW06R	residuum	781.45	781.41	2/8/18	27.80	3.64	777.77
PPMP-66-MW07	residuum	782.41	782.17	2/8/18	28.65	5.24	776.93
PPMP-66-MW08	bedrock	780.89	780.66	2/8/18	73.90	3.79	776.87
PPMP-66-MW09	bedrock	781.14	780.88	2/8/18	74.80	4.08	776.80
PPMP-66-MW10	bedrock	779.79	782.01	2/8/18	77.40	5.53	776.48
PPMP-66-MW11	bedrock	781.10	780.89	2/8/18	84.35	4.53	776.36
PPMP-66-MW13	bedrock	781.93	781.65	2/8/18	74.30	4.50	777.15
PPMP-66-MW14	residuum	781.92	781.70	2/8/18	20.71	4.94	776.76
PPMP-66-MW16	residuum	780.86	780.47	2/8/18	12.75	1.52	778.95
PPMP-66-MW17	transition	781.63	781.29	2/8/18	17.71	3.78	777.51
PPMP-66-MW18R	residuum	781.68	781.25	2/8/18	15.00	0.50	780.75
PPMP-66-MW21	residuum	780.78	780.44	2/8/18	14.40	0.40	780.04
PPMP-66-MW22	transition	780.79	780.44	2/8/18	24.71	3.58	776.86
PPMP-66-MW23R	transition	781.12	780.87	2/8/18	29.25	3.74	777.13
PPMP-66-MW24R	transition	781.57	781.20	2/8/18	34.15	4.29	776.91

Notes:
BTOC = Below top of casing
LTM = Long-term monitoring
msl = Mean sea level
TOC = Top of casing
* Water at top of casing

Table 4-2: Horizontal Hydraulic Gradients,
Seventh Year LTM
Small Weapons Repair Shop, Parcel 66(7),
McClellan, Anniston, Alabama

Upgradient Monitoring Well	Well Type	Groundwater Elevation	Downgradient Monitoring Well	Well Type	Groundwater Elevation	Estimated Groundwater Flow Direction	Horizontal Distance	Groundwater Elevation Difference (feet)	Horizontal Gradient (feet per foot)
May 2017									
PPMP-66-MW02RR	residuum	776.88	PPMP-66-MW01	residuum	775.94	west	96	0.94	0.010
PPMP-66-MW02RR	residuum	776.88	PPMP-66-MW07	residuum	776.25	east	150	0.63	0.004
PPMP-66-MW02RR	residuum	776.88	PPMP-66-MW06R	residuum	777.4	southeast	82	-0.52	-0.006
PPMP-66-MW02RR	residuum	776.88	PPMP-66-MW21	residuum	776.36	northwest	29	0.52	0.018
PPMP-66-MW18R	residuum	777.87	PPMP-66-MW14	residuum	776.02	southeast	55	1.85	0.033
PPMP-66-MW13	bedrock	776.55	PPMP-66-MW11	bedrock	776.89	northwest	71	-0.34	-0.005
PPMP-66-MW13	bedrock	776.55	PPMP-66-MW08	bedrock	776.14	west	134	0.41	0.003
PPMP-66-MW22	transition	776.55	PPMP-66-MW23R	transition	776.36	southeast	45	0.19	0.004
PPMP-66-MW17	transition	776.4	PPMP-66-MW24R	transition	776.16	west	47	0.24	0.005
PPMP-66-MW23R	transition	776.36	PPMP-66-MW24R	transition	776.16	southeast	68	0.20	0.003
							Average May 2017 Horizontal Gradient:		**0.007**
August 2017									
PPMP-66-MW02RR	residuum	777.25	PPMP-66-MW01	residuum	776.32	west	96	0.93	0.010
PPMP-66-MW02RR	residuum	777.25	PPMP-66-MW07	residuum	776.69	east	150	0.56	0.004
PPMP-66-MW02RR	residuum	777.25	PPMP-66-MW06R	residuum	777.43	southeast	82	-0.18	-0.002
PPMP-66-MW18R	residuum	778.24	PPMP-66-MW07	residuum	776.69	northeast	75	1.55	0.021
PPMP-66-MW14	residuum	776.49	PPMP-66-MW03	residuum	775.85	southwest	79	0.64	0.008
PPMP-66-MW13	bedrock	776.9	PPMP-66-MW11	bedrock	777.46	northwest	71	-0.56	-0.008
PPMP-66-MW13	bedrock	776.9	PPMP-66-MW08	bedrock	776.57	west	134	0.33	0.002
PPMP-66-MW17	transition	776.81	PPMP-66-MW24R	transition	776.78	west	47	0.03	0.001
PPMP-66-MW24R	transition	776.78	PPMP-66-MW23R	transition	776.71	northwest	68	0.07	0.001
							Average August 2017 Horizontal Gradient:		**0.004**
November 2017									
PPMP-66-MW02RR	residuum	777.28	PPMP-66-MW01	residuum	776.07	southwest	88	1.21	0.014
PPMP-66-MW02RR	residuum	777.28	PPMP-66-MW07	residuum	776.15	east	150	1.13	0.008
PPMP-66-MW02RR	residuum	777.28	PPMP-66-MW06R	residuum	777.35	southeast	82	-0.07	-0.001
PPMP-66-MW06R	residuum	777.35	PPMP-66-MW03	residuum	775.5	south	109	1.85	0.017
PPMP-66-MW18R	residuum	779.22	PPMP-66-MW14	residuum	772.92	southeast	55	6.30	0.114
PPMP-66-MW13	bedrock	776.3	PPMP-66-MW11	bedrock	775.64	northwest	71	0.66	0.009
PPMP-66-MW13	bedrock	776.3	PPMP-66-MW08	bedrock	775.88	west	134	0.42	0.003

Table 4-2: Horizontal Hydraulic Gradients,
Seventh Year LTM
Small Weapons Repair Shop, Parcel 66(7),
McClellan, Anniston, Alabama

Upgradient Monitoring Well	Well Type	Groundwater Elevation	Downgradient Monitoring Well	Well Type	Groundwater Elevation	Estimated Groundwater Flow Direction	Horizontal Distance	Groundwater Elevation Difference (feet)	Horizontal Gradient (feet per foot)
PPMP-66-MW08	bedrock	775.88	PPMP-66-MW11	bedrock	775.64	northeast	124	0.24	0.002
PPMP-66-MW24R	transition	776.22	PPMP-66-MW17	transition	776.63	east	47	-0.41	-0.009
PPMP-66-MW24R	transition	776.22	PPMP-66-MW23R	transition	776.92	northwest	68	-0.70	-0.010
PPMP-66-MW23R	transition	776.92	PPMP-66-MW22	transition	775.9	northwest	45	1.02	0.023
						Average November 2017 Horizontal Gradient:			**0.015**
February 2018									
PPMP-66-MW02RR	residuum	777.33	PPMP-66-MW01	residuum	777.31	southwest	88	0.02	0.000
PPMP-66-MW02RR	residuum	777.33	PPMP-66-MW07	residuum	776.93	east	150	0.40	0.003
PPMP-66-MW02RR	residuum	777.33	PPMP-66-MW06R	residuum	777.77	southeast	82	-0.44	-0.005
PPMP-66-MW18R	residuum	780.75	PPMP-66-MW06R	residuum	777.77	southwest	26	2.98	0.113
PPMP-66-MW18R	residuum	780.75	PPMP-66-MW14	residuum	776.76	southeast	55	3.99	0.072
PPMP-66-MW18R	residuum	780.75	PPMP-66-MW07	residuum	776.93	northeast	75	3.82	0.051
PPMP-66-MW18R	residuum	780.75	PPMP-66-MW02RR	residuum	777.33	west	104	3.42	0.033
PPMP-66-MW14	residuum	776.76	PPMP-66-MW03	residuum	776.34	southwest	79	0.42	0.005
PPMP-66-MW13	bedrock	777.15	PPMP-66-MW11	bedrock	776.36	northwest	71	0.79	0.011
PPMP-66-MW08	bedrock	776.87	PPMP-66-MW11	bedrock	776.36	northeast	124	0.51	0.004
PPMP-66-MW08	bedrock	776.87	PPMP-66-MW13	bedrock	777.15	east	134	-0.28	-0.002
PPMP-66-MW17	transition	777.51	PPMP-66-MW24R	transition	776.91	west	47	0.60	0.013
PPMP-66-MW23R	transition	777.13	PPMP-66-MW24R	transition	776.91	southeast	68	0.22	0.003
						Average February 2018 Horizontal Gradient:			**0.030**

Notes:
Elevations in feet above mean sea level.
LTM = Long-term monitoring

Table 4-3: Vertical Hydraulic Gradients, Sixth Year LTM
Small Weapons Repair Shop, Parcel 66(7),
McClellan, Anniston, Alabama

Well Cluster IDs	Well Zone	Midpoint of Screen (Elevation)	Groundwater Elevation				dL	dH				Vertical Hydraulic Gradient (ft per ft)			
			May17	Aug17	Nov17	Feb18		May17	Aug17	Nov17	Feb18	May17	Aug17	Nov17	Feb18
PPMP-66-MW06R	residuum	763.49	777.4	777.43	777.35	777.77	10.27	1.24	0.65	1.13	0.86	0.1207	0.0633	0.1100	0.0837
PPMP-66-MW24R	transition	753.22	776.16	776.78	776.22	776.91									
PPMP-66-MW02RR	residuum	764.49	776.88	777.25	777.28	777.33	6.51	0.52	0.54	0.36	0.20	0.079877	0.08295	0.0553	0.0307
PPMP-66-MW23R	transition	757.98	776.36	776.71	776.92	777.13									
PPMP-66-MW02RR	residuum	764.49	776.88	777.25	777.28	777.33	48.97	0.74	0.68	1.40	0.46	0.02	0.01389	0.0286	0.0094
PPMP-66-MW08	bedrock	715.52	776.14	776.57	775.88	776.87									
PPMP-66-MW23R	transition	757.98	776.36	776.71	776.92	777.13	42.46	0.22	0.14	1.04	0.26	0.0052	0.0033	0.0245	0.0061
PPMP-66-MW08	bedrock	715.52	776.14	776.57	775.88	776.87									
PPMP-66-MW18R	residuum	772.68	777.87	778.24	779.22	780.75	5.3	1.47	1.43	2.59	3.24	0.2774	0.2698	0.4887	0.6113
PPMP-66-MW17	transition	767.38	776.4	776.81	776.63	777.51									
PPMP-66-MW21	residuum	771.83	776.36	780.04	780.38	780.04	9.86	0.2	3.49	4.48	3.18	0.0203	0.3540	0.4544	0.3225
PPMP-66-MW22	transition	761.97	776.16	776.55	775.9	776.86									
PPMP-66-MW16	residuum	773.79	775.94	776.26	777.43	778.95	1.96	-0.42	-3.78	-2.95	-1.09	-0.2143	-1.9286	-1.5051	-0.5561
PPMP-66-MW21	residuum	771.83	776.36	780.04	780.38	780.04									

Notes:
ft/ft = feet per foot (a negative value indicates an upward vertical gradient)
ID = identification
LTM = Long-term monitoring
dH = difference in groundwater elevation (feet)
dL = distance between screened intervals (feet)

Elevations in feet above mean sea level.

Table 4-4: Groundwater Analytical Data for Constituents of Concern and Degradation Products
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

VOCs (µg/L)	GS RBTL	Residuum Well PPMP-66-MW02/PPMP-66-MW02R/PPMP-66-MW02RR *																															
		3/6/01	4/24/02	5/13/04	11/7/07	5/21/08	10/1/10	5/11/11	8/11/11	11/2/11	2/6/12	5/7/12	8/6/12	11/12/12	2/4/13	5/8/13	8/26/13	1/2/14	2/5/14	5/7/14	8/11/14	11/3/14	2/3/15	5/18/15	8/3/15	11/12/15	2/9/16	5/3/16	8/4/16	11/1/16	2/14/17	5/18/17	8/7/17	11/20/17	2/8/18
COCs		Historical					Baseline & First Year O&M					2nd Year O&M				3rd Year O&M				4th Year O&M				5th Year O&M				6th Year O&M				7th Year O & M			
Cis-1,2-Dichloroethene	991	7.5	9.5 (nv)	36	210	130	200	41	29	28	220	300	320	310	530	520	well damaged, could not be sampled	7.9	4.2	2.7	2.9	23	25	34	19	40	31	28	23	18	31	25	39	32	57
Trichloroethene	205	40	29 (nv)	74	480	27	170	34	52	45	87	130	160	140	530	450		3.1	1.0	0.49 J	0.31 J	12	19	35	10	29	27	28	11	6.9	24	21	23	19	31
Vinyl Chloride	3.86	60	67 (nv)	110	100	71	41	10	8.7	17	85	72	65	59	72	73		10	9.3	6.3	5.1	12	11	11	9.1	12	9.1	6.4	9.6	8.0	7.2	5.4	13	7.6	15
Degradation Products																																			
1,1-Dichloroethene	4800	9.2	11 (nv)	28	97	30	37	5	1.8	1.6	8	9.7	10	10	15	15		0.3 J	< 1.0	< 1.0	< 1.0	0.45 J	0.58 J	0.72 J	0.39 J	0.78 J	0.58 J	0.49 J	0.43 J	0.29 J	0.57 J	0.34 J	0.68 J	0.55 J	0.77 J
Trans-1,2-Dichloroethene	1950	6.4	6.7 nv)	10	13	7.2	7.6	12	8.7	15	72	97	110	100	280	220		2.1	1.0	0.57 J	0.71 J	7.1	9.7	15	6.9	18	15	13	8.5	5.1	16	11	19	15	27

VOCs (µg/L)	GS RBTL	PPMP-66-MW02RR			
		5/18/17	8/7/17	11/20/17	2/8/18
COCs		7th Year O & M			
Cis-1,2-Dichloroethene	991	25	39	32	57
Trichloroethene	205	21	23	19	31
Vinyl Chloride	3.86	5.4	13	7.6	15
Degradation Products					
1,1-Dichloroethene	4800	0.34 J	0.68 J	0.55 J	0.77 J
Trans-1,2-Dichloroethene	1950	11	19	15	27

VOCs (µg/L)	GS RBTL	Residuum Well PPMP-66-MW06/PPMP-66-MW06R *																															
		3/14/01	4/25/02	5/17/04	11/5/07	5/19/08	9/28/10	5/11/11	8/11/11	11/2/11	2/6/12	5/7/12	8/6/12	11/12/12	2/4/13	5/8/13	8/26/13	11/19/13	2/5/14	5/7/14	8/11/14	11/3/14	2/3/15	5/18/15	8/3/15	11/12/15	2/9/16	5/3/16	8/4/16	11/1/16	2/14/17	5/18/17	8/7/17	11/20/17	2/8/18
COCs		Historical					Baseline & First Year O&M					2nd Year O&M				3rd Year O&M				4th Year O&M				5th Year O&M				6th Year O&M				7th Year O & M			
Cis-1,2-Dichloroethene	991	500	720 (nv)	1600	810	700	580	47	71	46	34	38	56	48	30	25	31	41	29	21	32	33	15	14	17	14	12	11	24	25	11	13	16	14	16
Trichloroethene	205	9200	14000 (nv)	13000	2900	3900	2100	180	260	380	240	230	310	270	180	150	190	200	150	120	140	180	88	82	69	75	56	48	78	79	37 J	55	64	45	49
Vinyl Chloride	3.86	< 5	3.5 (nv)	10	26	26	27	2.2	4.8	8.5	5.8	6.1	10	9.9	5.4	4.0	7.9	14	6.9	4.6	7.0	10	3.4	3.1	3.6	1.8	2.0	2.4	7.1	6.5	3.0	3.8	5.7	3.5	6.1
Degradation Products																																			
1,1-Dichloroethene	4800	310	360 (nv)	300	46	52	44	4.5	7.6	2.8	1.6	1.6	2	1.8	1	0.91 J	1.1	1.3	0.65 J	0.49 J	0.86 J	0.76 J	0.39 J	0.33 J	0.47 J	0.34 J	0.32 J	0.29 J	0.64 J	0.59 J	0.34 J	0.29 J	0.66 J	0.45 J	0.49 J
Trans-1,2-Dichloroethene	1950	17	31 (nv)	130	34	33	30	2.1	4.9	12	7.6	7.9	13	13	8	6.3	8.8	12	7.2	5.9	7.9	9.8	4.9	4.3	4.5	3.8	3.2	2.8	6.0	5.9	2.9	3.3	5.2	3.3	3.8

VOCs (µg/L)	GS RBTL	Residuum Well PPMP-66-MW06R			
		5/18/17	8/7/17	11/20/17	2/8/18
COCs		7th Year O & M			
Cis-1,2-Dichloroethene	991	13	19	14	16
Trichloroethene	205	55	64	45	49
Vinyl Chloride	3.86	3.8	5.7	3.5	6.1
Degradation Products					
1,1-Dichloroethene	4800	0.29 J	0.66 J	0.45 J	0.49 J
Trans-1,2-Dichloroethene	1950	3.3	5.2	3.3	3.8

VOCs (µg/L)	GS RBTL	Bedrock Well PPMP-66-MW08																															
		3/6/01	5/12/04	5/20/08	10/1/10	5/11/11	8/11/11	11/2/11	2/6/12	5/7/12	8/6/12	11/12/12	2/4/13	5/8/13	8/26/13	11/19/13	2/5/14	5/7/14	8/11/14	11/3/14	2/3/15	5/18/15	8/3/15	11/12/15	2/9/16	5/3/16	8/4/16	11/1/16	2/14/17	5/18/17	8/7/17	11/20/17	2/8/18
COCs		Historical			Baseline & First Year O&M					2nd Year O&M				3rd Year O&M				4th Year O&M				5th Year O&M				6th Year O&M				7th Year O & M			
Cis-1,2-Dichloroethene	991	< 5	< 1.0	< 1.0	0.29 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	205	< 5	< 1.0	0.28 J	0.98 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	3.86	< 5	< 1.0	< 1.0	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Degradation Products																																			
1,1-Dichloroethene	4800	< 5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-Dichloroethene	1950	< 5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

VOCs (µg/L)	GS RBTL	Bedrock Well PPMP-66-MW08			
		5/18/17	8/7/17	11/20/17	2/8/18
COCs		7th Year O & M			
Cis-1,2-Dichloroethene	991	< 1	< 1	< 1	< 1
Trichloroethene	205	< 1	< 1	< 1	< 1
Vinyl Chloride	3.86	< 0.8	< 0.8	< 0.8	< 0.8
Degradation Products					
1,1-Dichloroethene	4800	< 1	< 1	< 1	< 1
Trans-1,2-Dichloroethene	1950	< 1	< 1	< 1	< 1

Table 4-4: Groundwater Analytical Data for Constituents of Concern and Degradation Products
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

VOCs (µg/L)	GS RBTL	Residuum Well PPMP-66-MW16																													
		10/17/01	5/13/04	11/7/07	5/20/08	10/1/10	5/11/11	8/11/11	11/2/11	2/6/12	5/7/12	8/6/12	11/12/12	2/4/13	5/8/13	8/26/13	11/19/13	2/5/14	5/7/14	8/11/14	11/3/14	2/3/15	5/18/15	8/3/15	11/12/15	2/9/16	5/3/16	8/4/16	11/1/16	2/14/17
COCs		Historical				Baseline & First Year O&M					2nd Year O&M				3rd Year O&M				4th Year O&M				5th Year O&M				6th Year O&M			
Cis-1,2-Dichloroethene	991	< 1.0	< 1.0	0.5 J	< 1.0	0.28 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.30 J	< 1.0
Trichloroethene	205	< 1.0	< 1.0	0.77 J	0.6 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	3.86	< 1.0	0.26 J	0.57 J	< 1.0	0.21 J	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Degradation Products																														
1,1-Dichloroethene	4800	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-Dichloroethene	1950	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

VOCs (µg/L)	GS RBTL	Residuum Well PPMP-66-MW16			
		5/18/17	8/7/17	11/20/17	2/8/18
COCs		7th Year O & M			
Cis-1,2-Dichloroethene	991	< 1	< 1	< 1	< 1
Trichloroethene	205	< 1	< 1	< 1	< 1
Vinyl Chloride	3.86	< 0.8	< 0.8	< 0.8	< 0.8
Degradation Products					
1,1-Dichloroethene	4800	< 1	< 1	< 1	< 1
Trans-1,2-Dichloroethene	1950	< 1	< 1	< 1	< 1

VOCs (µg/L)	GS RBTL	Transition Well PPMP-66-MW17																													
		5/20/04	5/20/08	9/29/10	5/11/11	8/11/11	11/2/11	2/6/12	5/7/12	8/6/12	11/12/12	2/4/13	5/8/13	8/26/13	11/19/13	2/5/14	5/7/14	8/11/14	11/3/14	2/3/15	5/18/15	8/3/15	11/12/15	2/9/16	5/3/16	8/4/16	11/1/16	2/14/17
COCs		Historical		Baseline & First Year O&M					2nd Year O&M				3rd Year O&M				4th Year O&M				5th Year O&M				6th Year O&M			
Cis-1,2-Dichloroethene	991	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	205	< 1.0	0.84 J	0.88 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	3.86	< 1.0	< 1.0	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Degradation Products																														
1,1-Dichloroethene	4800	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-Dichloroethene	1950	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

VOCs (µg/L)	GS RBTL	Transition Well PPMP-66-MW17						
		5/18/17	8/7/17	11/20/17	2/8/18			
COCs		7th Year O & M						
Cis-1,2-Dichloroethene	991	< 1	< 1	< 1	< 1			
Trichloroethene	205	< 1	< 1	< 1	< 1			
Vinyl Chloride	3.86	< 0.8	< 0.8	< 0.8	< 0.8			
Degradation Products								
1,1-Dichloroethene	4800	< 1	< 1	< 1	< 1			
Trans-1,2-Dichloroethene	1950	< 1	< 1	< 1	< 1			

VOCs (µg/L)	GS RBTL	Residuum Well PPMP-66-MW18/PPMP-66-MW18R *																													
		5/12/04	5/20/08	9/28/10	5/11/11	8/11/11	11/2/11	2/6/12	5/7/12	8/6/12	11/12/12	2/4/13	5/8/13	8/26/13	11/19/13	2/5/14	5/7/14	8/11/14	11/3/14	2/3/15	5/18/15	8/3/15	11/12/15	2/9/16	5/3/16	8/4/16	11/1/16	2/14/17
COCs		Historical		Baseline & First Year O&M					2nd Year O&M				3rd Year O&M				4th Year O&M				5th Year O&M				6th Year O&M			
Cis-1,2-Dichloroethene	991	< 1.0	< 1.0	< 1.0	7.5	14	3.6	1.3	3	7.6	5.2	2.2	2.2	5.2	4.9	1.5	2.1	1.0	2.3	0.26 J	0.67 J	2.3	< 1.0	< 1.0	0.72 J	2.8	1.7	< 1.0
Trichloroethene	205	< 1.0	4.6	< 1.0	21	42	10	3.4	4.5	2.2	0.58 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1 J	1.2	0.68 J	0.6 J	0.31 J	0.48 J	0.44 J	0.57 J	0.76 J
Vinyl Chloride	3.86	< 1.0	< 1.0	< 0.8	0.66 J	6.2	2.4	1	0.96	1.5	1.3	0.64 J	0.76 J	1.8	1.4	0.45 J	0.47 J	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	<0.8	< 0.8	< 0.8	< 0.8
Degradation Products																														
1,1-Dichloroethene	4800	< 1.0	< 1.0	< 1.0	0.25 J	0.32 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-Dichloroethene	1950	< 1.0	< 1.0	< 1.0	0.47 J	2.5	0.36 J	< 1.0	< 1.0	0.38 J	0.29 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

VOCs (µg/L)	GS RBTL	Residuum Well PPMP-66-MW18R			
		5/18/17	8/7/17	11/20/17	2/8/18
COCs		7th Year O & M			
Cis-1,2-Dichloroethene	991	0.28 J	1.1	0.73 J	0.37 J
Trichloroethene	205	0.74 J	0.76 J	0.34 J	0.28 J
Vinyl Chloride	3.86	< 0.8	< 0.8	< 0.8	< 0.8
Degradation Products					
1,1-Dichloroethene	4800	< 1	< 1	< 1	< 1
Trans-1,2-Dichloroethene	1950	< 1	< 1	< 1	< 1

Table 4-4: Groundwater Analytical Data for Constituents of Concern and Degradation Products
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

VOCs (µg/L)	GS RBTL	Transition Well PPMP-66-MW23/PPMP-66-MW23R *																							
		5/13/04	11/7/07	5/21/08	10/1/10	5/11/11	8/11/11	11/2/11	2/6/12	5/7/12	8/6/12	11/12/12	2/4/13	5/8/13	8/26/13	11/19/13	2/5/14	5/7/14	8/11/14	11/3/14	2/3/15	5/18/15	8/3/15	11/12/15	2/9/16	5/3/16	8/4/16	11/1/16	2/14/17
COCs		Historical			Baseline & First Year O&M					2nd Year O&M				3rd Year O&M				4th Year O&M				5th Year O&M				6th Year O&M			
Cis-1,2-Dichloroethene	991	1.6	110	75	58	92	550	180	130	93	180	170	150	130	210	270	170	170	210	220	180	140	91	160	160	80	110	110	170
Trichloroethene	205	1.4	89	290	39	77	940	550	370	200	210	180	130	75	120	170	120	110	140	210	120	100	62	110	120	66	76	67	120
Vinyl Chloride	3.86	9.2	16	20	6.6	4.5	15	14	20	19	39	33	31	32	48	59	31	41	39	54	33	26	20	28	23	12	19	16	30
Degradation Products																													
1,1-Dichloroethene	4800	2.2	34	57	18	31	96	45	29	16	19	16	11	8.2	11	14	10	5.4	7.1	6.2	10	7.5	4.1	9.6	9.2	4.0	6.0	5.1	11
Trans-1,2-Dichloroethene	1950	< 1.0	0.77 J	2.7	0.47 J	1.2	7.9	5.9	7.2	6.2	22	27	23	24	43	68	22	52	67	84	39	33	27	35	37	23	31	23	45

VOCs (µg/L)	GS RBTL	Transition Well PPMP-66-MW23R			
		5/18/17	8/7/17	11/20/17	2/8/18
COCs		7th Year O & M			
Cis-1,2-Dichloroethene	991	110	90	130	140
Trichloroethene	205	89	78	120	130
Vinyl Chloride	3.86	16	24	21	24
Degradation Products					
1,1-Dichloroethene	4800	4.9	5.6	7.5	11
Trans-1,2-Dichloroethene	1950	29	37	41	57

VOCs (µg/L)	GS RBTL	Transition Well PPMP-66-MW24/PPMP-66-MW24R *																							
		5/17/04	11/5/07	5/20/08	9/29/10	5/11/11	8/11/11	11/2/11	2/6/12	5/7/12	8/6/12	11/12/12	2/4/13	5/8/13	8/26/13	11/19/13	2/5/14	5/7/14	8/11/14	11/3/14	2/3/15	5/18/15	8/3/15	11/12/15	2/9/16	5/3/16	8/4/16	11/1/16	2/14/17
COCs		Historical			Baseline & First Year O&M					2nd Year O&M				3rd Year O&M				4th Year O&M				5th Year O&M				6th Year O&M			
Cis-1,2-Dichloroethene	991	130	290	260	80	0.47 J	0.47 J	0.39 J	0.46 J	0.39 J	0.64 J	0.55 J	0.32 J	0.4 J	0.55 J	0.54 J	0.36 J	0.46 J	0.57 J	0.55 J	0.42 J	0.64 J	0.84 J	0.51 J	0.46 J	0.80 J	1.1	0.95 J	0.74 J
Trichloroethene	205	5000	2500	4000	5.5	2.4	1.1	0.78 J	0.66 J	0.54 J	0.48 J	0.58 J	0.53 J	0.44 J	0.38 J	0.4 J	0.45 J	0.46 J	0.37 J	0.4 J	0.44 J	0.45 J	0.25 J	0.37 J	0.39 J	0.24 J	0.29 J	0.30 J	0.48 J
Vinyl Chloride	3.86	1.2	16	11	20	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Degradation Products																													
1,1-Dichloroethene	4800	180	100	98	4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-Dichloroethene	1950	8.2	7.6	8.5	1.2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

VOCs (µg/L)	GS RBTL	Transition Well PPMP-66-MW24R			
		5/18/17	8/7/17	11/20/17	2/8/18
COCs		7th Year O & M			
Cis-1,2-Dichloroethene	991	0.59 J	0.93 J	0.65 J	0.73 J
Trichloroethene	205	0.32 J	0.38 J	0.46 J	0.49 J
Vinyl Chloride	3.86	< 0.8	< 0.8	< 0.8	< 0.8
Degradation Products					
1,1-Dichloroethene	4800	< 1	< 1	< 1	< 1
Trans-1,2-Dichloroethene	1950	< 1	< 1	< 1	< 1

Notes:
< = Indicates the analyte was not detected at the reported quantitation limit shown.
µg/L = micrograms per liter
COCs = Constituents of concern
GS = Groundskeeper
(nv) = Not validated
LTM = Long-term monitoring
RBTL = Risk-Based Target Level (10^{-5} Risk)
VOCs = Volatile Organic Compounds

* Groundwater samples were collected from the original wells during the historical and baseline rounds (i.e., from March 2001 through October 2010).
Groundwater samples were collected from the replacement wells (noted with a "R" suffix) during the LTM rounds from May 2011 to the present, with the exception of well PPMP-66-MW02R.
Groundwater samples were collected from replacement well PPMP-66-MW02R from May 2011 through May 2013 and from the second replacement well PPMP-66-MW02RR from January 2014 to the present.

Lab Flag:
J = Estimated detection. The analyte is positively identified and the concentration is less than the reporting limit (RL) but greater than the method detection limit (MDL).

Result exceeds GS RBTL

Table 4-5: Trend in Total VOCs Concentrations
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Monitoring Well	Well Type	Sep/Oct 2010 (Baseline) Total VOCs	May 2017 (7th Year LTM, 1st Qtr) Total VOCs	Change in Total VOCs Compared to Baseline
PPMP-66-MW02R	residuum	456	63	-393
PPMP-66-MW06R	residuum	2,781	76	-2,705
PPMP-66-MW08	bedrock	1.27	ND	-1
PPMP-66-MW16	residuum	0.49	ND	0
PPMP-66-MW17	transition	0.88	ND	-1
PPMP-66-MW18R	residuum	ND	1	1
PPMP-66-MW23R	transition	122	250	128
PPMP-66-MW24R	transition	111	1	-110

Monitoring Well	Well Type	Sep/Oct 2010 (Baseline) Total VOCs	August 2017 (7th Year LTM, 2nd Qtr) Total VOCs	Change in Total VOCs Compared to Baseline
PPMP-66-MW02R	residuum	456	95	-361
PPMP-66-MW06R	residuum	2,781	95	-2686
PPMP-66-MW08	bedrock	1.27	ND	-1.27
PPMP-66-MW16	residuum	0.49	ND	-0.49
PPMP-66-MW17	transition	0.88	ND	-0.88
PPMP-66-MW18R	residuum	ND	2	2
PPMP-66-MW23R	transition	122	235	113
PPMP-66-MW24R	transition	111	2	-109

Monitoring Well	Well Type	Sep/Oct 2010 (Baseline) Total VOCs	November 2017 (7th Year LTM, 3rd Qtr) Total VOCs	Change in Total VOCs Compared to Baseline
PPMP-66-MW02RR	residuum	456	75	-381
PPMP-66-MW06R	residuum	2,781	76	-2,705
PPMP-66-MW08	bedrock	1.27	ND	-1.27
PPMP-66-MW16	residuum	0.49	ND	-0.49
PPMP-66-MW17	transition	0.88	ND	-0.88
PPMP-66-MW18R	residuum	ND	2	2
PPMP-66-MW23R	transition	122	320	198
PPMP-66-MW24R	transition	111	2	-109

Monitoring Well	Well Type	Sep/Oct 2010 (Baseline) Total VOCs	February 2018 (7th Year LTM, 4th Qtr) Total VOCs	Change in Total VOCs Compared to Baseline
PPMP-66-MW02RR	residuum	456	131	-325
PPMP-66-MW06R	residuum	2,781	76	-2,705
PPMP-66-MW08	bedrock	1.27	ND	-1.27

Table 4-5: Trend in Total VOCs Concentrations
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

PPMP-66-MW16	residuum	0.49	ND	-0.49
PPMP-66-MW17	transition	0.88	ND	-0.88
PPMP-66-MW18R	residuum	ND	1	0.76
PPMP-66-MW23R	transition	122	362	240
PPMP-66-MW24R	transition	111	2	-109

Notes:
ND = Not detected
NS = Not sampled
VOCs = Volatile Organic Compounds
-- = Not calculated because VOCs were not detected or sample not collected

Figures

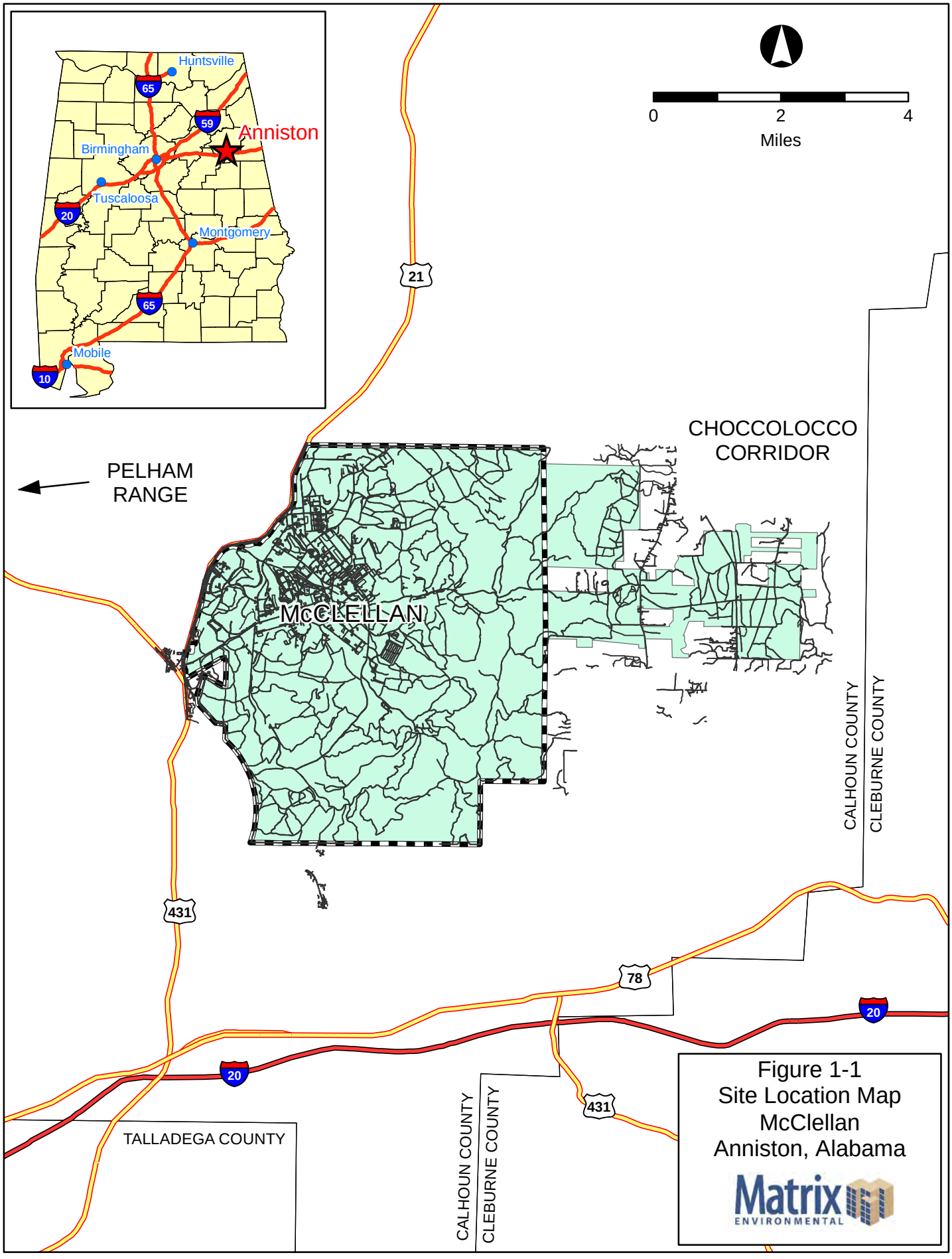

Figure 1-1
Site Location Map
McClellan
Anniston, Alabama

Matrix ENVIRONMENTAL

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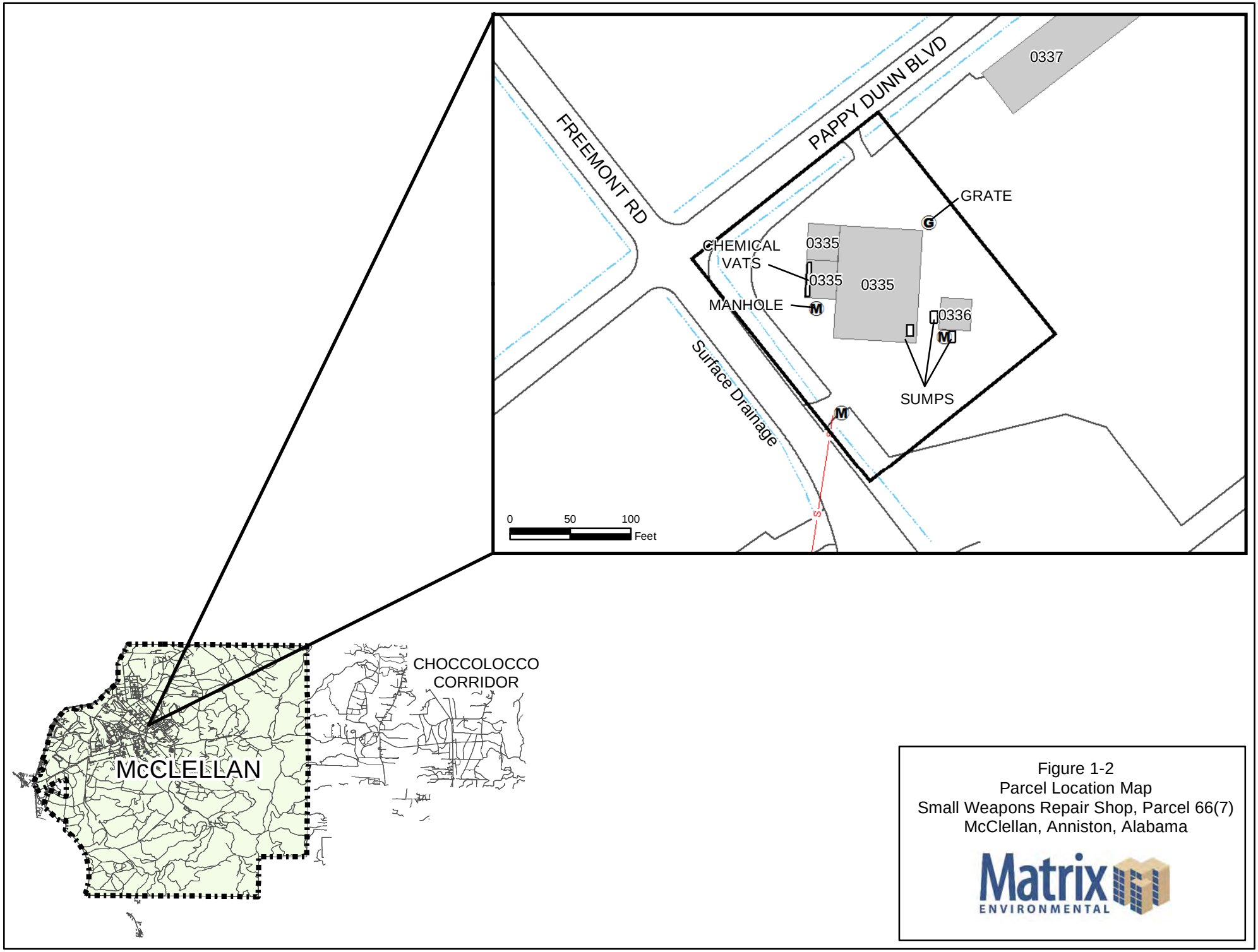

Figure 1-2
Parcel Location Map
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

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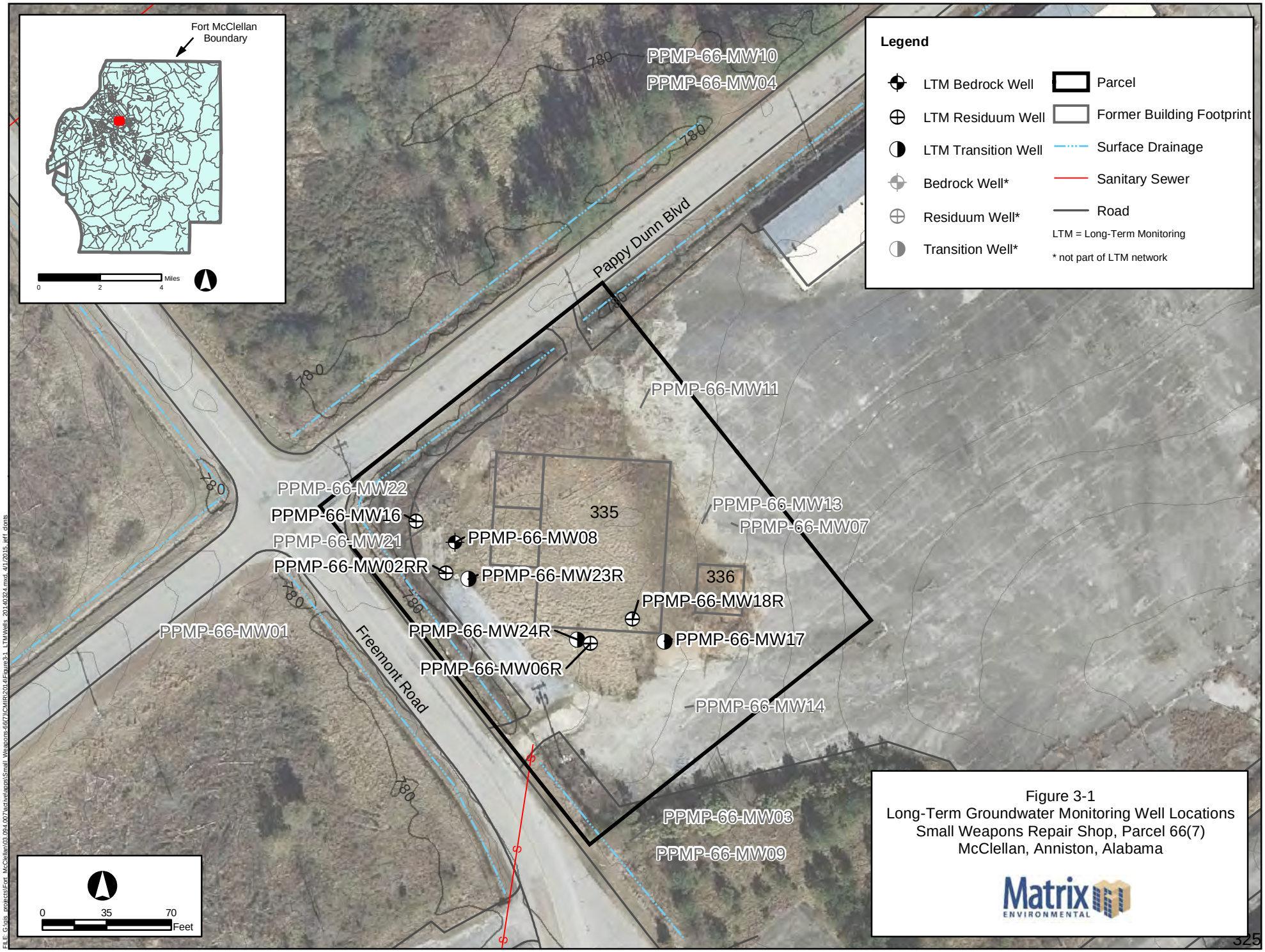

Figure 3-1
Long-Term Groundwater Monitoring Well Locations
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

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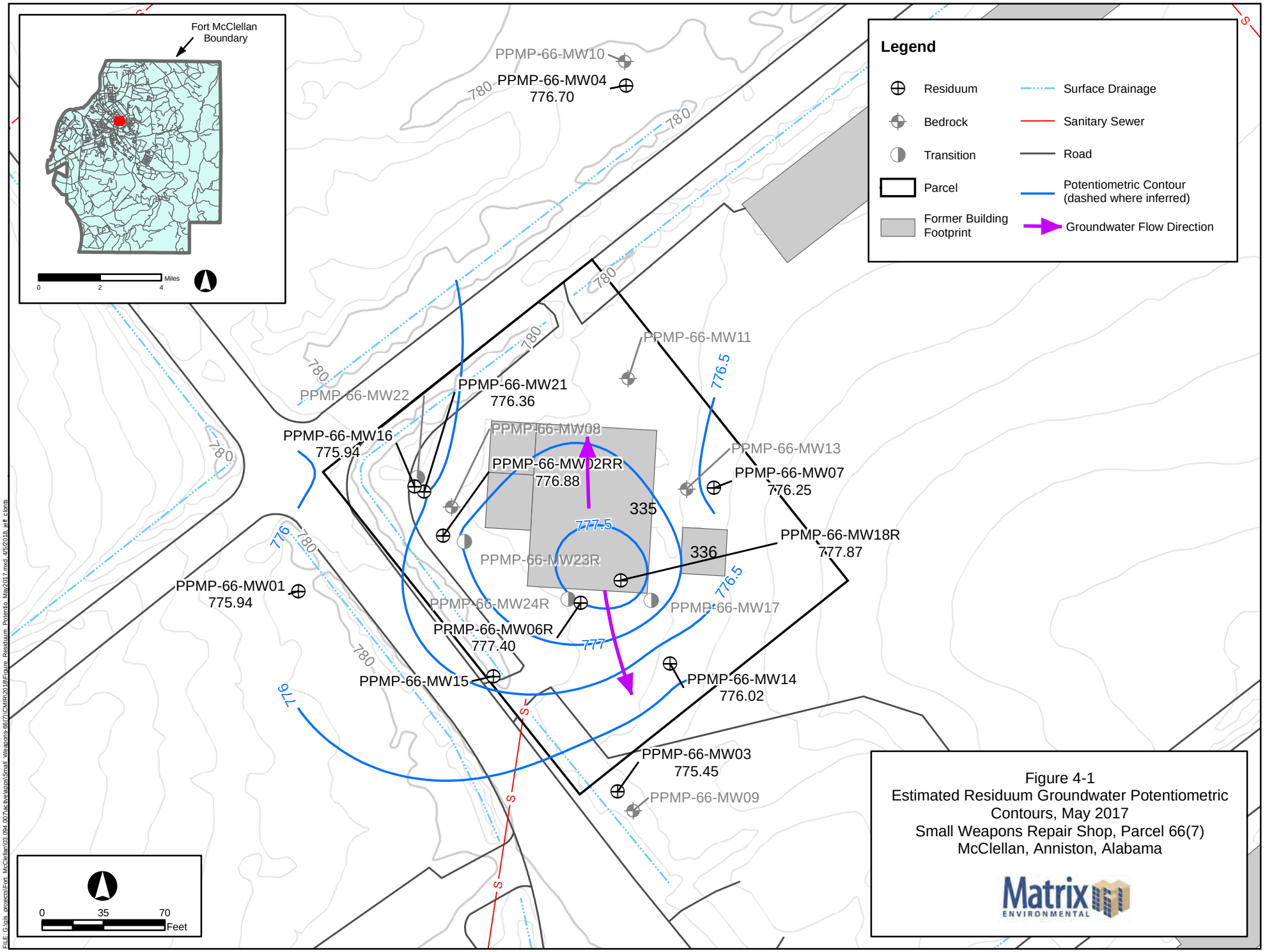


Figure 4-1
Estimated Residuum Groundwater Potentiometric Contours, May 2017
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

FILE: G:\gis_projects\Fort_McClellan\03.094.007\active\gpro\Small_Weapons-66(7)\CMR2018\Figure_Residuum_Potentio_May2017.mxd 4/5/2018 arft cjons

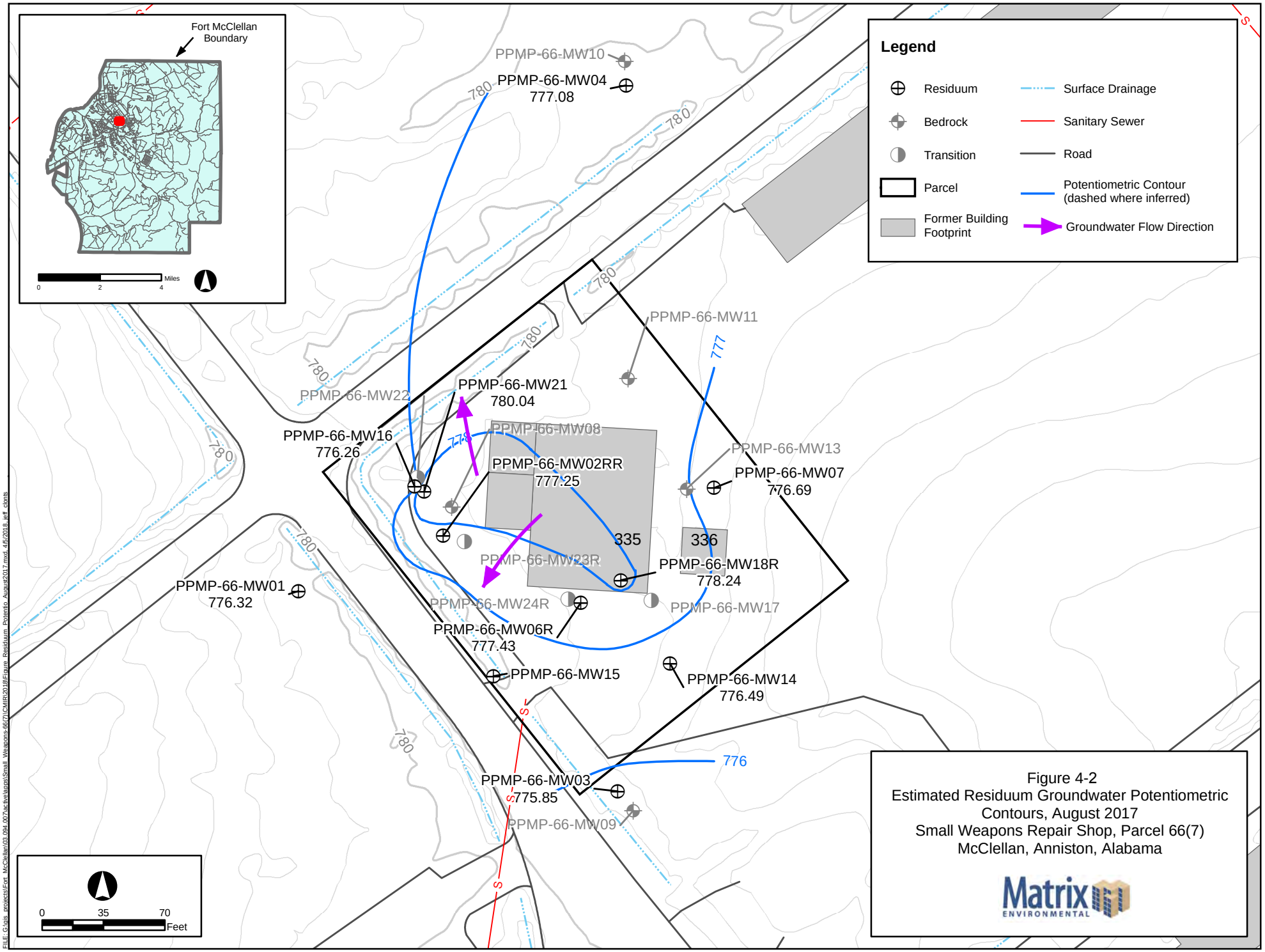


Figure 4-2
Estimated Residuum Groundwater Potentiometric Contours, August 2017
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

FILE: G:\gis_projects\Fort_McClellan\03.094.007\active\reports\Small_Weapons-66(7)\CMR2018\Figure_Residuum_Potentio_August2017.mxd, 4/5/2018, jeff_cloris

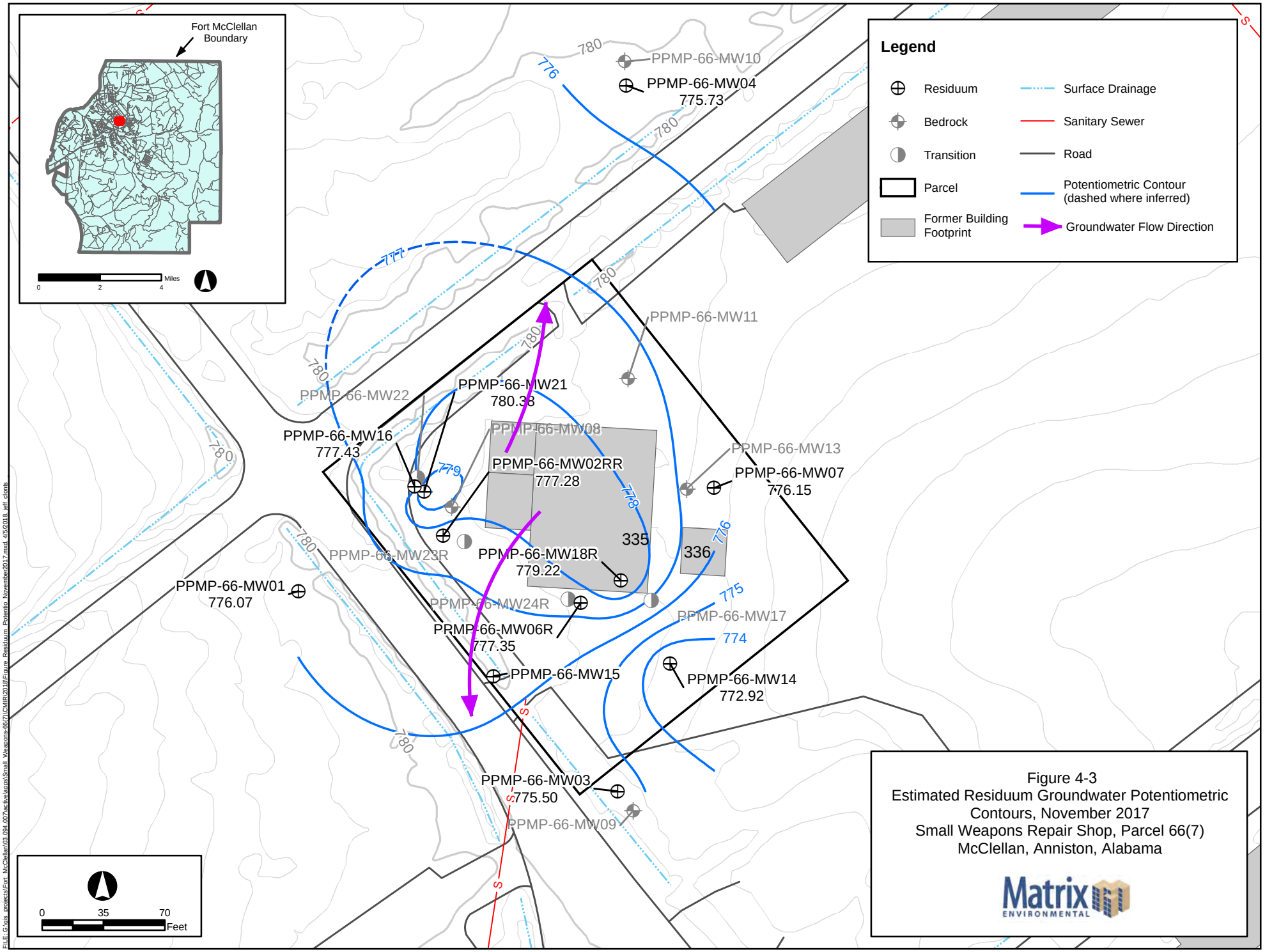


Figure 4-3
Estimated Residuum Groundwater Potentiometric Contours, November 2017
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

FILE: G:\gis_projects\Fort_McClellan\03_094_007\active\reports\Small_Weapons-66(7)\CMR2018\Figure_Residuum_Potentio_November2017.mxd, 4/5/2018, jeff.clonts

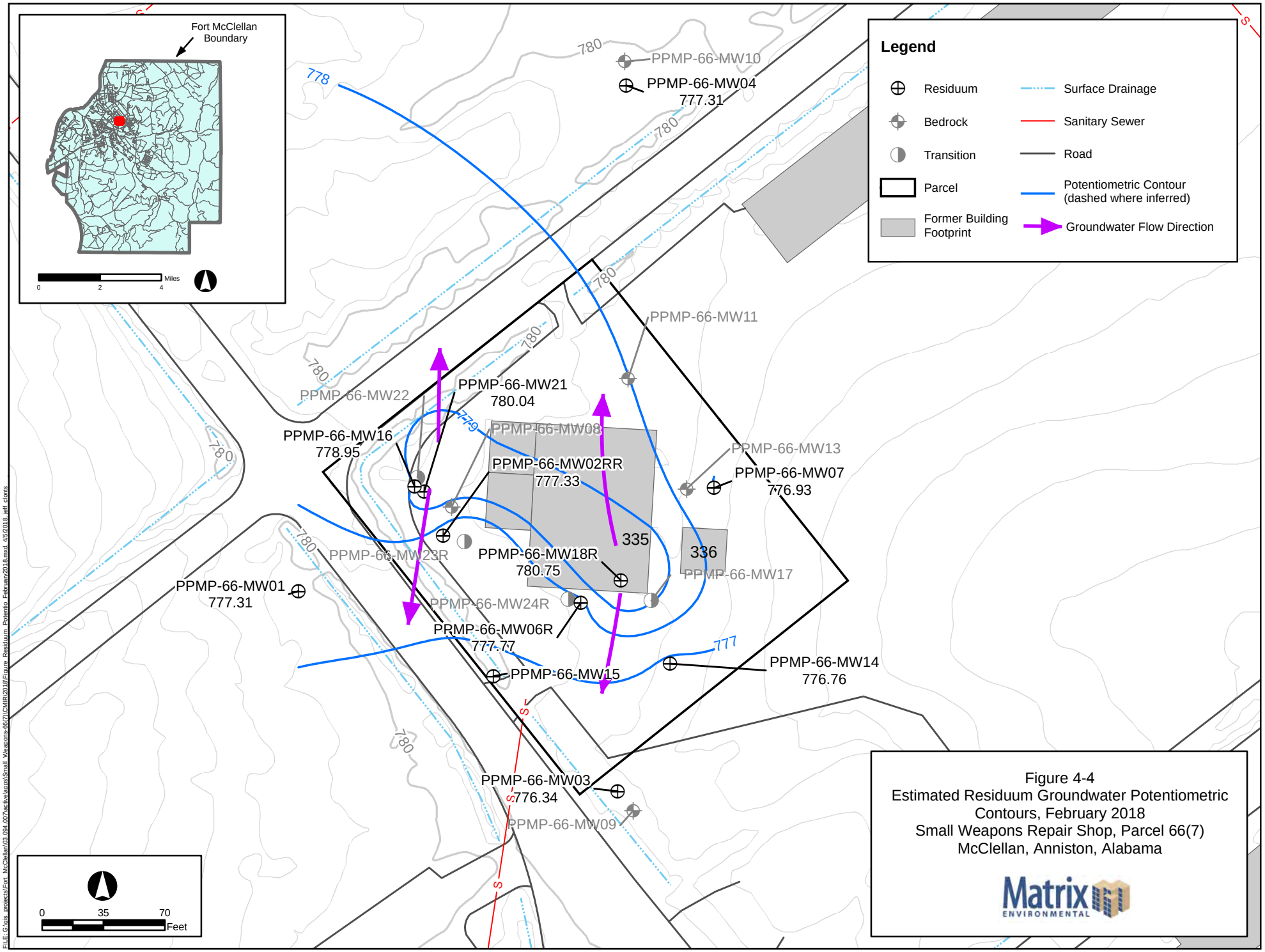


Figure 4-4
Estimated Residuum Groundwater Potentiometric Contours, February 2018
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

FILE: G:\gis_projects\Fort_McClellan\09_094_007\active\reports\Small_Weapons-66(7)\CMR2018\Figure_Residuum_Potentio_February2018.mxd 4/5/2018 jeff_clonts

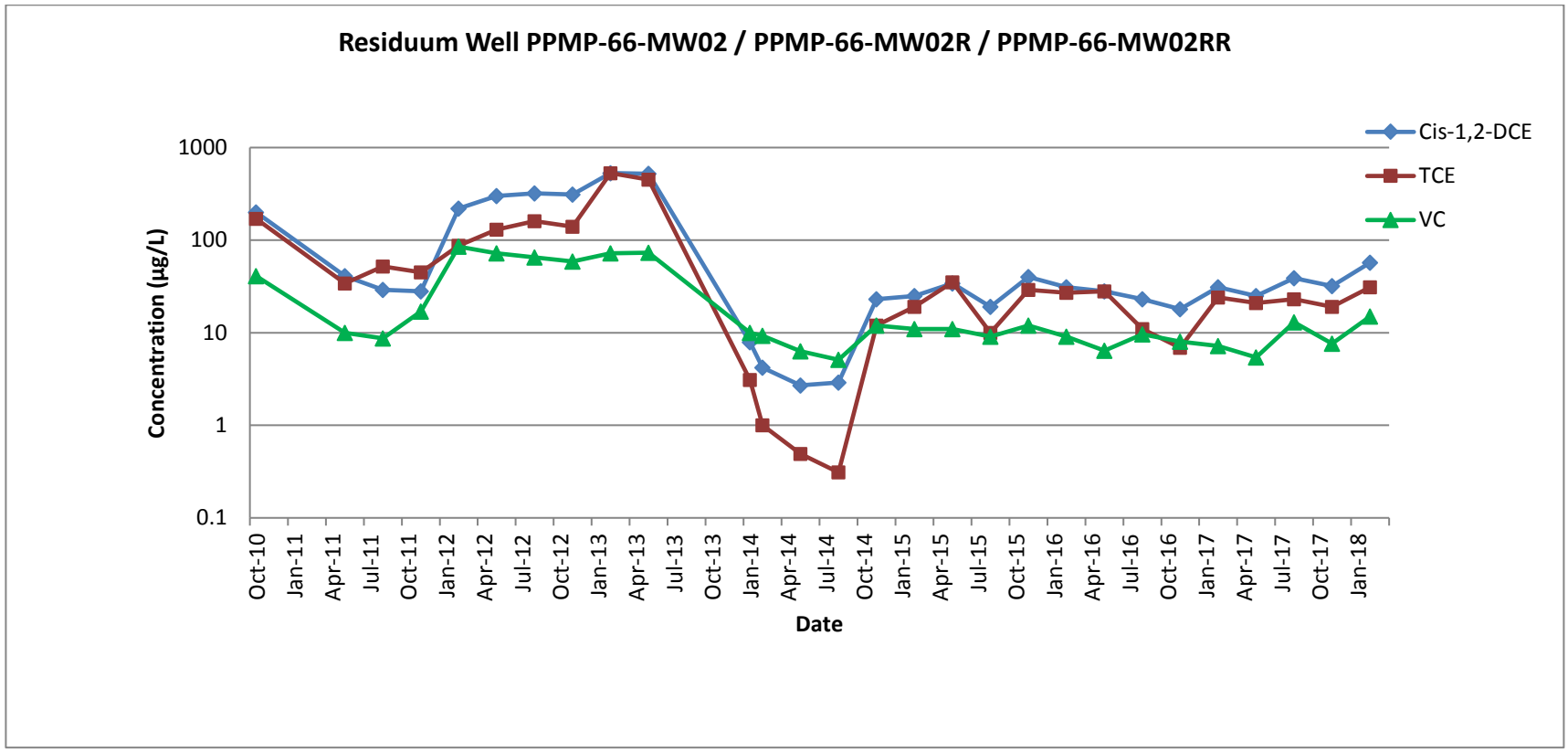


Figure 4-5: Volatile Concentrations in Residuum Well
PPMP-66-MW02 / PPMP-66-MW02R/ PPMP-66-MW02RR
Small Weapons, Parcel 66(7)
McClellan, Anniston, Alabama

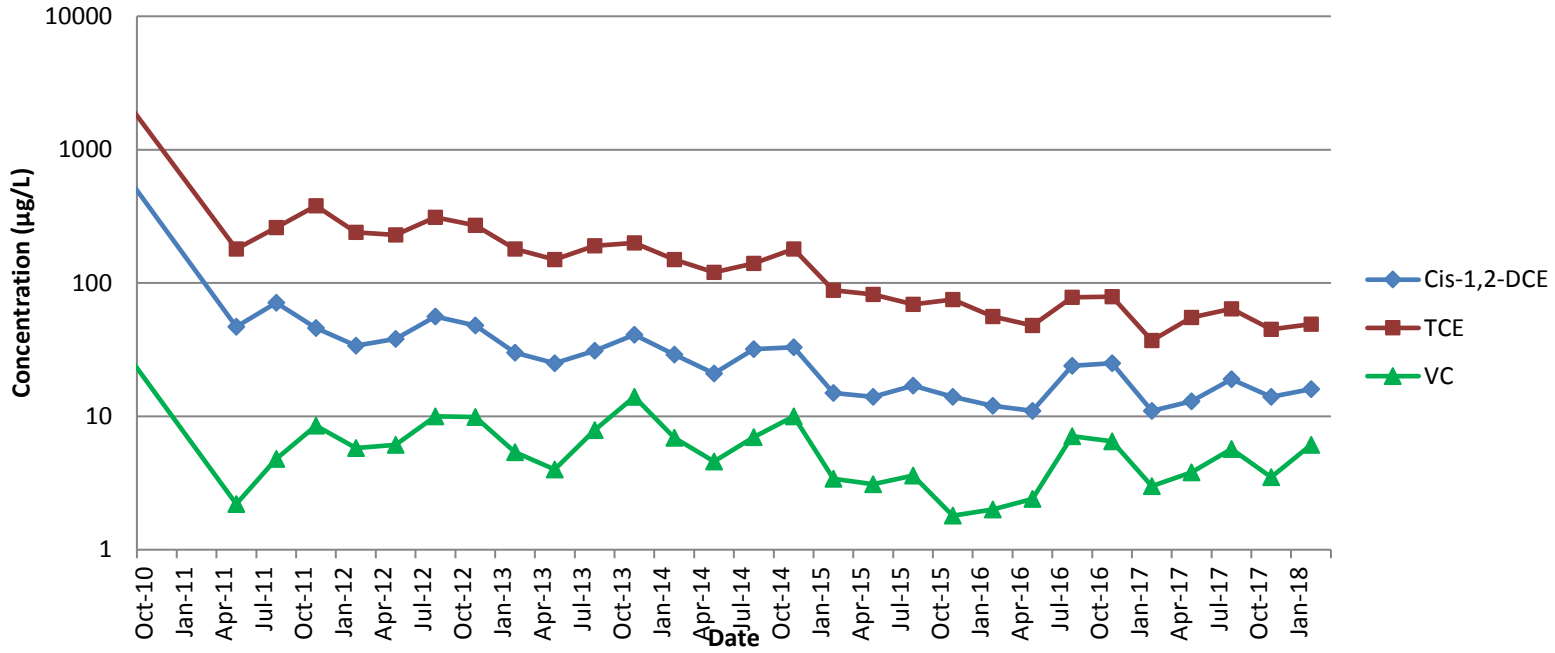


Figure 4-6: Volatile Concentrations in Residuum Well
PPMP-66-MW06 / PPMP-66-MW06R
Small Weapons, Parcel 66(7)
McClellan, Anniston, Alabama

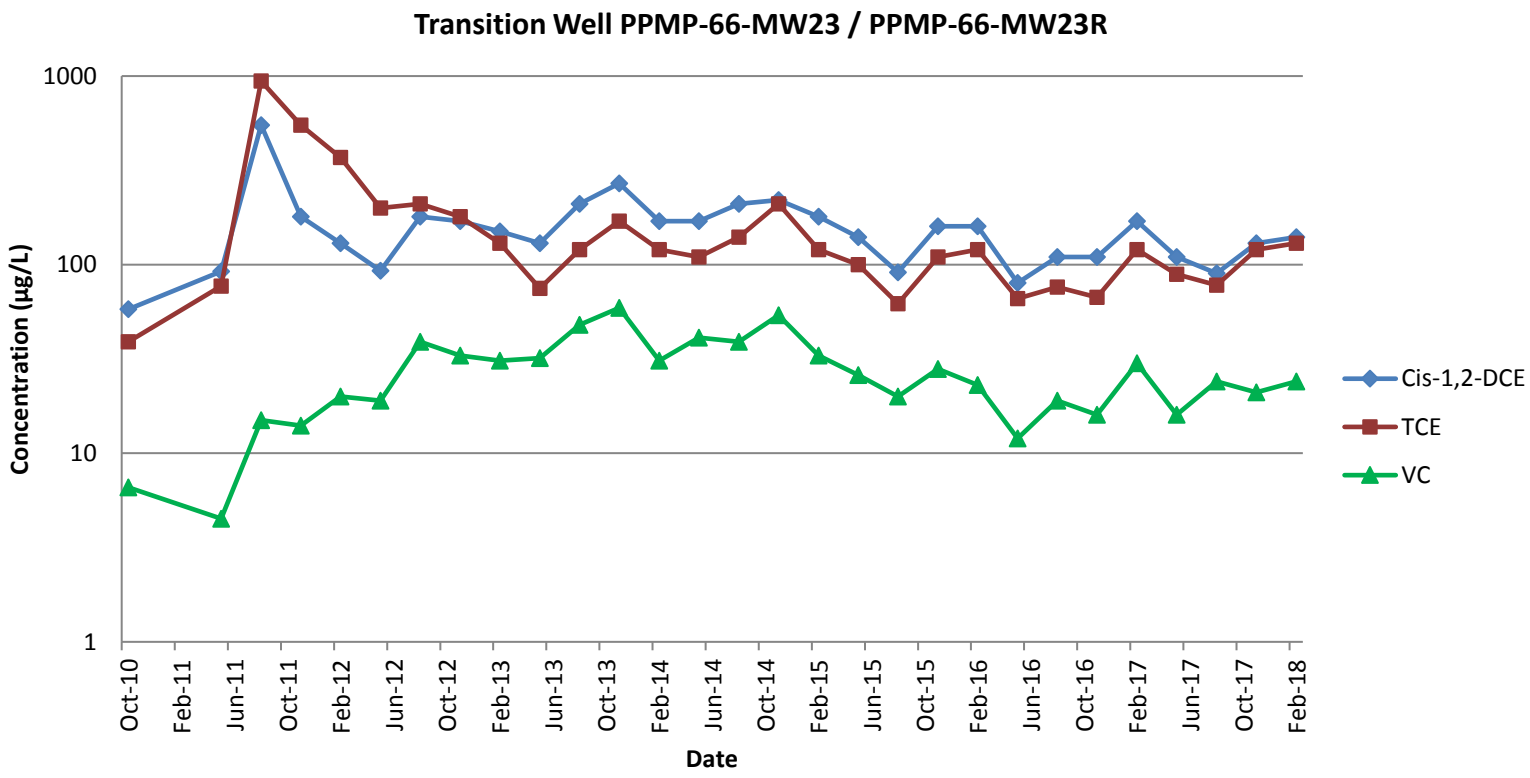


Figure 4-7: Volatile Concentrations in Transition Well
PPMP-66-MW23 / PPMP-66-MW23R
Small Weapons, Parcel 66(7)
McClellan, Anniston, Alabama

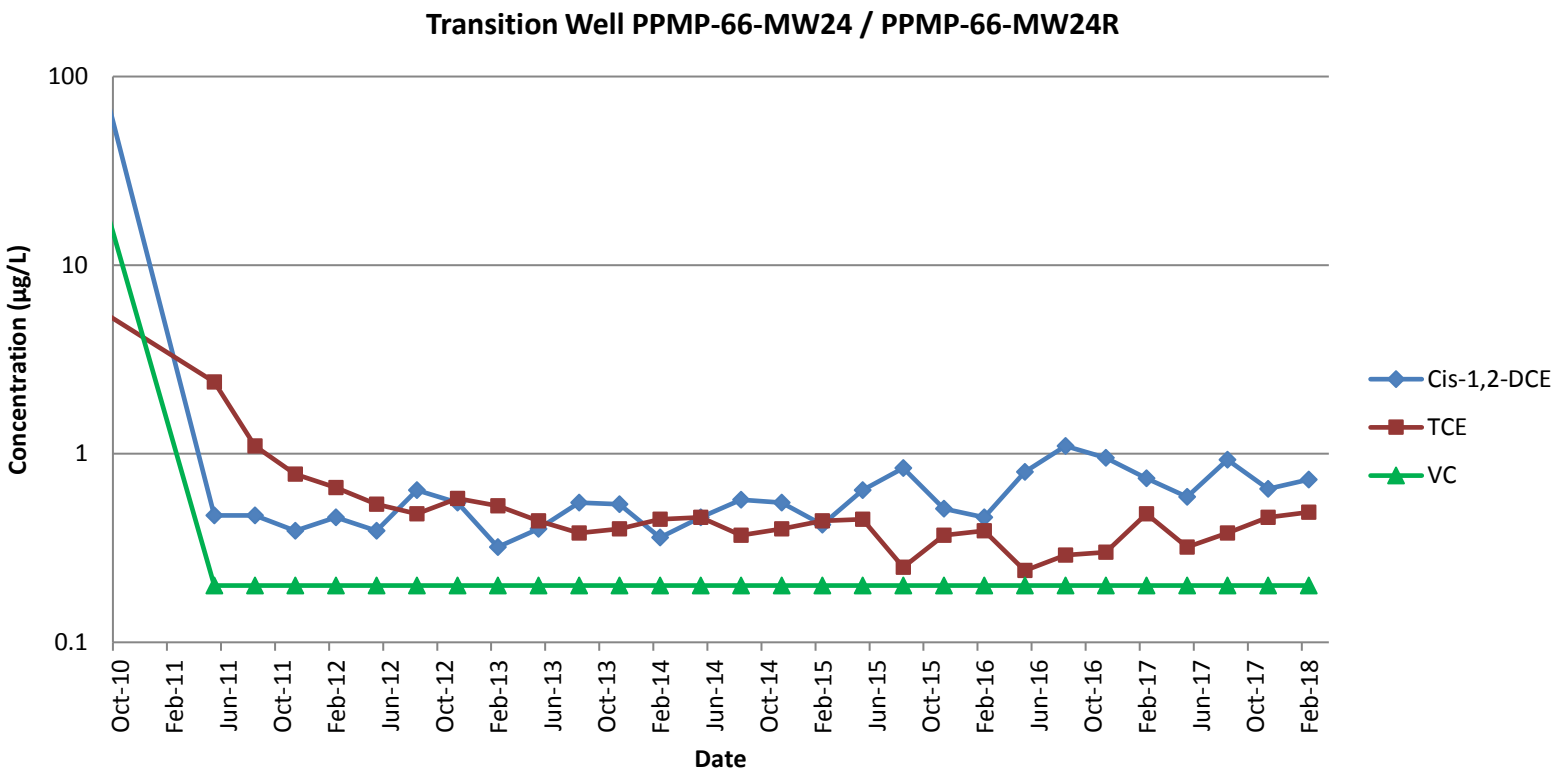


Figure 4-8: Volatile Concentrations in Transition Well
PPMP-66-MW24 / PPMP-66-MW24R
Small Weapons, Parcel 66(7)
McClellan, Anniston, Alabama

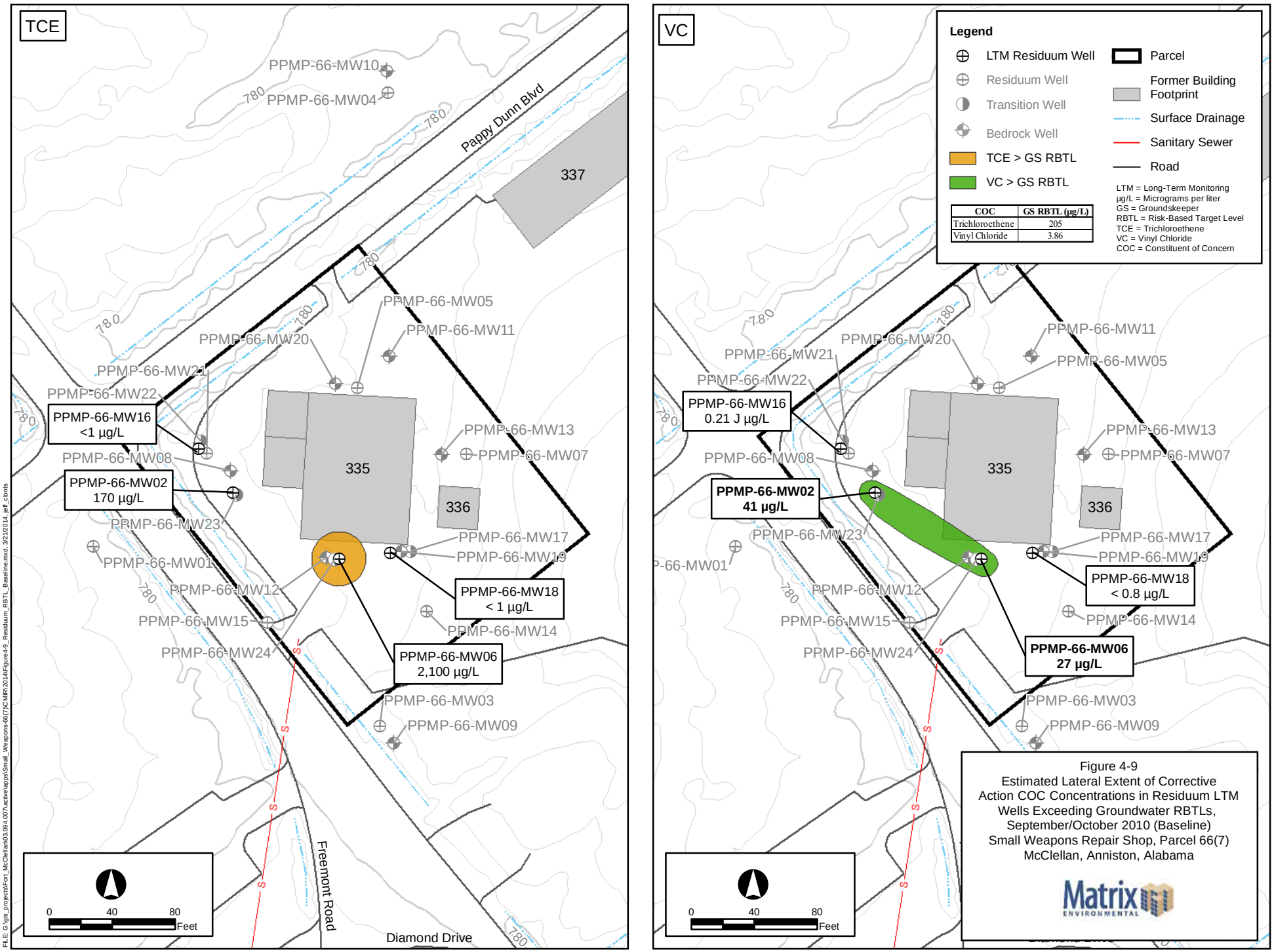
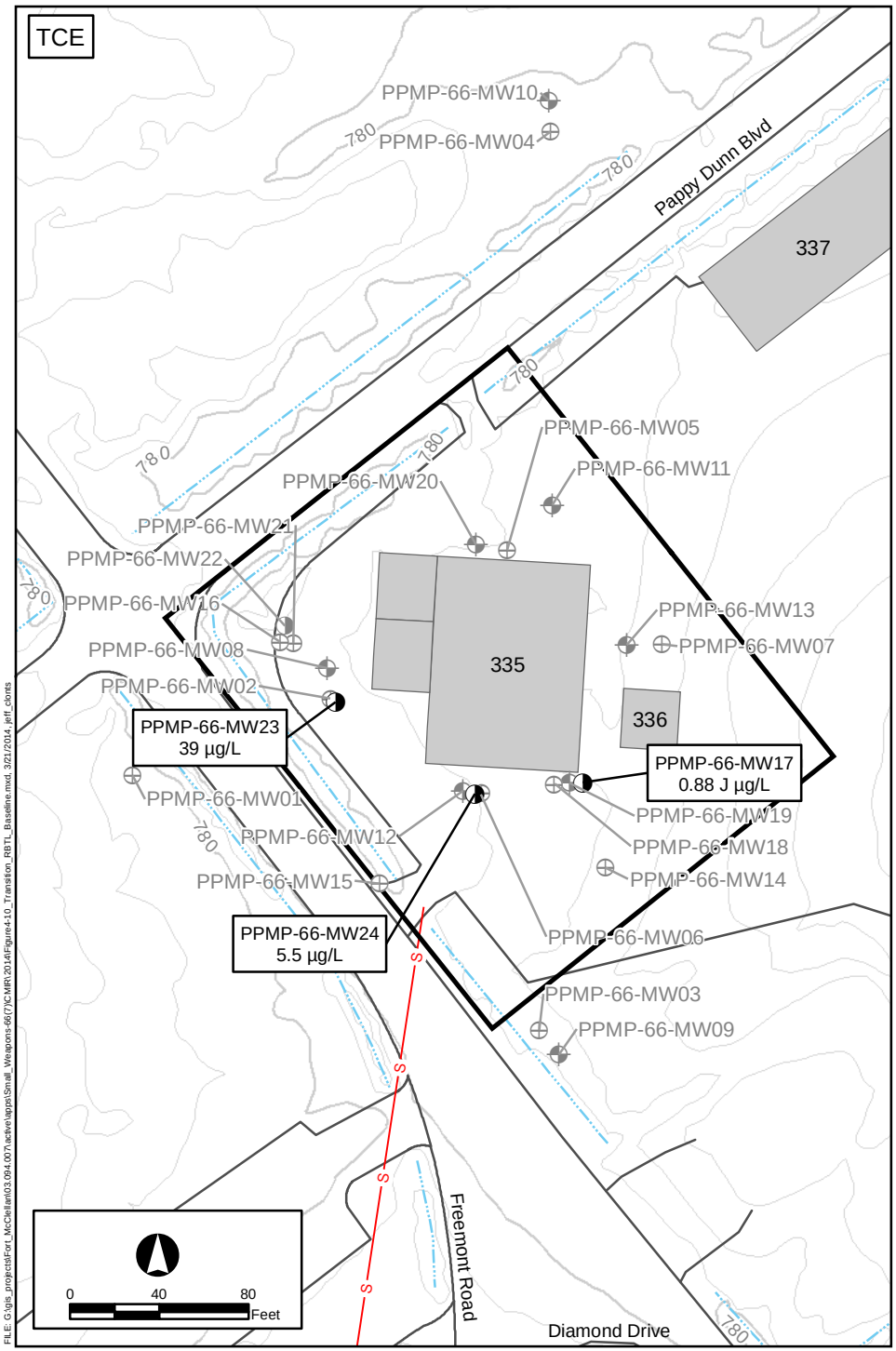


Figure 4-9
Estimated Lateral Extent of Corrective Action COC Concentrations in Residuum LTM Wells Exceeding Groundwater RBTLs, September/October 2010 (Baseline)
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

FILE: G:\gis_projects\Fort_McClellan\03.094.007\active\appt\Small_Weapons-66(7)\CMR\2014\Figure4-9_Residuum_RBTL_Baseline.mxd, 3/21/2014, jeff_cbnts



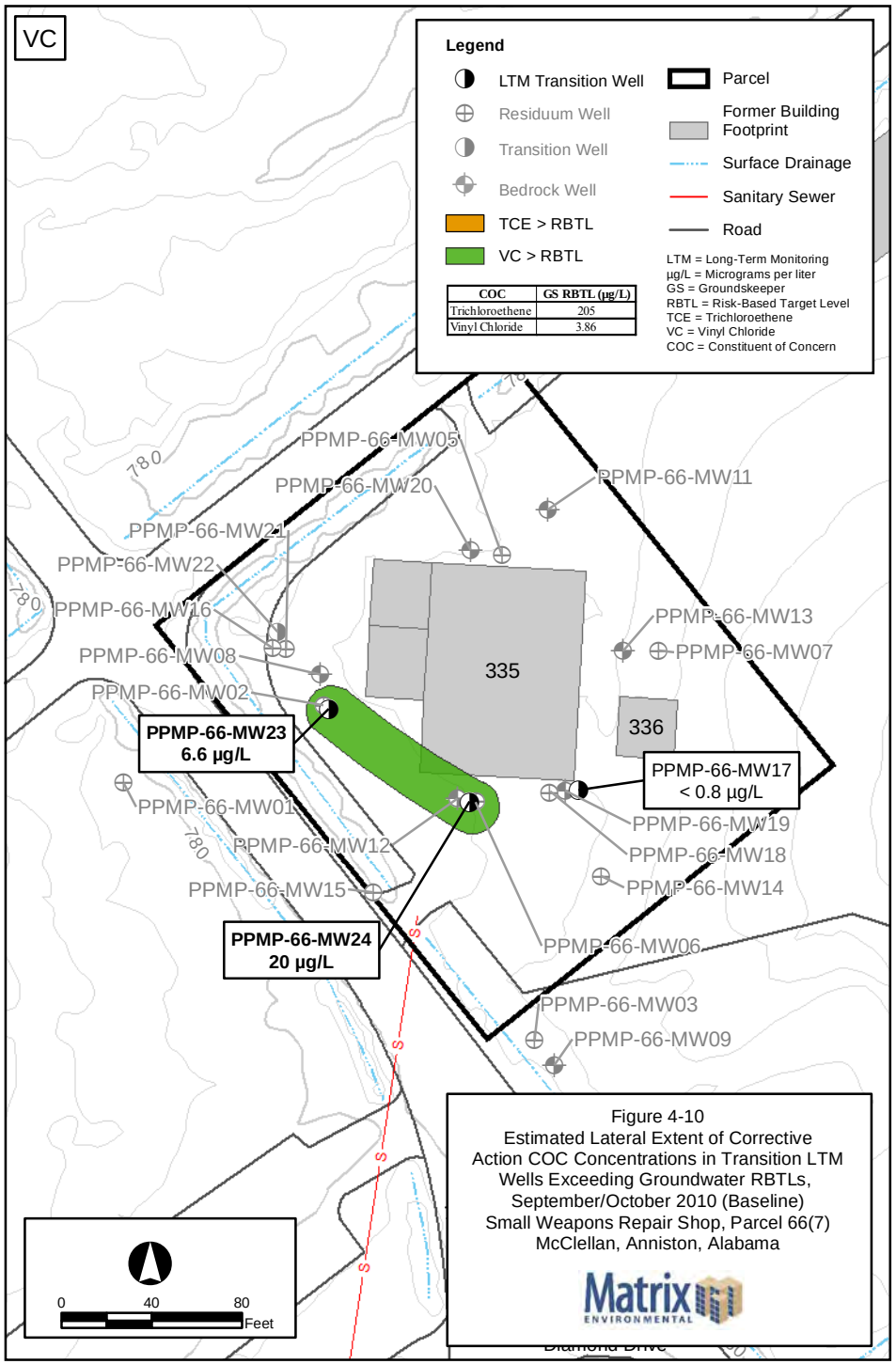
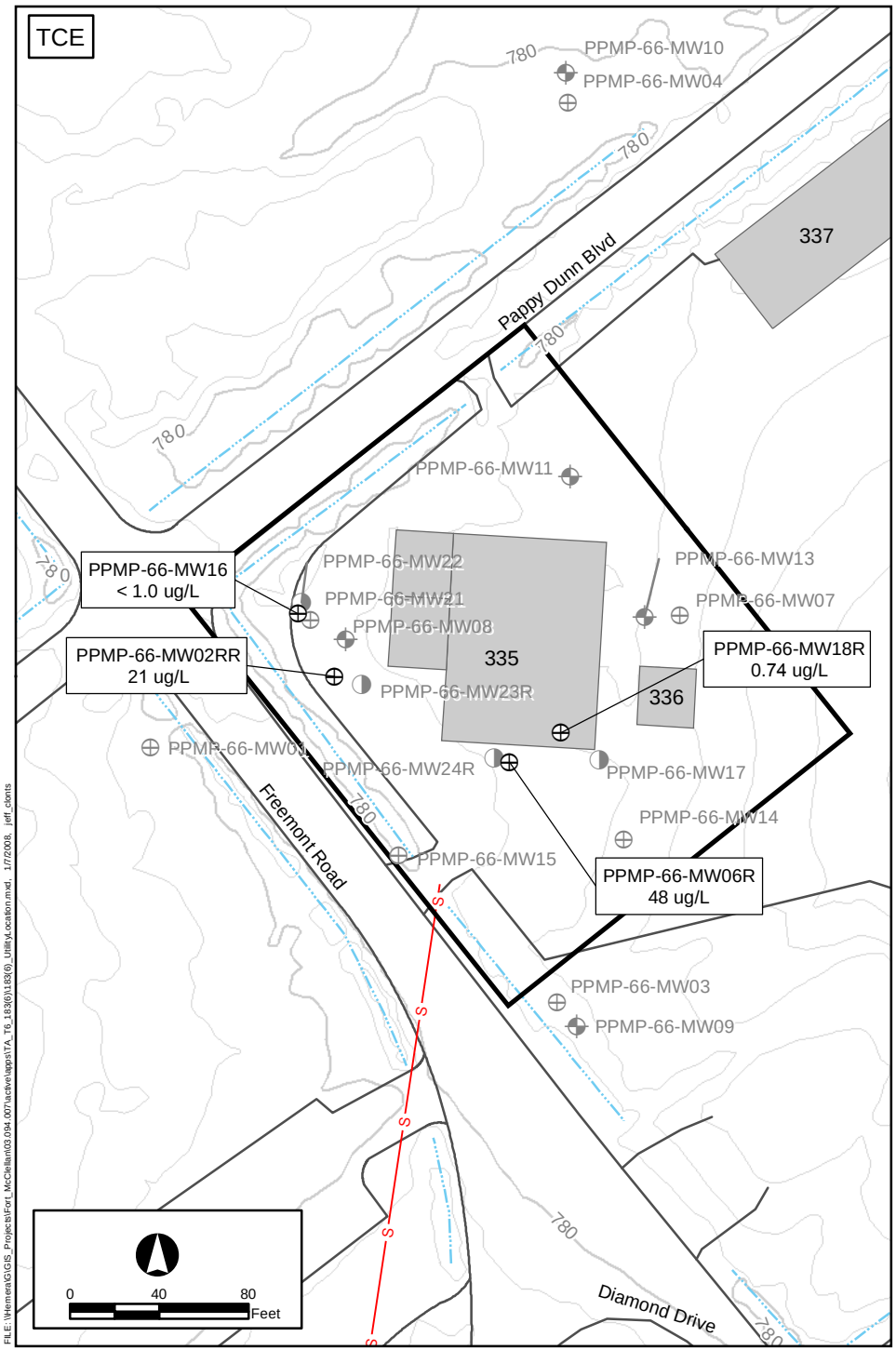


Figure 4-10
Estimated Lateral Extent of Corrective Action COC Concentrations in Transition LTM Wells Exceeding Groundwater RBTLs, September/October 2010 (Baseline)
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix NEWS ENVIRONMENTAL

FILE: G:\gis_projects\Fort_McClellan\03.094.007\active\appt\Small_Weapons-66(7)\CMR\2014\Figure4-10_Transition_RBTL_Baseline.mxd, 3/21/2014, jeff_coons



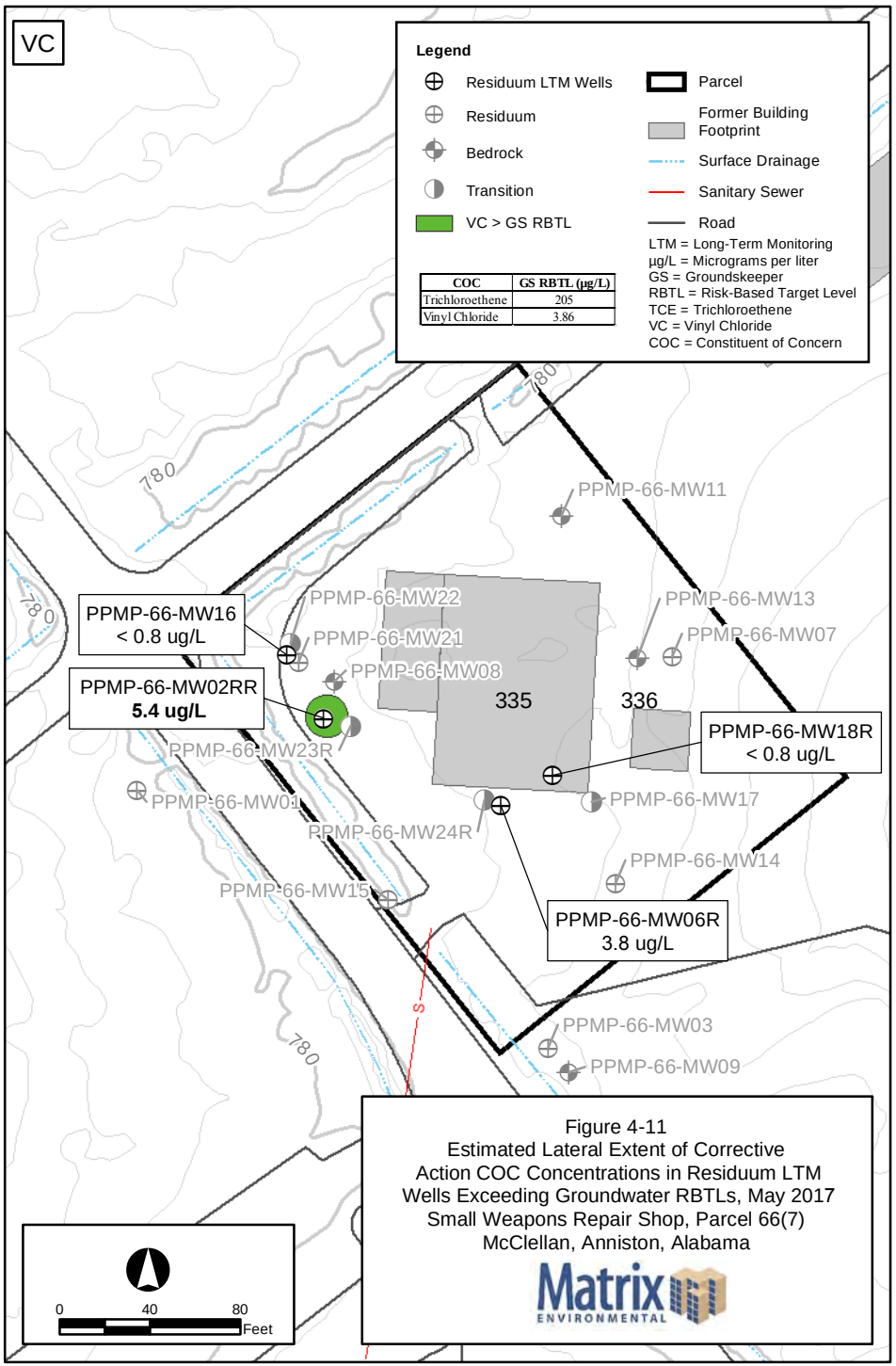


Figure 4-11
Estimated Lateral Extent of Corrective Action COC Concentrations in Residuum LTM Wells Exceeding Groundwater RBTLs, May 2017
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

FILE: \\Remera\GIS\GIS_Projects\Fort_McClellan\03.094.007\active\apps\TA_T6_1836\1836_UtilityLocation.mxd 1/7/2008, jeff_cloris

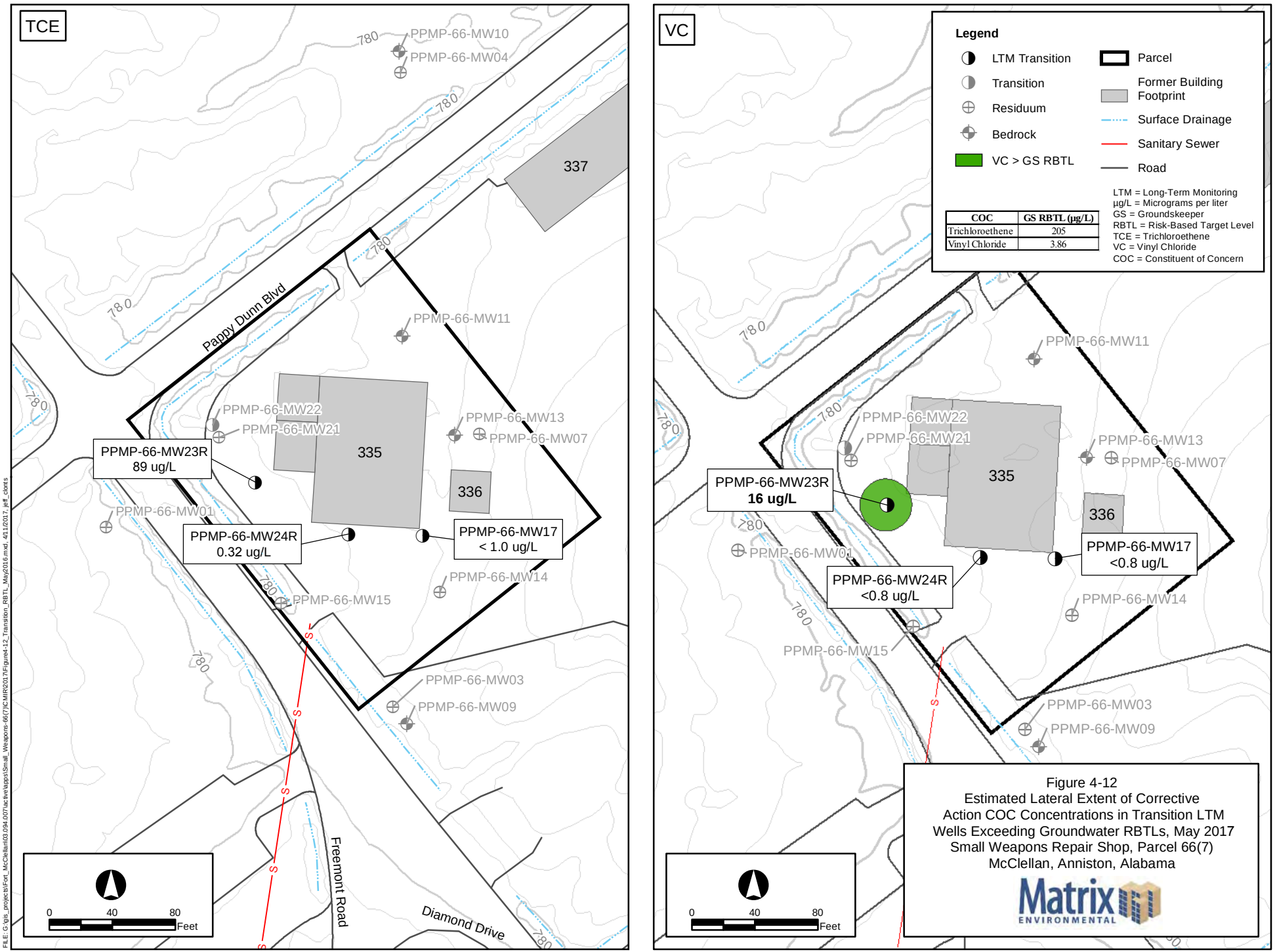
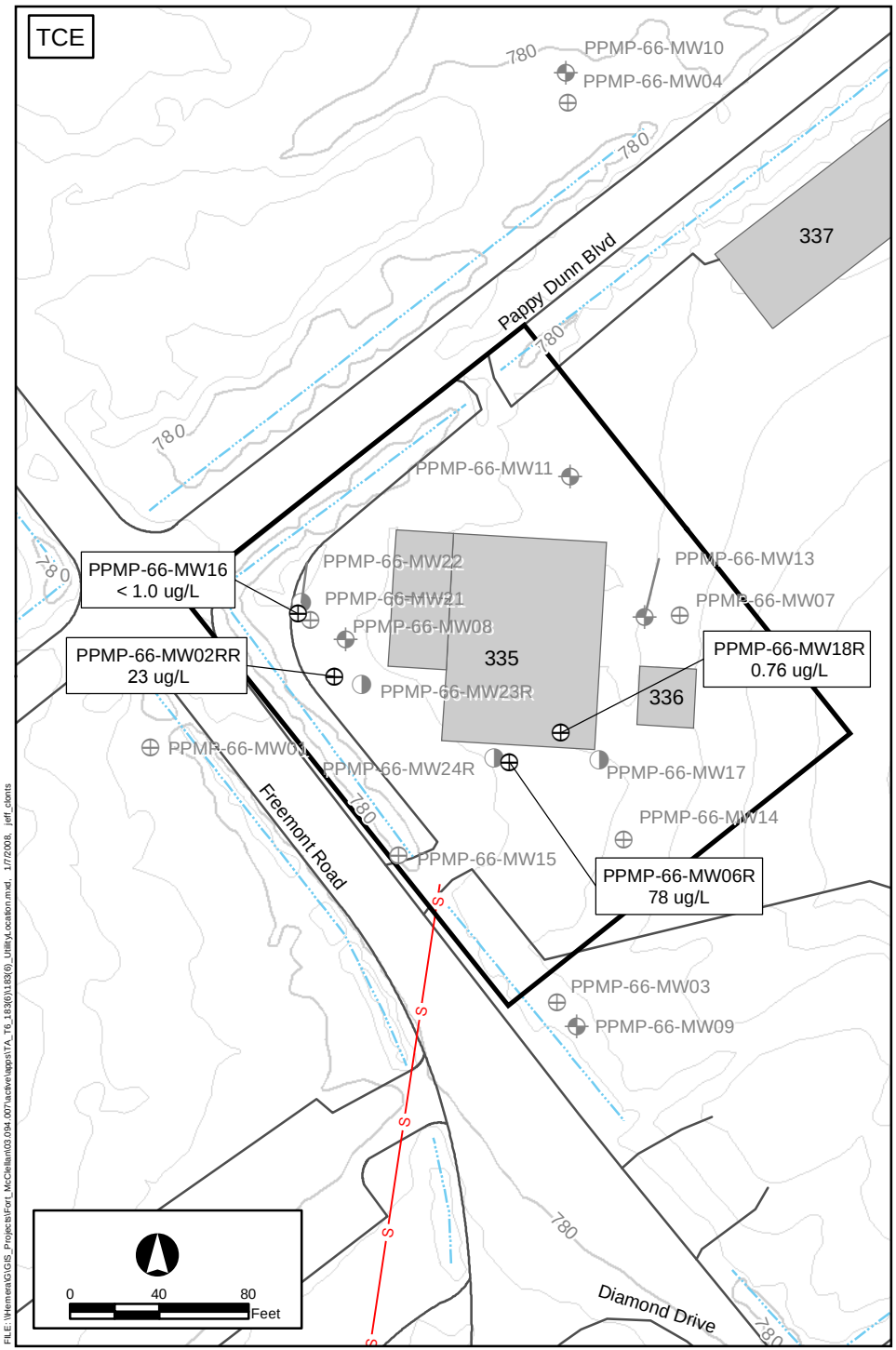


Figure 4-12
Estimated Lateral Extent of Corrective Action COC Concentrations in Transition LTM Wells Exceeding Groundwater RBTLs, May 2017
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

FILE: G:\gis_projects\Fort_McClellan\03.094.007\active\apps\Small_Weapons-66(7)\CMR2017\Figure4-12_Transition_RBTL_May2016.mxd, 4/11/2017, jeff_coons



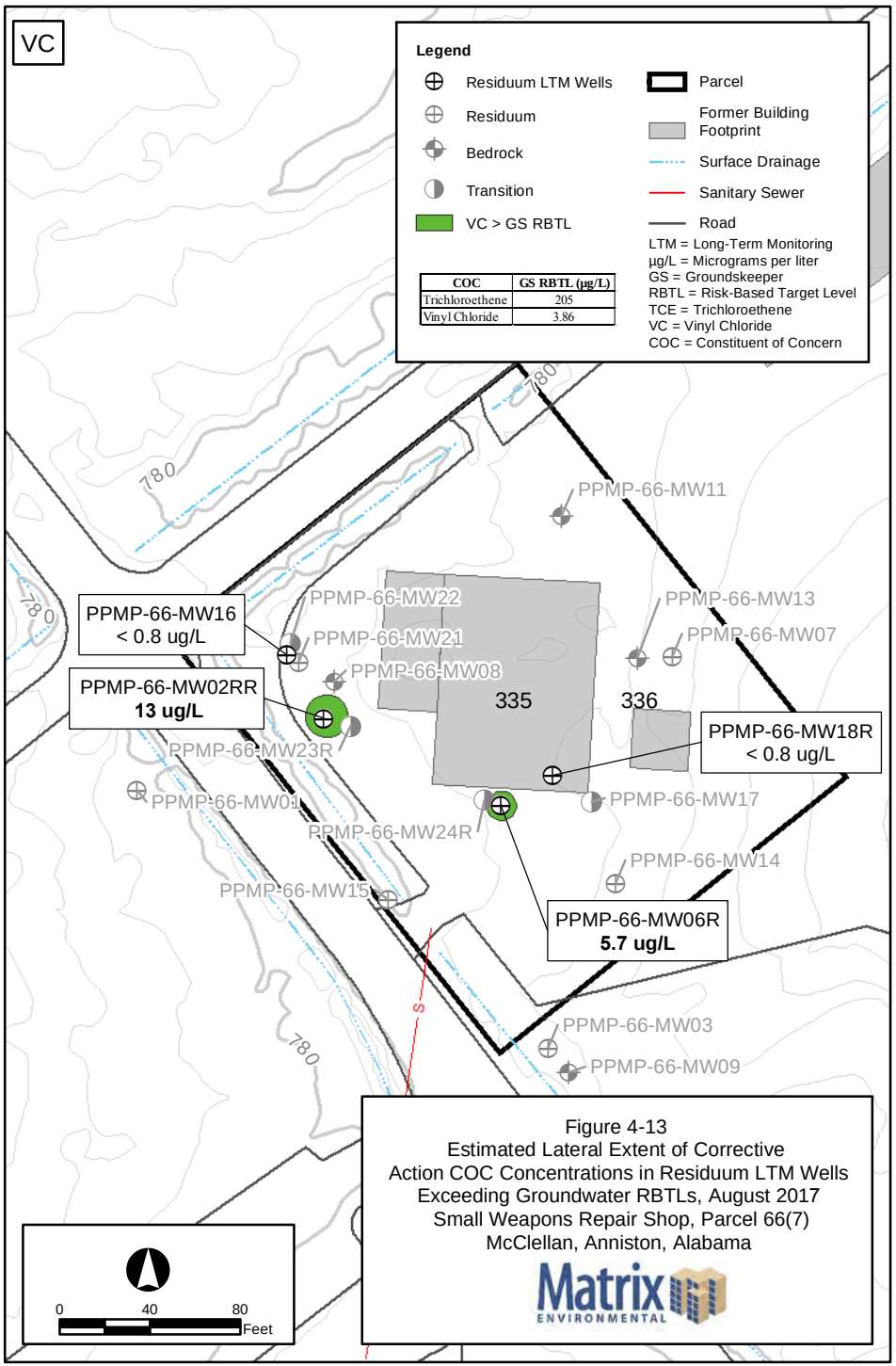
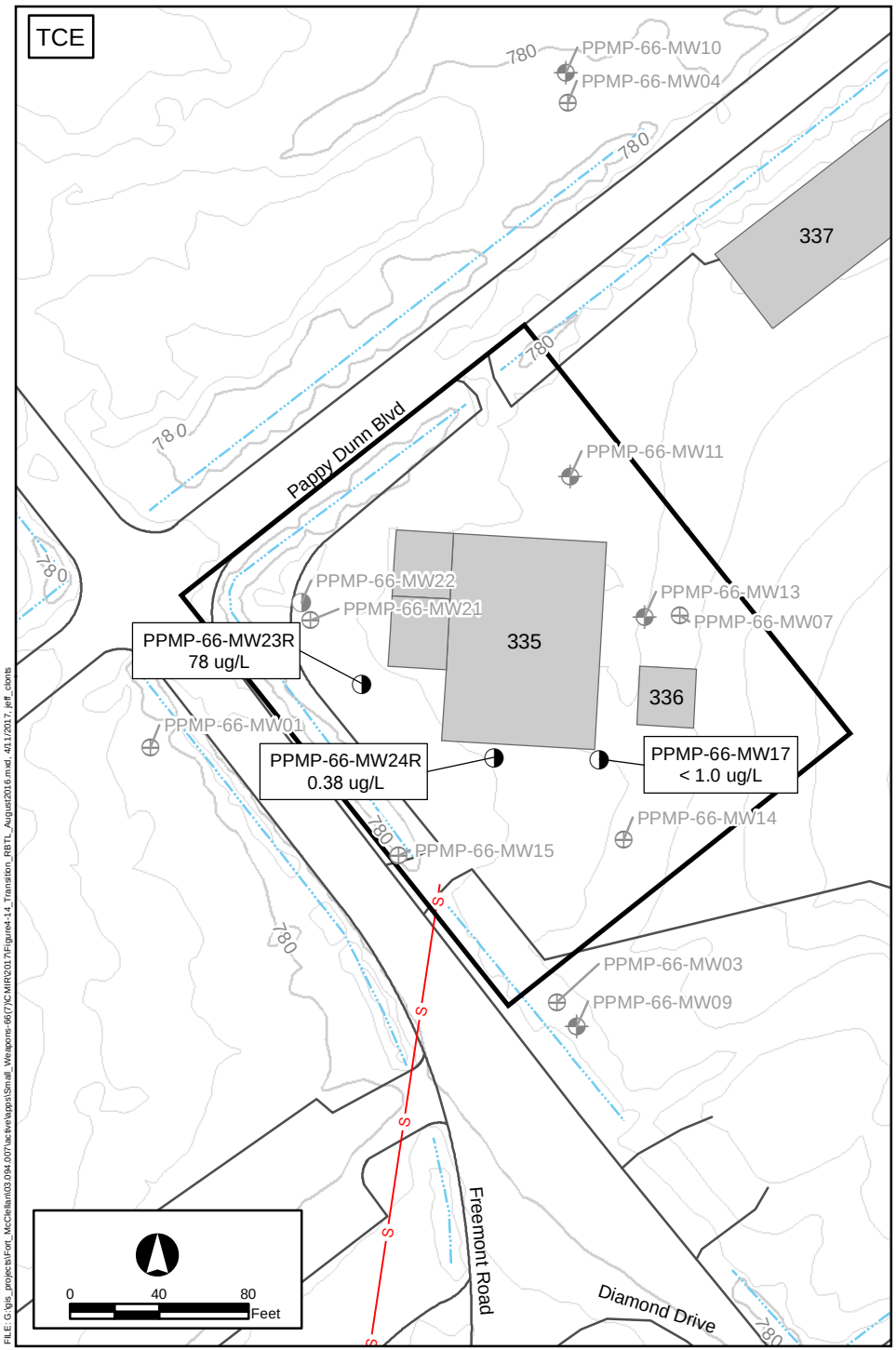


Figure 4-13
Estimated Lateral Extent of Corrective Action COC Concentrations in Residuum LTM Wells Exceeding Groundwater RBTLs, August 2017
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

FILE: \\Remra\GIS\GIS_Projects\Fort_McClellan\03.094.007\active\apps\TA_T6_1836\1836_UtilityLocation.mxd 1/7/2008, jeff_cloris



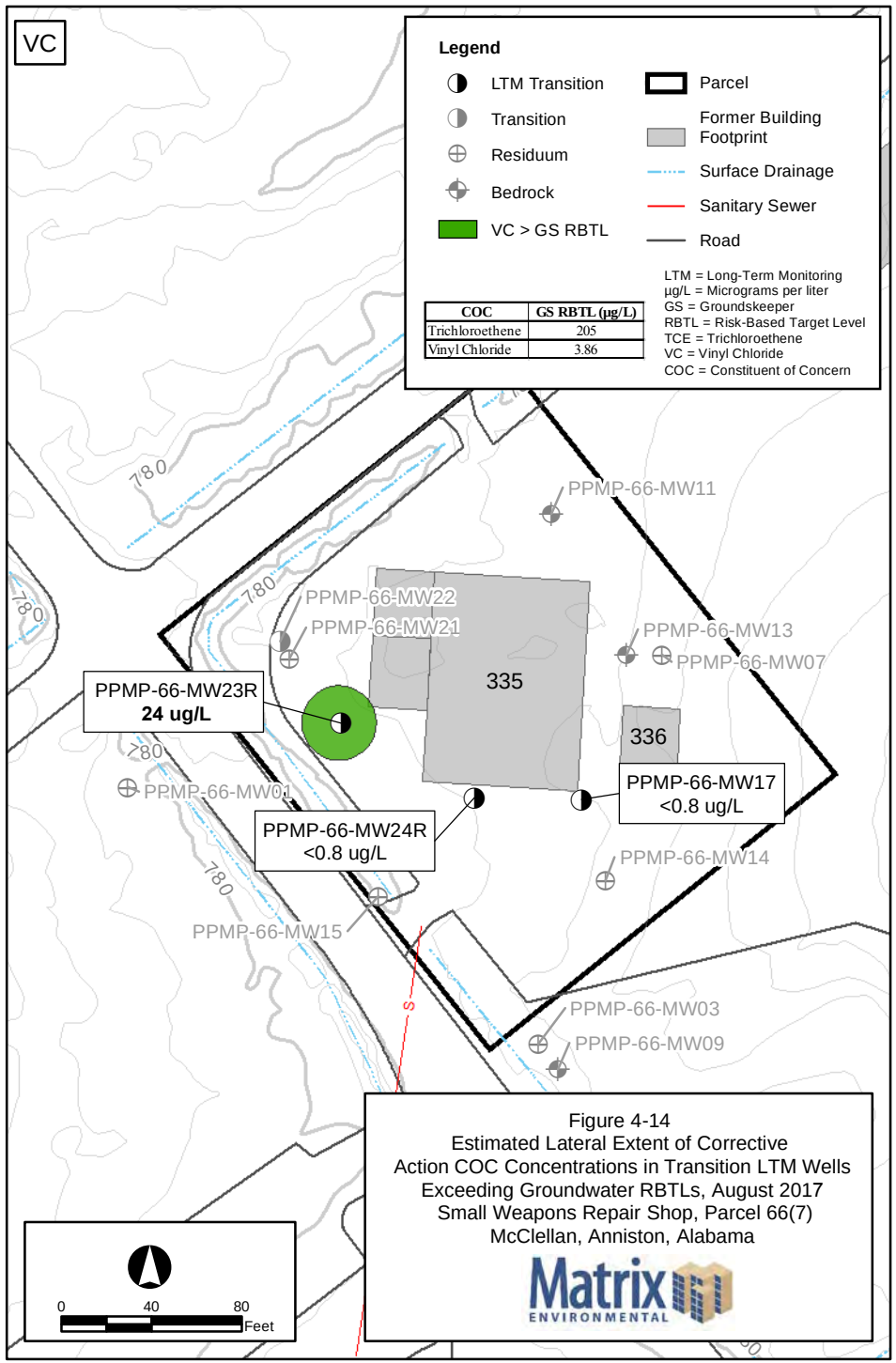
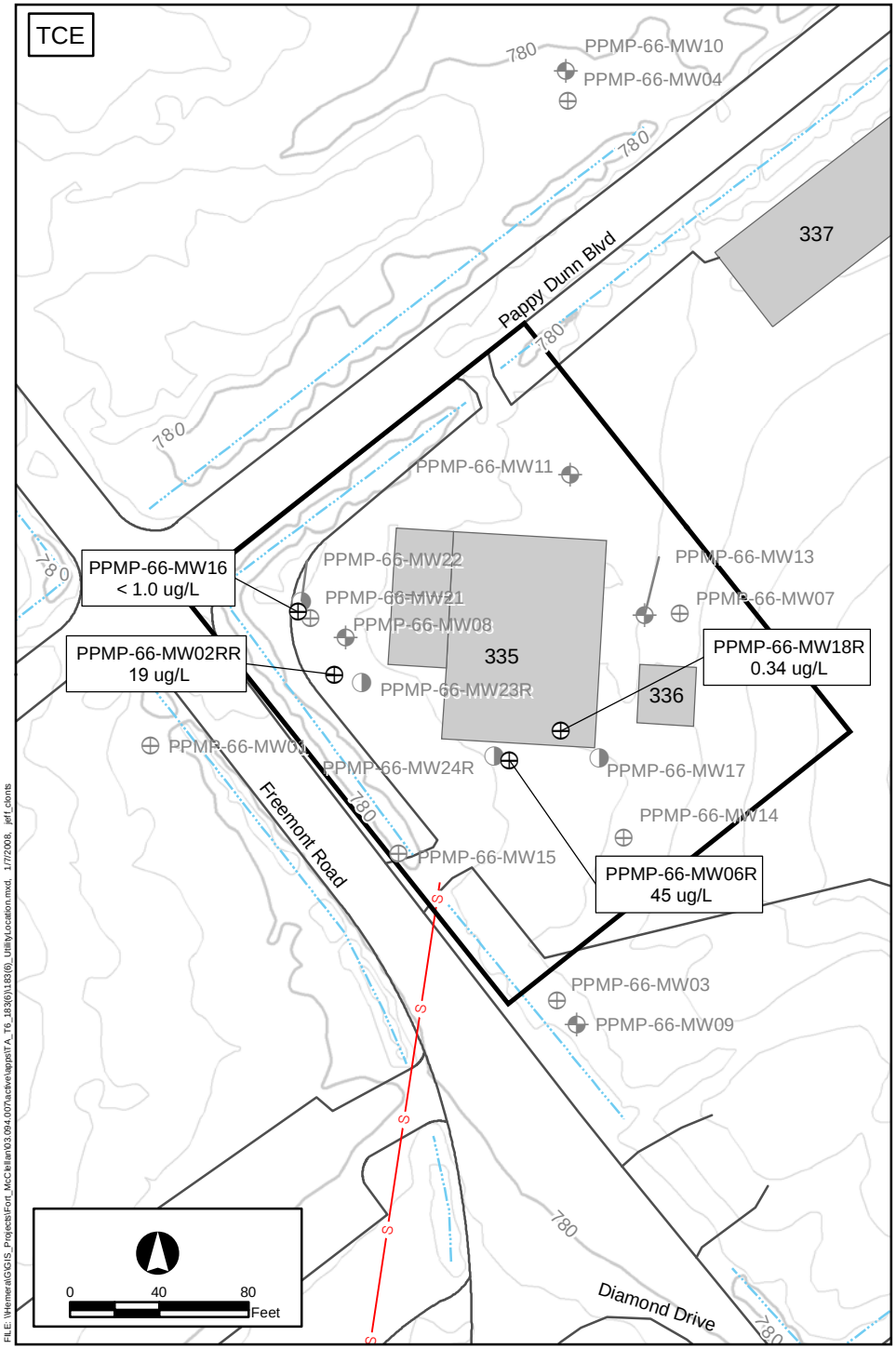


Figure 4-14
Estimated Lateral Extent of Corrective Action COC Concentrations in Transition LTM Wells Exceeding Groundwater RBTLs, August 2017
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

FILE: G:\gis_projects\Fort_McClellan\03.094.007\active\apps\Small_Weapons-66(7)\CMIR2017\Figure4-14_Transition_RBTL_August2016.mxd, 4/11/2017, jeff_cloris



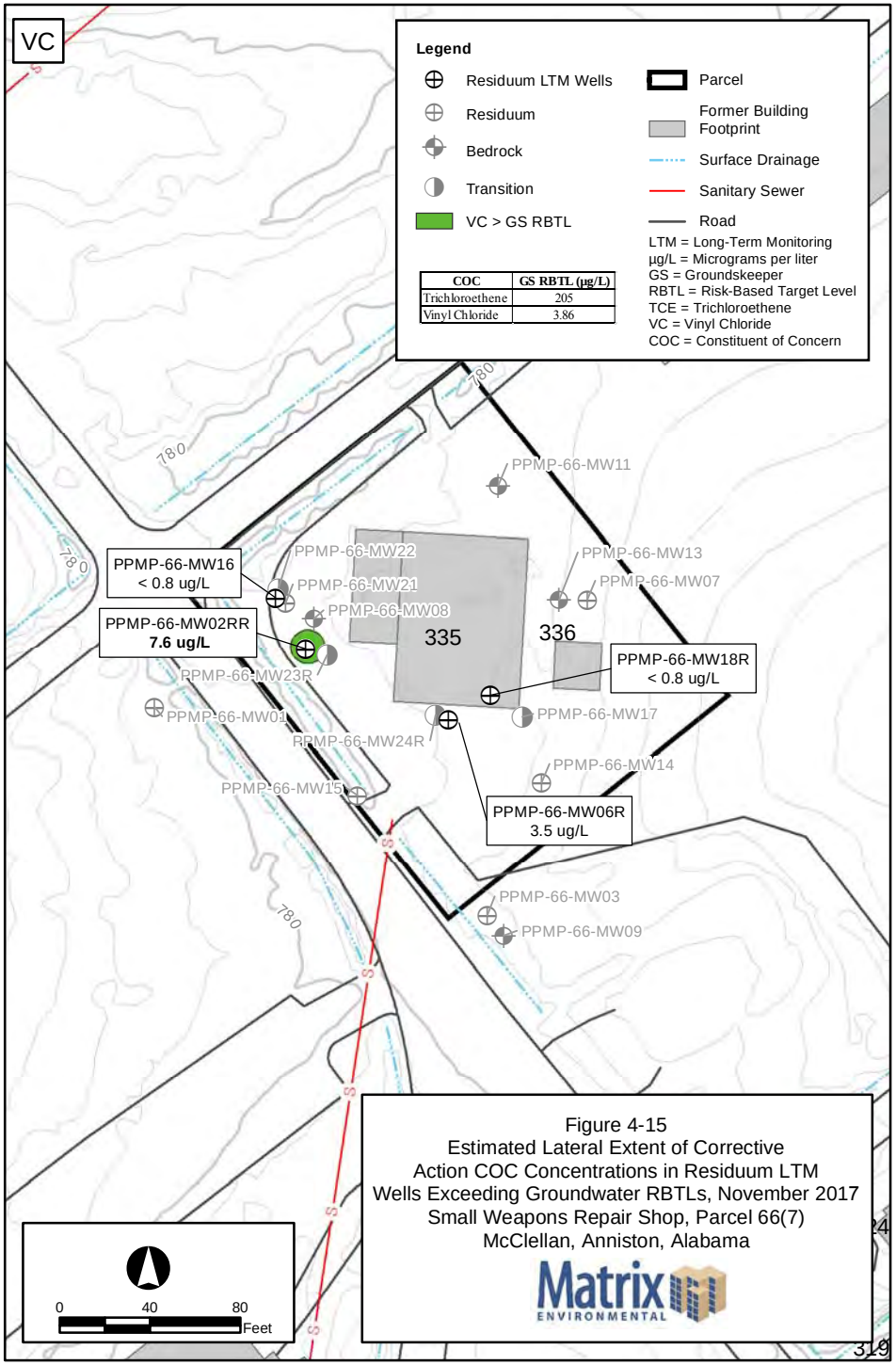


Figure 4-15
Estimated Lateral Extent of Corrective Action COC Concentrations in Residuum LTM Wells Exceeding Groundwater RBTLs, November 2017
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

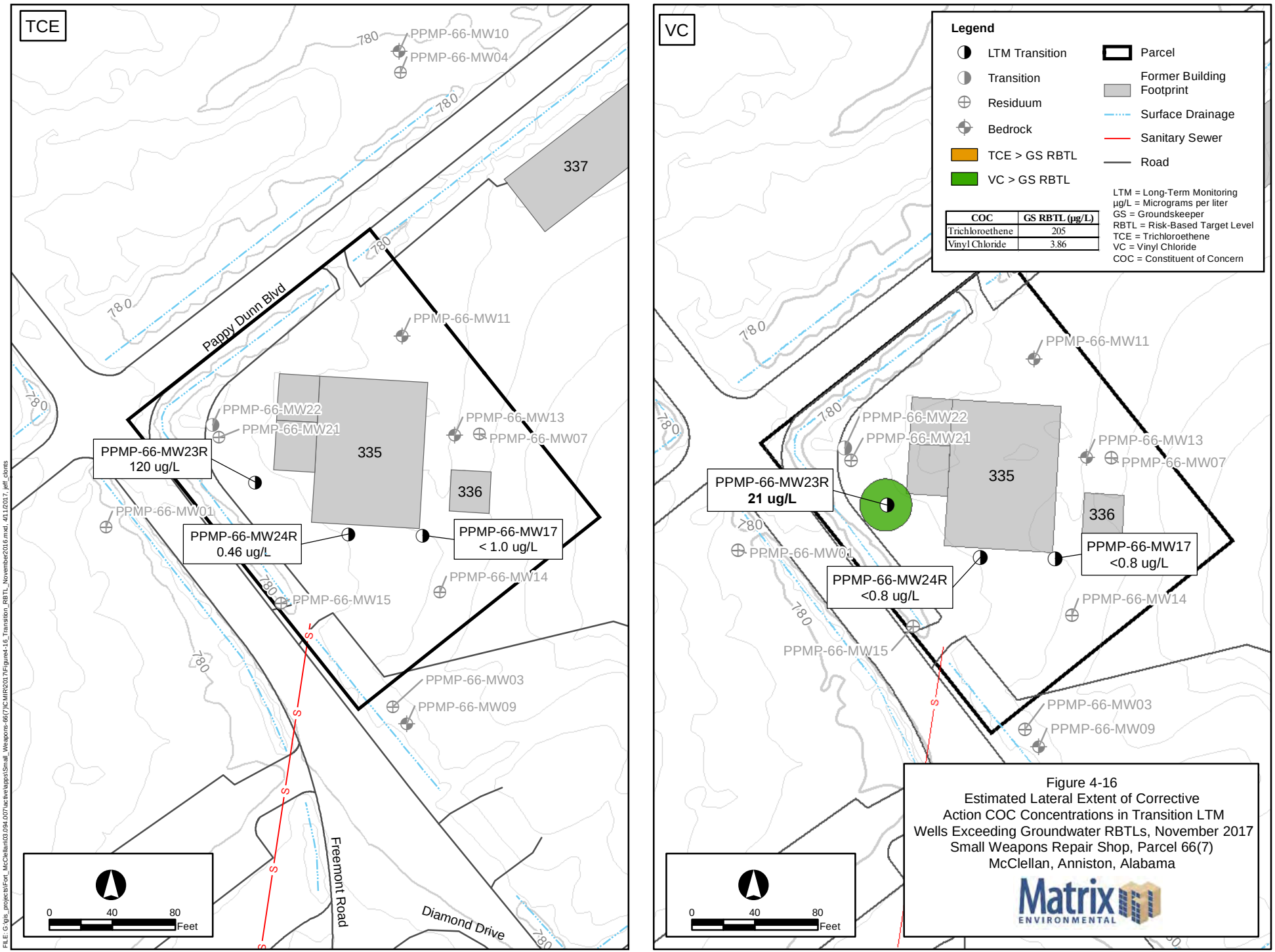
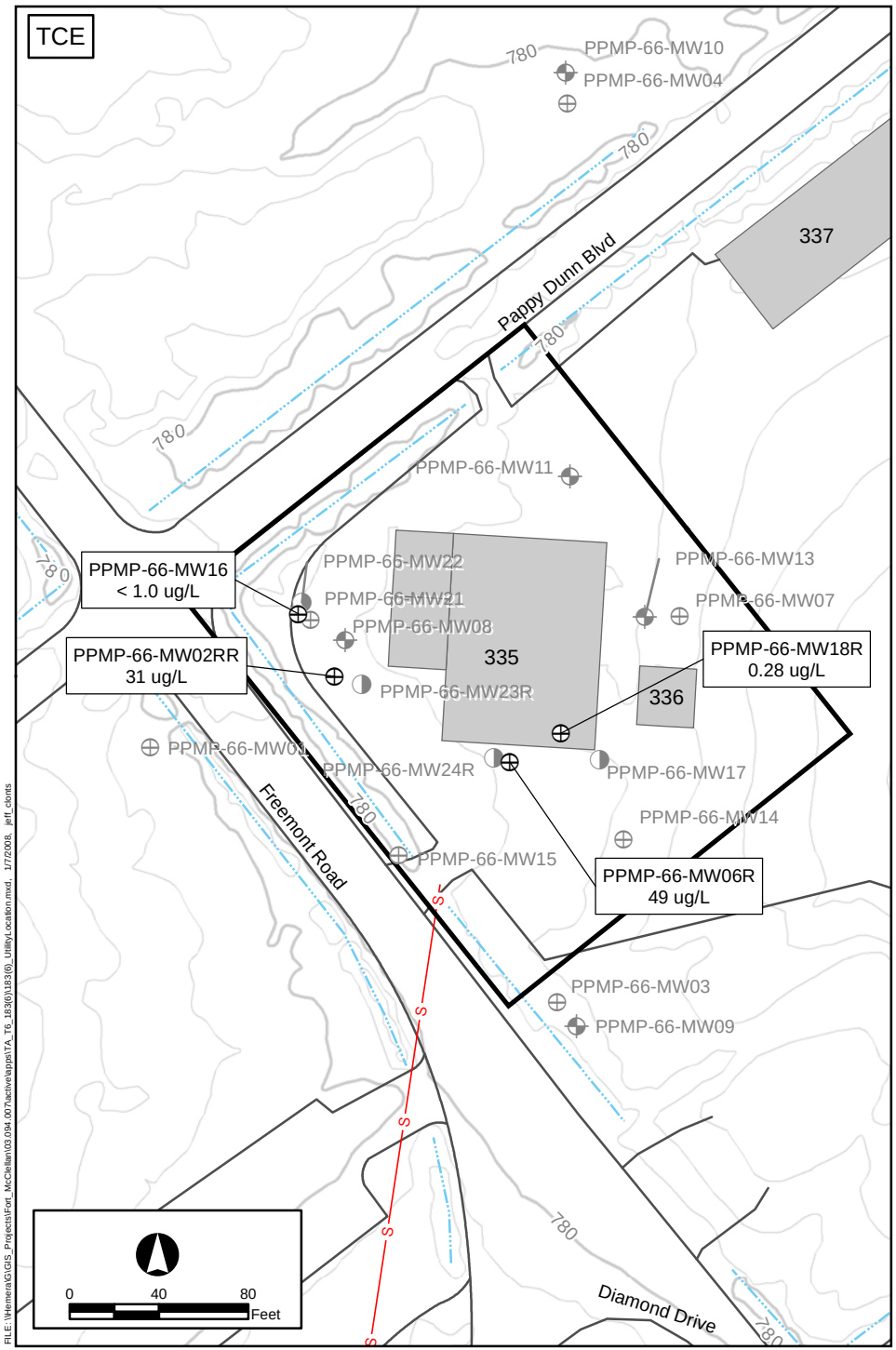


Figure 4-16
Estimated Lateral Extent of Corrective Action COC Concentrations in Transition LTM Wells Exceeding Groundwater RBTLs, November 2017
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

FILE: G:\gis_projects\Fort_McClellan\03.094.007\active\apps\Small_Weapons-66(7)\CMR2017\Figure4-16_Transition_RBTL_November2016.mxd, 4/11/2017, jeff_cloms



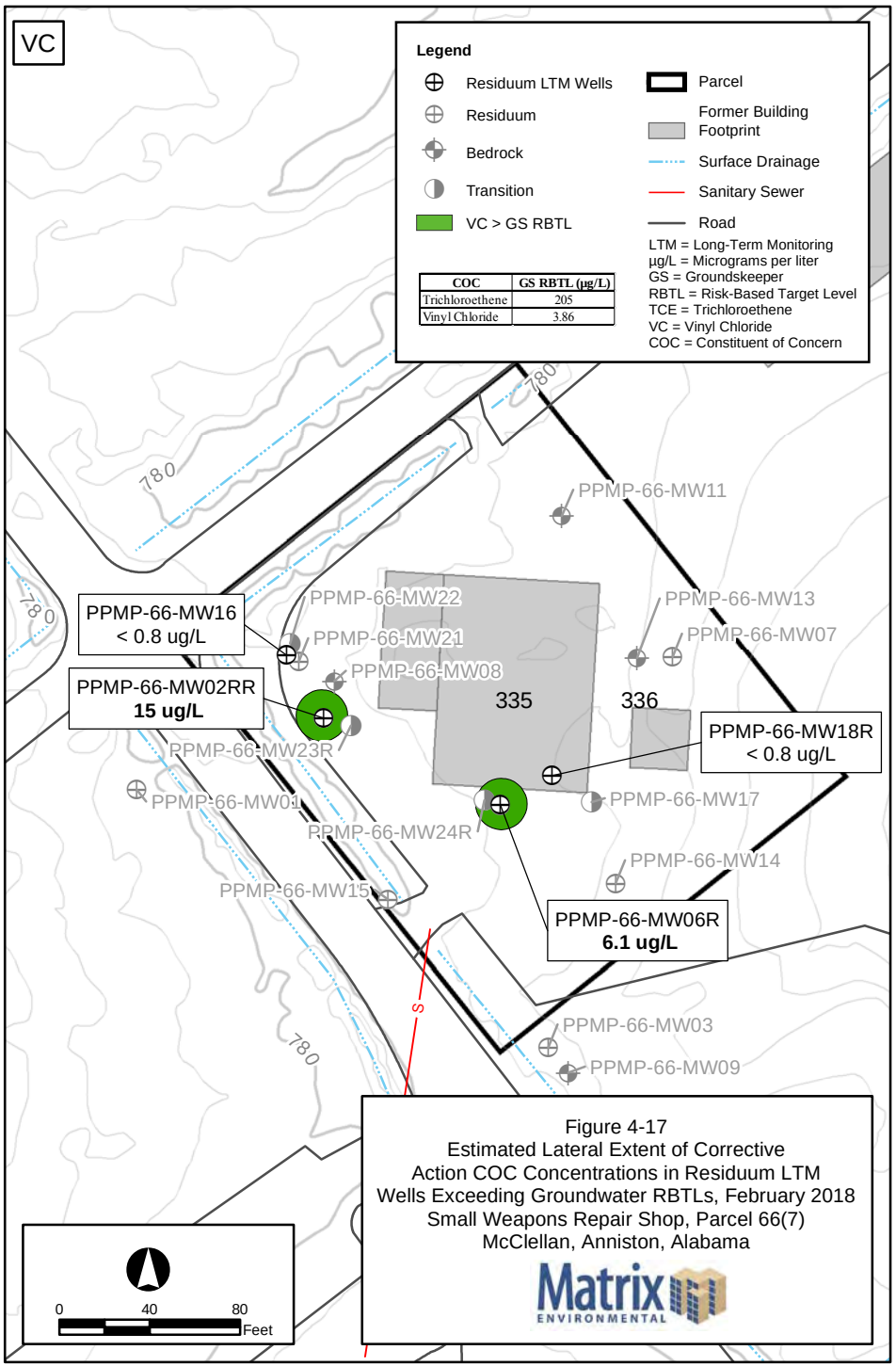


Figure 4-17
Estimated Lateral Extent of Corrective Action COC Concentrations in Residuum LTM Wells Exceeding Groundwater RBTLs, February 2018
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

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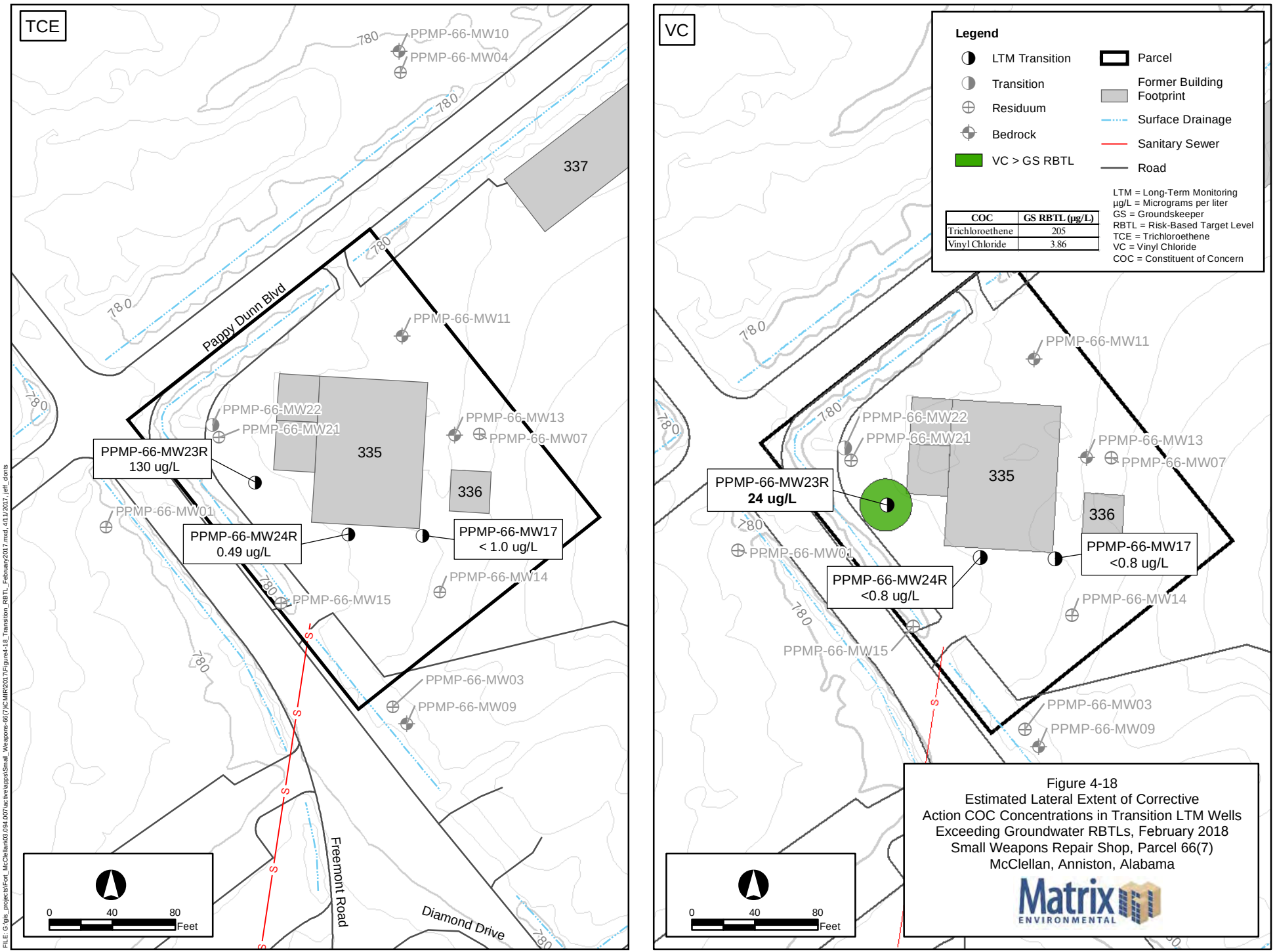


Figure 4-18
Estimated Lateral Extent of Corrective Action COC Concentrations in Transition LTM Wells Exceeding Groundwater RBTLs, February 2018
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

FILE: G:\gis_projects\Fort_McClellan\03.094.007\active\apps\Small_Weapons-66(7)\CMIR2017\Figure4-18_Transition_RBTL_February2017.mxd, 4/11/2017, jeff_doris

Appendices

APPENDIX A

Groundwater Sampling Documentation

5/18/2017 SWR

0950 - Joseph Owens - MES onsite to collect samples.

Weather: Breezy, Partly Cloudy, 70's.

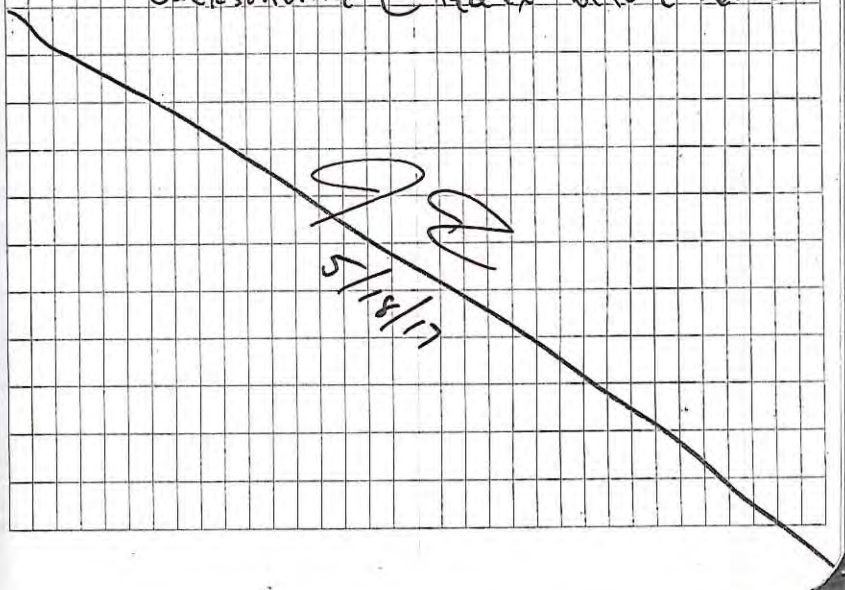
0955 - open wells to allow water levels to stabilize.

1021 - Begin water levels:

Well ID	Water level (TOC)
PPMP-66-MW01	6.18 ft
PPMP-66-MW04	5.20 ft
PPMP-66-MW10 (4")	7.31 ft
PPMP-66-MW11 (4")	4.00 ft
PPMP-66-MW13 (4")	5.10 ft
PPMP-66-MW07	5.92 ft
PPMP-66-MW14	5.68 ft
PPMP-66-MW03	5.29 ft
PPMP-66-MW09	4.97 ft
PPMP-66-MW17	4.89 ft
PPMP-66-MW18R	3.38 ft
PPMP-66-MW6R	4.01 ft
PPMP-66-MW24R	5.04 ft
PPMP-66-MW08	4.52 ft
PPMP-66-MW22	4.28 ft
PPMP-66-MW16	4.53 ft
PPMP-66-MW21	4.08 ft
PPMP-66-MW23R	4.51 ft
PPMP-66-MW02R	3.49 ft

5/18/17 Continued JTulley, JOwens

11:00	Collected PPMP-66-MW17
11:08	Collected PPMP-66-MW18R
11:15	Collected PPMP-66-MW06
11:23	Collected PPMP-66-MW24R
11:30	Collected PPMP-66-MW16
11:35	Collected PPMP-66-MW08 - MS/MSD
11:45	Collected PPMP-66-MW02 - Dup #253
11:55	Collected PPMP-66-MW23R
12:00	Material blank
12:05	Headed back to office to pack samples
12:30	Trip blank
	Samples will be dropped in Jacksonville @ Fedex before 16:00



8/7/17 Overcast High 82° JTulley, SMeadows

07:00	In office to load truck		
08:45	On site to open wells for water levels. S. Meadows was already on site opening wells		
09:00	taking water levels		water level
09:01	PPMP- 66-	MW 24R	4.42
09:03	PPMP- 66-	MW 06R	3.98
	PPMP- 66-	MW 18R	3.02
09:06	PPMP- 66-	MW 01	5.80
	Solinst Model 101 SN# 40100 is not working using geotech meter		
09:10	PPMP- 66-	MW 17	4.48
09:13	PPMP- 66-	MW 14	5.21
09:15	PPMP- 66-	MW 03	4.89
09:17	PPMP- 66-	MW 09	4.49
09:19	PPMP- 66-	MW 13	4.75
09:22	PPMP- 66-	MW 07	5.48
09:25	PPMP- 66-	MW 11	3.43
09:27	PPMP- 66-	MW 04	4.82
09:30	PPMP- 66-	MW 10	6.70
09:32	PPMP- 66-	MW 22	3.89
09:35	PPMP- 66-	MW 16	4.21
09:37	PPMP- 66-	MW 21	0.40
09:40	PPMP- 66-	MW 08	4.09
09:42	PPMP- 66-	MW 02RR	3.12

8/7/17 Continued

	Well ID		Water Level
09:45	PPMP-66-	MW23	4.16
09:46	Water levels are complete collecting PDB Samples.		
09:50	PPMP- 66-	MW02RR	
10:00	PPMP- 66-	MW06R	
10:10	PPMP- 66-	MW04 MS/MSD	
10:20	PPMP- 66-	MW23R	
10:30	PPMP- 66-	MW24R Dup # 254	
10:40	PPMP- 66-	MW16	
10:45	PPMP- 66-	MW17	
10:55	PPMP- 66-	MW18R	
	New PDB's deployed		
11:30	TB# 452 3 voa - PPMP-66-MW23R labels were Hand written under COC # 4987 they were missing.		
12:00	Packing cooler it will be dropped at Fedex in Jacksonville.		

8/7/17

11/20/17 Sunny 31° JTulley, SMeadows

07:15 In the office loading trucks and prepping for sampling. Waiting for temp to come up a little

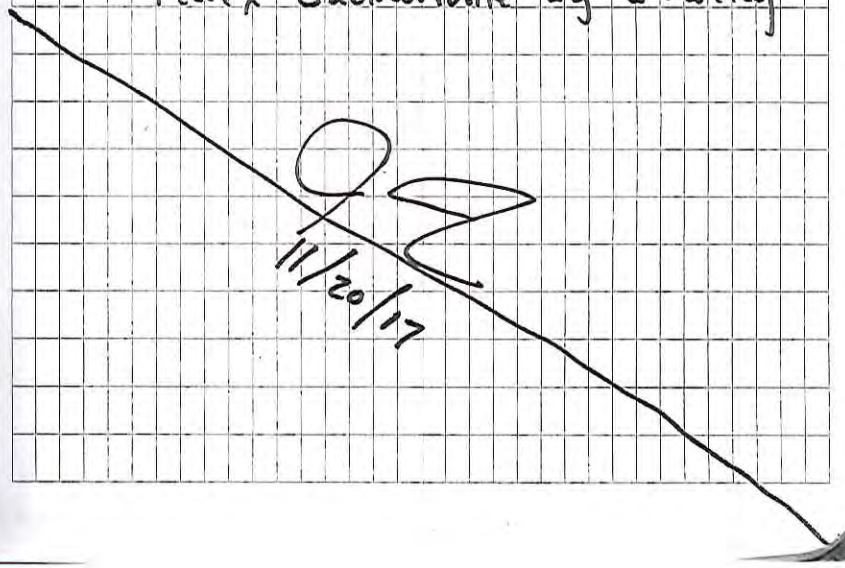
09:00 on site opening wells Taking water levels

		Water level
09:03	PPMP-66-MW24R	4.98
09:09	PPMP-66-MW06R	4.06
09:13	PPMP-66-MW18R	2.03
09:17	PPMP-66-MW17	4.66
09:20	PPMP-66-MW14	8.78
09:23	PPMP-66-MW07	6.02
09:26	PPMP-66-MW13	5.35
09:30	PPMP-66-MW11	5.25
09:34	PPMP-66-MW04	6.17
09:37	PPMP-66-~~MW010~~ MW-10	6.91
09:40	PPMP-66-MW23 -	3.95
09:43	PPMP-66-MW02R	3.09
09:46	PPMP-66-MW08	4.78
09:48	PPMP-66-MW21	0.06
09:50	PPMP-66-MW16	3.04
09:52	PPMP-66-MW22	4.54
09:54	PPMP-66-MW01	6.05
09:56	PPMP-66-MW03	5.24
09:59	PPMP-66-MW09	4.98

Continued →

← Continued 11/20/17

10:00	Water levels are done Collecting PDB samples
10:10	PPMP-66-MW06R - MS/MSD
10:20	PPMP-66-MW24R
10:30	PPMP-66-MW17 - Dup# ~~466~~ 274
10:40	PPMP-66-MW18R
10:50	PPMP-66-MW-23R
11:00	PPMP-66-MW02RR
11:05	PPMP-66-MW08
11:15	PPMP-66-MW16
	New PDB's deployed
11:50	TB466
11:55	Material 080
13:30	Samples are packed shipping via fedex Jacksonville by JTulley



Feb 8th 2018 J Tulley, S Meadows

Sunny High 58°

07:45 On site opening wells. Heavy Rain yesterday wells have to be drained before opening.

08:40 Collecting water levels

	Well ID	water level
08:42	PPMP-66-MW 16	1.52
08:44	PPMP-66-MW 22	3.58
	PPMP-66-MW 21	0.40
	PPMP-66-MW 08	3.79
	PPMP-66-MW 02R	3.04
	PPMP-66-MW 23R	3.74
	PPMP-66-MW 24R	4.29
	PPMP-66-MW 06R	3.64
	PPMP-66-MW 18R	0.50
	PPMP-66-MW 17	3.78
	PPMP-66-MW 14	4.94
	PPMP-66-MW 03	4.40
	PPMP-66-MW 09	4.08
	PPMP-66-MW 07	5.24
	PPMP-66-MW 13	4.50
	PPMP-66-MW 11	4.53
	PPMP-66-MW 04	4.59
	PPMP-66-MW 10	5.53
	PPMP-66-MW 01	4.81

09:15 Water Levels Complete Continued

Feb 8th 2018 Continued

Collecting Samples and Deplaing PID B's at the same time due to high water levels

09:20 PPMP-66-MW 24R

09:30 PPMP-66-MW 06 Dup #775

09:40 PPMP-66-MW 18R

09:50 PPMP-66-MW 17

10:00 PPMP-66-MW 02RR

10:10 PPMP-66-MW 23R

10:20 PPMP-66-MW 16

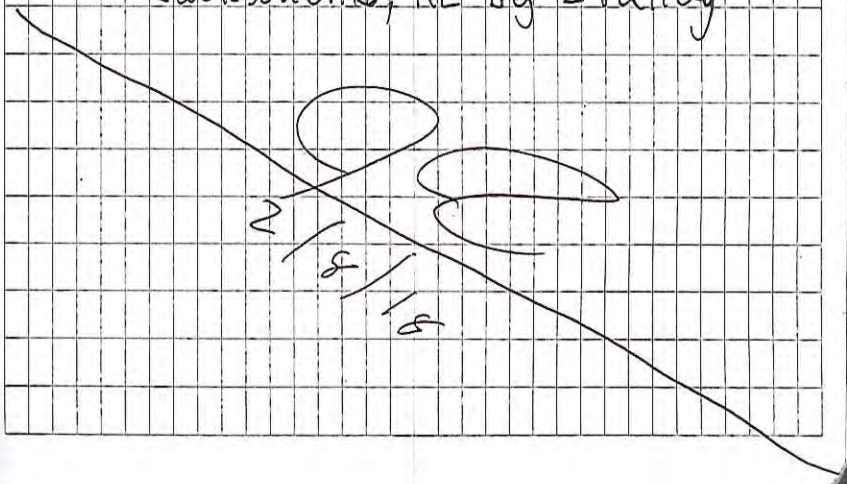
10:30 PPMP-66-MW 08 (MS/MSD)

10:45 Headed to office to pack samples

11:10 Material blank 082

JB 469 @ 11:15

16:00 Samples shipped Via Fedex Jacksonville, FL By JTulley



APPENDIX B

Chain-of-Custody Forms

17E159

MATRIX ENVIRONMENTAL SERVICES CHAIN OF CUSTODY RECORD

COC Number 4942 (highest # on bottles)
Cooler ID A
Page 1 of 1

Laboratory EMAX
Lab Contact Ye Myint
MES Contact Betty Van Pelt
MES Phone 801-699-1246
Project Small Weapons
Task # 16.094.17-07.2.500
Lab contract: TO 093

Samplers Signature

	SWMU	Station ID	QC Code	Station Code	Matrix	Sample Method	Date Collected	Sample Time	Analysis: SW8260 - VOC* 40 mL VOA, HCl				
1	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW02RR	NS	MW	WG	G	5/18/2017	11:45	X				
2	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW06R	NS	MW	WG	G		11:15	X				
3	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-~~MW06R~~ J.O. 5/18/17 MW-08	MS/MSD	MW	WG	G		11:35	X				
	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW08	FD	MW	WG	G		11:35	X				
4	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW16	NS	MW	WG	G		11:30	X				
5	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW17	NS	MW	WG	G		11:00	X				
6	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW18R	NS	MW	WG	G		11:08	X				
7	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW23R	NS	MW	WG	G		11:55	X				
8	McClellan Field QC J.O. 5-18-17 Panel with	PPMP-66-MW24R	~~EB~~ NS	MW	WG	G		11:23	X				
9	McClellan Field QC	MATERIAL077	WS	WQ	W	G		12:00	X				
10	McClellan Field QC	DUP253	TB	WQ	W	G		11:45	X				
11	McClellan Field QC	TB451	TB	WQ	W	G		12:30	X				

NOTES:

QC Code: NS = Investigative Sample, FD = Field Duplicate, MS/MSD = Matrix Spike/Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water

Station Type = MW = Monitoring Well, BH = Bore Hole, SD = Sediment, SW = Surface Water, SS = Surface Soil, SU = Sump, WS = Waste Solid/Soil, WW = Waste Water

White Copy = Lab COC, Yellow COC = Field Copy, Pink COC = Data Mgmt

BOTTLES: (method - quantity, size and type, preservative)

Double the number of bottles for MS/MSD

* SW8260 VOC - 3-40 mL vials with HCL (TB only 2)

Temp = 3.4°C

*VOC Analytes List: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE, VC

COMMENTS: See Task Order 093 for required list of VOCs and metals.

Relinquished by (Signature): [signature] Date/Time: 5/18/17 16:00 Received by (Signature): FedEx

Relinquished by (Signature): Date/Time: 05/19/17 9:15 Received by (Signature): [signature]

MATRIX ENVIRONMENTAL SERVICES CHAIN OF CUSTODY RECORD

COC Number (pick 1 on bottles)
Cooler ID 4980 – 4991
Page 1 of

Laboratory EMAX
Lab Contact Ye Myint
MES Contact Betty Van Pelt
MES Phone 801-699-1246
Project Small Weapons
Task # 16.094.17-07.2.500
Lab contract: TO 093

Samplers Signature

SWMU	Station ID	QC Code	Station Code	Matrix	Sample Method	Date Collected	Sample Time	Analysis: SW8260 - VOC*				
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW02RR	NS	MW	WG	G	8/7/17	09:50	X				
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW06R	NS	MW	WG	G		10:00	X				
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW08 ~~PPMP-66-MW08R~~ 9 – 8/7/17	MS/MSD	MW	WG	G		10:10	X				
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW08	QT 8/8/17 ~~FD~~ NS	MW	WG	G		10:10	X				
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW16	NS	MW	WG	G		10:40	X				
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW17	NS	MW	WG	G		10:45	X				
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW18R	NS	MW	WG	G		10:55	X				
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW23R	NS QT 8/8/17	MW	WG	G		10:20	X				
~~McClellan Field QC~~	PPMP-66-MW24R	QT EB NS	WQ	W	G		10:30	X				
McClellan Field QC	MATERIAL077	WS	WQ	W	G		11:35	X				
McClellan Field QC QT	~~DUP253~~ DUP 254	~~FB~~ FD	WQ	W	G		10:30	X				
McClellan Field QC 8/8/17	~~TB451~~ TB 452	TB	WQ	W	G		11:30	X				

Parcel 66(7), Small Arms Repair Shop

NOTES: QT 8/8/17

QC Code: NS = Investigative Sample, FD = Field Duplicate, MS/MSD = Matrix Spike/Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water
Station Type = MW = Monitoring Well, BH = Bore Hole, SD = Sediment, SW = Surface Water, SS = Surface Soil, SU = Sump, WS = Waste Solid/Soil, WW = Waste Water
White Copy = Lab COC, Yellow COC = Field Copy, Pink COC = Data Mgmt
BOTTLES: (method - quantity, size and type, preservative)
Double the number of bottles for MS/MSD
SW8260 VOC - 3-40 mL vials with HCL (TB only 2)
COMMENTS: See Task Order 093 for required list of VOCs and metals.

*VOC Analytes List: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE, VC

Relinquished by (Signature): Date/Time: 8/7/17 Received by (Signature): Fedex

Relinquished by (Signature): Date/Time: Received by (Signature):

Revised 8/8/2017

MATRIX ENVIRONMENTAL SERVICES CHAIN OF CUSTODY RECORD 17K201

COC Number 5162 (highest # on bottles)
Cooler ID
Page 1 of

Laboratory EMAX
Lab Contact Ye Myint
MES Contact Betty Van Pelt
MES Phone 801-699-1246
Project Small Weapons
Task # 16.094.17-07.2
Lab contract: TO 093

Samplers Signature

	SWMU	Station ID	QC Code	Station Code	Matrix	Sample Method	Date Collected	Sample Time	Analysis: SW8260 - VOC				
1	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW02RR	NS	MW	WG	G	11/20/17	11:00	X				
2	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW06R	NS	MW	WG	G		10:10	X				
	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW06R	MS/MSD	MW	WG	G		10:10	X				
3	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW08	NS	MW	WG	G		11:05	X				
4	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW16	NS	MW	WG	G		11:15	X				
5	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW17	NS	MW	WG	G		10:30	X				
6	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW18R	NS	MW	WG	G		10:40	X				
7	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW23R	NS	MW	WG	G		10:50	X				
8	McClellan Field QC	PPMP-66-MW24R	NS	WQ	W	G		10:20	X				
9	McClellan Field QC	MATERIAL080	WS	WQ	W	G		11:55	X				
10	McClellan Field QC	DUP2743 11/20/17	FD	WQ	W	G		10:30	X				
11	McClellan Field QC	TB466	TB	WQ	W	G		11:50	X				

NOTES:
QC Code: NS = Investigative Sample, FD = Field Duplicate, MS/MSD = Matrix Spike/Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water
Station Type = MW = Monitoring Well, BH = Bore Hole, SD = Sediment, SW = Surface Water, SS = Surface Soil, SU = Sump, WS = Waste Solid/Soil, WW = Waste Water
White Copy = Lab COC, Yellow COC = Field Copy, Pink COC = Data Mgmt
BOTTLES: (method - quantity, size and type, preservative)
Double the number of bottles for MS/MSD
SW8260 VOC - 3-40 mL vials with HCL (TB only 2)
COMMENTS: See Task Order 093 for required list of VOCs and metals.

Temp 2.8°c

VOC Analytes List: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE, VC

Relinquished by (Signature): Fedex
Date/Time: 11/20/17 16:00
Received by (Signature): Fedex

Relinquished by (Signature):
Date/Time: 11/21/17 0855
Received by (Signature):

MATRIX ENVIRONMENTAL SERVICES CHAIN OF CUSTODY RECORD

COC Number (pick 1 on bottles) 18B056
Cooler ID 518
Page 1 of

Laboratory EMAX
Lab Contact Ye Myint
MES Contact Betty Van Pelt
MES Phone 801-699-1246
Project Small Weapons
Task # 18-22.1
Lab contract: TO 093

Samplers Signature

	SWMU	Station ID	QC Code	Station Code	Matrix	Sample Method	COC Number	Date Collected	Sample Time	Analysis: SW8260 - VOC* 3 VOA					
1	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW02RR	NS	MW	GW	G	5178	2/8/18	10:00	X					
2	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW06R	NS	MW	GW	G	5179		09:30	X					
3	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW08R (08 QT 2/8/18)	MS/MSD	MW	GW	G	5180		10:30	X X					
3	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW08	NS	MW	GW	G	5181		10:30	X					
4	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW16	NS	MW	GW	G	5182		10:20	X					
5	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW17	NS	MW	GW	G	5183		09:50	X					
6	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW18R	NS	MW	GW	G	5184		09:40	X					
7	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW23R	NS	MW	GW	G	5185		10:10	X					
8	Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW24R	NS	MW	GW	G	5186		9:20	X					
9	McClellan Field QC	MATERIAL082	WS	WQ	GW	G	5187		11:10	X					
10	McClellan Field QC	DUP275	FD	WQ	GW	G	5188		09:30	X					
11	McClellan Field QC	TB469	TB	WQ	GW	G	5189		11:15	X					

NOTES:

QC Code: NS = Investigative Sample, FD = Field Duplicate, MS/MSD = Matrix Spike/Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water

Station Type = MW = Monitoring Well, BH = Bore Hole, SD = Sediment, SW = Surface Water, SS = Surface Soil, SU = Sump, WS = Waste Solid/Soil, WW = Waste Water, GW = Groundwater

White Copy = Lab COC, Yellow COC = Field Copy, Pink COC = Data Mgmt

Temp: 3.2°c

BOTTLES: (method - quantity, size and type, preservative)

Double the number of bottles for MS/MSD

SW8260 VOC - 3-40 mL vials with HCL (TB only 2)

COMMENTS: See Task Order 093 for required list of VOCs and metals.

*VOC Analytes List: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE, VC

Relinquished by (Signature):

Date/Time: 2/8/18 16:00 Received by (Signature): Fedex

Relinquished by (Signature):

Date/Time: 2/9/18 09:20 Received by (Signature): Elaine Mata

APPENDIX C

Analytical Data Table

Appendix C: Analytical Data for Seventh Year of Long-Term Monitoring (May 2017 to February 2018)
Small Weapons Repair Shop, Parcel 66(7), McClellan, Anniston, Alabama

Delivery Group	Lab Sample ID	Station Name	Sample Date	Sample Matrix	QC	Method	Parameter Name	Value	Flag Code	Validation Code	Units
17E159	E159-01	PPMP-66-MW02RR	5/18/17	WG	NS	SW8260B	1,1-Dichloroethene	0.34	J		µg/L
17E159	E159-01	PPMP-66-MW02RR	5/18/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	25			µg/L
17E159	E159-01	PPMP-66-MW02RR	5/18/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	11			µg/L
17E159	E159-01	PPMP-66-MW02RR	5/18/17	WG	NS	SW8260B	Trichloroethene	21			µg/L
17E159	E159-01	PPMP-66-MW02RR	5/18/17	WG	NS	SW8260B	Vinyl Chloride	5.4			µg/L
17E159	E159-02	PPMP-66-MW06R	5/18/17	WG	NS	SW8260B	1,1-Dichloroethene	0.29	J		µg/L
17E159	E159-02	PPMP-66-MW06R	5/18/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	13			µg/L
17E159	E159-02	PPMP-66-MW06R	5/18/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	3.3			µg/L
17E159	E159-02	PPMP-66-MW06R	5/18/17	WG	NS	SW8260B	Trichloroethene	55			µg/L
17E159	E159-02	PPMP-66-MW06R	5/18/17	WG	NS	SW8260B	Vinyl Chloride	3.8			µg/L
17E159	E159-03	PPMP-66-MW08	5/18/17	WG	FD	SW8260B	1,1-Dichloroethene	1	U		µg/L
17E159	E159-03	PPMP-66-MW08	5/18/17	WG	FD	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17E159	E159-03	PPMP-66-MW08	5/18/17	WG	FD	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17E159	E159-03	PPMP-66-MW08	5/18/17	WG	FD	SW8260B	Trichloroethene	1	U		µg/L
17E159	E159-03	PPMP-66-MW08	5/18/17	WG	FD	SW8260B	Vinyl Chloride	0.8	U		µg/L
17E159	E159-04	PPMP-66-MW16	5/18/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17E159	E159-04	PPMP-66-MW16	5/18/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17E159	E159-04	PPMP-66-MW16	5/18/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17E159	E159-04	PPMP-66-MW16	5/18/17	WG	NS	SW8260B	Trichloroethene	1	U		µg/L
17E159	E159-04	PPMP-66-MW16	5/18/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17E159	E159-05	PPMP-66-MW17	5/18/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17E159	E159-05	PPMP-66-MW17	5/18/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17E159	E159-05	PPMP-66-MW17	5/18/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17E159	E159-05	PPMP-66-MW17	5/18/17	WG	NS	SW8260B	Trichloroethene	1	U		µg/L
17E159	E159-05	PPMP-66-MW17	5/18/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17E159	E159-06	PPMP-66-MW18R	5/18/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17E159	E159-06	PPMP-66-MW18R	5/18/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	0.28	J		µg/L
17E159	E159-06	PPMP-66-MW18R	5/18/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17E159	E159-06	PPMP-66-MW18R	5/18/17	WG	NS	SW8260B	Trichloroethene	0.74	J		µg/L

Appendix C: Analytical Data for Seventh Year of Long-Term Monitoring (May 2017 to February 2018)
Small Weapons Repair Shop, Parcel 66(7), McClellan, Anniston, Alabama

17E159	E159-06	PPMP-66-MW18R	5/18/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17E159	E159-07	PPMP-66-MW23R	5/18/17	WG	NS	SW8260B	1,1-Dichloroethene	4.9			µg/L
17E159	E159-07	PPMP-66-MW23R	5/18/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	29			µg/L
17E159	E159-07	PPMP-66-MW23R	5/18/17	WG	NS	SW8260B	Trichloroethene	89			µg/L
17E159	E159-07	PPMP-66-MW23R	5/18/17	WG	NS	SW8260B	Vinyl Chloride	16			µg/L
17E159	E159-07I	PPMP-66-MW23R	5/18/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	110			µg/L
17E159	E159-08	PPMP-66-MW24R	5/18/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17E159	E159-08	PPMP-66-MW24R	5/18/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	0.59	J		µg/L
17E159	E159-08	PPMP-66-MW24R	5/18/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17E159	E159-08	PPMP-66-MW24R	5/18/17	WG	NS	SW8260B	Trichloroethene	0.32	J		µg/L
17E159	E159-08	PPMP-66-MW24R	5/18/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17E159	E159-09	MATERIAL BLANK	5/18/17	W	WS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17E159	E159-09	MATERIAL BLANK	5/18/17	W	WS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17E159	E159-09	MATERIAL BLANK	5/18/17	W	WS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17E159	E159-09	MATERIAL BLANK	5/18/17	W	WS	SW8260B	Trichloroethene	1	U		µg/L
17E159	E159-09	MATERIAL BLANK	5/18/17	W	WS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17E159	E159-10	PPMP-66-MW02RR	5/18/17	W	FD	SW8260B	1,1-Dichloroethene	0.44	J		µg/L
17E159	E159-10	PPMP-66-MW02RR	5/18/17	W	FD	SW8260B	Cis-1,2-Dichloroethene	24			µg/L
17E159	E159-10	PPMP-66-MW02RR	5/18/17	W	FD	SW8260B	Trans-1,2-Dichloroethene	13			µg/L
17E159	E159-10	PPMP-66-MW02RR	5/18/17	W	FD	SW8260B	Trichloroethene	19			µg/L
17E159	E159-10	PPMP-66-MW02RR	5/18/17	W	FD	SW8260B	Vinyl Chloride	5.4			µg/L
17E159	E159-11	TRIP BLANK	5/18/17	W	TB	SW8260B	1,1-Dichloroethene	1	U		µg/L
17E159	E159-11	TRIP BLANK	5/18/17	W	TB	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17E159	E159-11	TRIP BLANK	5/18/17	W	TB	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17E159	E159-11	TRIP BLANK	5/18/17	W	TB	SW8260B	Trichloroethene	1	U		µg/L
17E159	E159-11	TRIP BLANK	5/18/17	W	TB	SW8260B	Vinyl Chloride	0.8	U		µg/L
17H041	H041-01	PPMP-66-MW02RR	8/7/17	WG	NS	SW8260B	1,1-Dichloroethene	0.68	J		µg/L
17H041	H041-01	PPMP-66-MW02RR	8/7/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	39			µg/L
17H041	H041-01	PPMP-66-MW02RR	8/7/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	19			µg/L
17H041	H041-01	PPMP-66-MW02RR	8/7/17	WG	NS	SW8260B	Trichloroethene	23			µg/L
17H041	H041-01	PPMP-66-MW02RR	8/7/17	WG	NS	SW8260B	Vinyl Chloride	13			µg/L
17H041	H041-02	PPMP-66-MW06R	8/7/17	WG	NS	SW8260B	1,1-Dichloroethene	0.66	J		µg/L

Appendix C: Analytical Data for Seventh Year of Long-Term Monitoring (May 2017 to February 2018)
Small Weapons Repair Shop, Parcel 66(7), McClellan, Anniston, Alabama

17H041	H041-02	PPMP-66-MW06R	8/7/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	19			µg/L
17H041	H041-02	PPMP-66-MW06R	8/7/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	5.2			µg/L
17H041	H041-02	PPMP-66-MW06R	8/7/17	WG	NS	SW8260B	Trichloroethene	64			µg/L
17H041	H041-02	PPMP-66-MW06R	8/7/17	WG	NS	SW8260B	Vinyl Chloride	5.7			µg/L
17H041	H041-03	PPMP-66-MW08	8/7/17	WG	FD	SW8260B	1,1-Dichloroethene	1	U		µg/L
17H041	H041-03	PPMP-66-MW08	8/7/17	WG	FD	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17H041	H041-03	PPMP-66-MW08	8/7/17	WG	FD	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17H041	H041-03	PPMP-66-MW08	8/7/17	WG	FD	SW8260B	Trichloroethene	1	U		µg/L
17H041	H041-03	PPMP-66-MW08	8/7/17	WG	FD	SW8260B	Vinyl Chloride	0.8	U		µg/L
17H041	H041-04	PPMP-66-MW16	8/7/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17H041	H041-04	PPMP-66-MW16	8/7/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17H041	H041-04	PPMP-66-MW16	8/7/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17H041	H041-04	PPMP-66-MW16	8/7/17	WG	NS	SW8260B	Trichloroethene	1	U		µg/L
17H041	H041-04	PPMP-66-MW16	8/7/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17H041	H041-05	PPMP-66-MW17	8/7/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17H041	H041-05	PPMP-66-MW17	8/7/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17H041	H041-05	PPMP-66-MW17	8/7/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17H041	H041-05	PPMP-66-MW17	8/7/17	WG	NS	SW8260B	Trichloroethene	1	U		µg/L
17H041	H041-05	PPMP-66-MW17	8/7/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17H041	H041-06	PPMP-66-MW18R	8/7/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17H041	H041-06	PPMP-66-MW18R	8/7/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1.1			µg/L
17H041	H041-06	PPMP-66-MW18R	8/7/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17H041	H041-06	PPMP-66-MW18R	8/7/17	WG	NS	SW8260B	Trichloroethene	0.76	J		µg/L
17H041	H041-06	PPMP-66-MW18R	8/7/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17H041	H041-07	PPMP-66-MW23R	8/7/17	WG	NS	SW8260B	1,1-Dichloroethene	5.6			µg/L
17H041	H041-07	PPMP-66-MW23R	8/7/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	90			µg/L
17H041	H041-07	PPMP-66-MW23R	8/7/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	37			µg/L
17H041	H041-07	PPMP-66-MW23R	8/7/17	WG	NS	SW8260B	Trichloroethene	78			µg/L
17H041	H041-07	PPMP-66-MW23R	8/7/17	WG	NS	SW8260B	Vinyl Chloride	24			µg/L
17H041	H041-08	PPMP-66-MW24R	8/7/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17H041	H041-08	PPMP-66-MW24R	8/7/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	0.93	J		µg/L
17H041	H041-08	PPMP-66-MW24R	8/7/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L

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17H041	H041-08	PPMP-66-MW24R	8/7/17	WG	NS	SW8260B	Trichloroethene	0.38	J		µg/L
17H041	H041-08	PPMP-66-MW24R	8/7/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17H041	H041-09	Material Blank	8/7/17	W	WS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17H041	H041-09	Material Blank	8/7/17	W	WS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17H041	H041-09	Material Blank	8/7/17	W	WS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17H041	H041-09	Material Blank	8/7/17	W	WS	SW8260B	Trichloroethene	1	U		µg/L
17H041	H041-09	Material Blank	8/7/17	W	WS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17H041	H041-10	PPMP-66-MW24R	8/7/17	WG	FD	SW8260B	1,1-Dichloroethene	1	U		µg/L
17H041	H041-10	PPMP-66-MW24R	8/7/17	WG	FD	SW8260B	Cis-1,2-Dichloroethene	1.1			µg/L
17H041	H041-10	PPMP-66-MW24R	8/7/17	WG	FD	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17H041	H041-10	PPMP-66-MW24R	8/7/17	WG	FD	SW8260B	Trichloroethene	0.44	J		µg/L
17H041	H041-10	PPMP-66-MW24R	8/7/17	WG	FD	SW8260B	Vinyl Chloride	0.8	U		µg/L
17H041	H041-11	Trip Blank	8/7/17	W	TB	SW8260B	1,1-Dichloroethene	1	U		µg/L
17H041	H041-11	Trip Blank	8/7/17	W	TB	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17H041	H041-11	Trip Blank	8/7/17	W	TB	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17H041	H041-11	Trip Blank	8/7/17	W	TB	SW8260B	Trichloroethene	1	U		µg/L
17H041	H041-11	Trip Blank	8/7/17	W	TB	SW8260B	Vinyl Chloride	0.8	U		µg/L
17K201	K201-01	PPMP-66-MW02RR	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	0.55	J		µg/L
17K201	K201-01	PPMP-66-MW02RR	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	0.55	J		µg/L
17K201	K201-01	PPMP-66-MW02RR	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	32			µg/L
17K201	K201-01	PPMP-66-MW02RR	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	32			µg/L
17K201	K201-01	PPMP-66-MW02RR	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	15			µg/L
17K201	K201-01	PPMP-66-MW02RR	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	15			µg/L
17K201	K201-01	PPMP-66-MW02RR	11/20/17	WG	NS	SW8260B	Trichloroethene	19			µg/L
17K201	K201-01	PPMP-66-MW02RR	11/20/17	WG	NS	SW8260B	Trichloroethene	19			µg/L
17K201	K201-01	PPMP-66-MW02RR	11/20/17	WG	NS	SW8260B	Vinyl Chloride	7.6			µg/L
17K201	K201-01	PPMP-66-MW02RR	11/20/17	WG	NS	SW8260B	Vinyl Chloride	7.6			µg/L
17K201	K201-02	PPMP-66-MW06R	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	0.45	J		µg/L
17K201	K201-02	PPMP-66-MW06R	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	0.45	J		µg/L
17K201	K201-02	PPMP-66-MW06R	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	14			µg/L
17K201	K201-02	PPMP-66-MW06R	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	14			µg/L
17K201	K201-02	PPMP-66-MW06R	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	3.3			µg/L

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17K201	K201-02	PPMP-66-MW06R	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	3.3			µg/L
17K201	K201-02	PPMP-66-MW06R	11/20/17	WG	NS	SW8260B	Trichloroethene	45			µg/L
17K201	K201-02	PPMP-66-MW06R	11/20/17	WG	NS	SW8260B	Trichloroethene	45			µg/L
17K201	K201-02	PPMP-66-MW06R	11/20/17	WG	NS	SW8260B	Vinyl Chloride	3.5			µg/L
17K201	K201-02	PPMP-66-MW06R	11/20/17	WG	NS	SW8260B	Vinyl Chloride	3.5			µg/L
17K201	K201-03	PPMP-66-MW08	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17K201	K201-03	PPMP-66-MW08	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17K201	K201-03	PPMP-66-MW08	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17K201	K201-03	PPMP-66-MW08	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17K201	K201-03	PPMP-66-MW08	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17K201	K201-03	PPMP-66-MW08	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17K201	K201-03	PPMP-66-MW08	11/20/17	WG	NS	SW8260B	Trichloroethene	1	U		µg/L
17K201	K201-03	PPMP-66-MW08	11/20/17	WG	NS	SW8260B	Trichloroethene	1	U		µg/L
17K201	K201-03	PPMP-66-MW08	11/20/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17K201	K201-03	PPMP-66-MW08	11/20/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17K201	K201-04	PPMP-66-MW16	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17K201	K201-04	PPMP-66-MW16	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17K201	K201-04	PPMP-66-MW16	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17K201	K201-04	PPMP-66-MW16	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17K201	K201-04	PPMP-66-MW16	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17K201	K201-04	PPMP-66-MW16	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17K201	K201-04	PPMP-66-MW16	11/20/17	WG	NS	SW8260B	Trichloroethene	1	U		µg/L
17K201	K201-04	PPMP-66-MW16	11/20/17	WG	NS	SW8260B	Trichloroethene	1	U		µg/L
17K201	K201-04	PPMP-66-MW16	11/20/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17K201	K201-04	PPMP-66-MW16	11/20/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17K201	K201-05	PPMP-66-MW17	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17K201	K201-05	PPMP-66-MW17	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17K201	K201-05	PPMP-66-MW17	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17K201	K201-05	PPMP-66-MW17	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17K201	K201-05	PPMP-66-MW17	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17K201	K201-05	PPMP-66-MW17	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17K201	K201-05	PPMP-66-MW17	11/20/17	WG	NS	SW8260B	Trichloroethene	1	U		µg/L

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17K201	K201-05	PPMP-66-MW17	11/20/17	WG	NS	SW8260B	Trichloroethene	1	U		µg/L
17K201	K201-05	PPMP-66-MW17	11/20/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17K201	K201-05	PPMP-66-MW17	11/20/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17K201	K201-06	PPMP-66-MW18R	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17K201	K201-06	PPMP-66-MW18R	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17K201	K201-06	PPMP-66-MW18R	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	0.73	J		µg/L
17K201	K201-06	PPMP-66-MW18R	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	0.73	J		µg/L
17K201	K201-06	PPMP-66-MW18R	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17K201	K201-06	PPMP-66-MW18R	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17K201	K201-06	PPMP-66-MW18R	11/20/17	WG	NS	SW8260B	Trichloroethene	0.34	J		µg/L
17K201	K201-06	PPMP-66-MW18R	11/20/17	WG	NS	SW8260B	Trichloroethene	0.34	J		µg/L
17K201	K201-06	PPMP-66-MW18R	11/20/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17K201	K201-06	PPMP-66-MW18R	11/20/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17K201	K201-07	PPMP-66-MW23R	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	7.5			µg/L
17K201	K201-07	PPMP-66-MW23R	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	41			µg/L
17K201	K201-07	PPMP-66-MW23R	11/20/17	WG	NS	SW8260B	Vinyl Chloride	21			µg/L
17K201	K201-07I	PPMP-66-MW23R	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	130			µg/L
17K201	K201-07I	PPMP-66-MW23R	11/20/17	WG	NS	SW8260B	Trichloroethene	120			µg/L
17K201	K201-08	PPMP-66-MW24R	11/20/17	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17K201	K201-08	PPMP-66-MW24R	11/20/17	WG	NS	SW8260B	Cis-1,2-Dichloroethene	0.65	J		µg/L
17K201	K201-08	PPMP-66-MW24R	11/20/17	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17K201	K201-08	PPMP-66-MW24R	11/20/17	WG	NS	SW8260B	Trichloroethene	0.46	J		µg/L
17K201	K201-08	PPMP-66-MW24R	11/20/17	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17K201	K201-09	MATERIAL BLANK	11/20/17	W	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
17K201	K201-09	MATERIAL BLANK	11/20/17	W	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17K201	K201-09	MATERIAL BLANK	11/20/17	W	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17K201	K201-09	MATERIAL BLANK	11/20/17	W	NS	SW8260B	Trichloroethene	1	U		µg/L
17K201	K201-09	MATERIAL BLANK	11/20/17	W	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
17K201	K201-10	PPMP-66-MW17	11/20/17	WG	FD	SW8260B	1,1-Dichloroethene	1	U		µg/L
17K201	K201-10	PPMP-66-MW17	11/20/17	WG	FD	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17K201	K201-10	PPMP-66-MW17	11/20/17	WG	FD	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17K201	K201-10	PPMP-66-MW17	11/20/17	WG	FD	SW8260B	Trichloroethene	1	U		µg/L

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17K201	K201-10	PPMP-66-MW17	11/20/17	WG	FD	SW8260B	Vinyl Chloride	0.8	U		µg/L
17K201	K201-11	TRIP BLANK	11/20/17	W	TB	SW8260B	1,1-Dichloroethene	1	U		µg/L
17K201	K201-11	TRIP BLANK	11/20/17	W	TB	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
17K201	K201-11	TRIP BLANK	11/20/17	W	TB	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
17K201	K201-11	TRIP BLANK	11/20/17	W	TB	SW8260B	Trichloroethene	1	U		µg/L
17K201	K201-11	TRIP BLANK	11/20/17	W	TB	SW8260B	Vinyl Chloride	0.8	U		µg/L
18B056	B056-01	PPMP-66-MW02RR	2/8/18	WG	NS	SW8260B	1,1-Dichloroethene	0.77	J		µg/L
18B056	B056-01	PPMP-66-MW02RR	2/8/18	WG	NS	SW8260B	Cis-1,2-Dichloroethene	57			µg/L
18B056	B056-01	PPMP-66-MW02RR	2/8/18	WG	NS	SW8260B	Trans-1,2-Dichloroethene	27			µg/L
18B056	B056-01	PPMP-66-MW02RR	2/8/18	WG	NS	SW8260B	Trichloroethene	31			µg/L
18B056	B056-01I	PPMP-66-MW02RR	2/8/18	WG	NS	SW8260B	Vinyl Chloride	15			µg/L
18B056	B056-02	PPMP-66-MW06R	2/8/18	WG	NS	SW8260B	1,1-Dichloroethene	0.49	J		µg/L
18B056	B056-02	PPMP-66-MW06R	2/8/18	WG	NS	SW8260B	Cis-1,2-Dichloroethene	16			µg/L
18B056	B056-02	PPMP-66-MW06R	2/8/18	WG	NS	SW8260B	Trans-1,2-Dichloroethene	3.8			µg/L
18B056	B056-02	PPMP-66-MW06R	2/8/18	WG	NS	SW8260B	Trichloroethene	49			µg/L
18B056	B056-02	PPMP-66-MW06R	2/8/18	WG	NS	SW8260B	Vinyl Chloride	6.1			µg/L
18B056	B056-03	PPMP-66-MW08	2/8/18	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
18B056	B056-03	PPMP-66-MW08	2/8/18	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
18B056	B056-03	PPMP-66-MW08	2/8/18	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
18B056	B056-03	PPMP-66-MW08	2/8/18	WG	NS	SW8260B	Trichloroethene	1	U		µg/L
18B056	B056-03	PPMP-66-MW08	2/8/18	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
18B056	B056-04	PPMP-66-MW16	2/8/18	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
18B056	B056-04	PPMP-66-MW16	2/8/18	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
18B056	B056-04	PPMP-66-MW16	2/8/18	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
18B056	B056-04	PPMP-66-MW16	2/8/18	WG	NS	SW8260B	Trichloroethene	1	U		µg/L
18B056	B056-04	PPMP-66-MW16	2/8/18	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
18B056	B056-05	PPMP-66-MW17	2/8/18	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
18B056	B056-05	PPMP-66-MW17	2/8/18	WG	NS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
18B056	B056-05	PPMP-66-MW17	2/8/18	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
18B056	B056-05	PPMP-66-MW17	2/8/18	WG	NS	SW8260B	Trichloroethene	1	U		µg/L
18B056	B056-05	PPMP-66-MW17	2/8/18	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
18B056	B056-06	PPMP-66-MW18R	2/8/18	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L

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18B056	B056-06	PPMP-66-MW18R	2/8/18	WG	NS	SW8260B	Cis-1,2-Dichloroethene	0.37	J		µg/L
18B056	B056-06	PPMP-66-MW18R	2/8/18	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
18B056	B056-06	PPMP-66-MW18R	2/8/18	WG	NS	SW8260B	Trichloroethene	0.28	J		µg/L
18B056	B056-06	PPMP-66-MW18R	2/8/18	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
18B056	B056-07	PPMP-66-MW23R	2/8/18	WG	NS	SW8260B	1,1-Dichloroethene	11			µg/L
18B056	B056-07	PPMP-66-MW23R	2/8/18	WG	NS	SW8260B	Trans-1,2-Dichloroethene	57			µg/L
18B056	B056-07I	PPMP-66-MW23R	2/8/18	WG	NS	SW8260B	Cis-1,2-Dichloroethene	140			µg/L
18B056	B056-07I	PPMP-66-MW23R	2/8/18	WG	NS	SW8260B	Trichloroethene	130			µg/L
18B056	B056-07I	PPMP-66-MW23R	2/8/18	WG	NS	SW8260B	Vinyl Chloride	24			µg/L
18B056	B056-08N	PPMP-66-MW24R	2/8/18	WG	NS	SW8260B	1,1-Dichloroethene	1	U		µg/L
18B056	B056-08N	PPMP-66-MW24R	2/8/18	WG	NS	SW8260B	Cis-1,2-Dichloroethene	0.73	J		µg/L
18B056	B056-08N	PPMP-66-MW24R	2/8/18	WG	NS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
18B056	B056-08N	PPMP-66-MW24R	2/8/18	WG	NS	SW8260B	Trichloroethene	0.49	J		µg/L
18B056	B056-08N	PPMP-66-MW24R	2/8/18	WG	NS	SW8260B	Vinyl Chloride	0.8	U		µg/L
18B056	B056-09	MATERIAL BLANK	2/8/18	W	WS	SW8260B	1,1-Dichloroethene	1	U		µg/L
18B056	B056-09	MATERIAL BLANK	2/8/18	W	WS	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
18B056	B056-09	MATERIAL BLANK	2/8/18	W	WS	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
18B056	B056-09	MATERIAL BLANK	2/8/18	W	WS	SW8260B	Trichloroethene	1	U		µg/L
18B056	B056-09	MATERIAL BLANK	2/8/18	W	WS	SW8260B	Vinyl Chloride	0.8	U		µg/L
18B056	B056-10	PPMP-66-MW06R	2/8/18	WG	FD	SW8260B	1,1-Dichloroethene	0.5	J		µg/L
18B056	B056-10	PPMP-66-MW06R	2/8/18	WG	FD	SW8260B	Cis-1,2-Dichloroethene	15			µg/L
18B056	B056-10	PPMP-66-MW06R	2/8/18	WG	FD	SW8260B	Trans-1,2-Dichloroethene	3.7			µg/L
18B056	B056-10	PPMP-66-MW06R	2/8/18	WG	FD	SW8260B	Trichloroethene	46			µg/L
18B056	B056-10	PPMP-66-MW06R	2/8/18	WG	FD	SW8260B	Vinyl Chloride	6.1			µg/L
18B056	B056-11	TRIP BLANK	2/8/18	W	TB	SW8260B	1,1-Dichloroethene	1	U		µg/L
18B056	B056-11	TRIP BLANK	2/8/18	W	TB	SW8260B	Cis-1,2-Dichloroethene	1	U		µg/L
18B056	B056-11	TRIP BLANK	2/8/18	W	TB	SW8260B	Trans-1,2-Dichloroethene	1	U		µg/L
18B056	B056-11	TRIP BLANK	2/8/18	W	TB	SW8260B	Trichloroethene	1	U		µg/L
18B056	B056-11	TRIP BLANK	2/8/18	W	TB	SW8260B	Vinyl Chloride	0.8	U		µg/L

APPENDIX D

Data Quality Summary

Appendix D

Data Quality Summary:

Former Small Weapons Repair Shop, Parcel 66(7)

McClellan, Anniston, Alabama

Seventh Year Long-Term Monitoring

(May 2017 to February 2018)

Prepared for:

MCCLELLAN
DEVELOPMENT AUTHORITY

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March 2018

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ATTACHMENTS

LIST OF ABBREVIATIONS AND ACRONYMS

ADEM	Alabama Department of Environmental Management
ARBCA	*Alabama Risk-Based Corrective Action Guidance Manual*
CCAL	Continuing calibration
COC	Chain-of-custody
DQO	Data Quality Objective
DQS	Data Quality Summary
EMAX	EMAX Laboratories, Torrance, California
EPA	United States Environmental Protection Agency
ESV	Ecological Screening Value
FD	Field duplicate
GC/MS	Gas chromatography/mass spectrometry
ICAL	Initial calibration
IDL	Instrument detection limit
IS	Internal standard
IT	IT Corporation
LCS	Laboratory control sample
LCSD	Laboratory control sample duplicate
LTM	Long-term monitoring
MDA	McClellan Development Authority
MDL	Method detection limit
MES	Matrix Environmental Services, LLC
MS	Matrix spike
MSD	Matrix spike duplicate
PARCCS	Precision, accuracy, representativeness, completeness, comparability, and sensitivity
QA	Quality assurance
QAP	*Quality Assurance Plan*
QC	Quality control
%R	Percent recovery
RBTL	Risk-Based Target Level
RL	Reporting limit
RPD	Relative percent difference
RSD	Relative standard deviation
Site	Former Small Weapons Repair Shop, Parcel 66(7)
TB	Trip blank
VOC	Volatile Organic Compound

1.0 INTRODUCTION

Matrix Environmental Services, LLC (MES) has prepared this Data Quality Summary (DQS) on behalf of the McClellan Development Authority (MDA) in support of sampling events conducted during the sixth year of long-term monitoring (LTM) from May 2017 to February 2018 at the Former Small Weapons Repair Shop, Parcel 66(7) (the Site) within McClellan, Anniston, Alabama, formerly known as Fort McClellan. The purpose of these sampling events was to collect data to support the evaluation of the effectiveness of the remedial action for contaminated groundwater at the Site.

This DQS addresses the data quality review for groundwater samples collected during the May 2017 to February 2018 sampling events. The approved methods used to conduct the investigations are discussed in the *Quality Assurance Plan* (*QAP*) in *Appendix A* of the *Final Installation-Wide Sampling and Analysis Plan* (MES, 2013) which details the specifics of quality assurance (QA) and quality control (QC) with respect to sampling and data evaluation.

2.0 PROJECT DESCRIPTION

Project objectives and QA objectives in terms of precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) are described in this section.

2.1 PROJECT OBJECTIVES

The objective of the environmental sampling at the Site was to evaluate the effectiveness of the selected remedy for groundwater at the Site. To support this objective groundwater samples were collected from four residuum wells, three transition wells, and one bedrock well during four rounds of sampling conducted from May 2017 to February 2018. The groundwater samples were analyzed for VOCs.

2.2 DATA QUALITY LEVELS

During the field program, groundwater samples were collected and analyzed with screening level methods for field parameters and definitive level methods for specific chemical analytes. Screening and definitive level data are defined as follows (United States Environmental Protection Agency [EPA], 1994):

- Screening Level Data – Screening level data are subject to minimal QC requirements. Results are often not compound-specific and not quantitative, but results are available in real time. Obtaining screening level data is less costly than obtaining definitive level data, but the results are less defensible because of the greater potential for error and the inherent precision and accuracy limitations. This level is normally used for field investigation health and safety screening, but can also be used to identify media or samples for consideration for further analyses. Field pH, conductivity, temperature, turbidity, total dissolved solids, dissolved oxygen, and oxidation/reduction potential measurements collected during this investigation are considered screening level data.

- Definitive Level Data - Analyses performed using established analytical procedures and strict QC procedures produce definitive level data. Applicable EPA test methods (EPA, 1986) were used to collect definitive level data for the Site. Analytical results produced were analyte-specific with confirmation of analyte identity and concentration. Definitive level data meeting quality criteria are suitable for site assessments, risk assessments, remedial design, and remediation efforts.

2.3 DATA QUALITY OBJECTIVES

QA objectives in terms of PARCCS are outlined below.

Precision is a measure of the reproducibility of a set of duplicate analytical results, usually under prescribed similar conditions. Precision, as discussed in Section A3.3.1 in the *QAP*, is expressed in terms of the relative percent difference (RPD) between duplicate determinations, or in terms of the relative standard deviation (RSD) when three or more determinations are made. Various measures of precision exist depending on the prescribed similar conditions.

Overall sampling and analysis precision was assessed using RPDs for duplicate environmental samples and matrix spike/matrix spike duplicates (MS/MSDs). The RPDs for laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results were used to assess laboratory precision. RPD is defined as the difference between two measurements divided by their mean and expressed as a percent as shown in the following equation:

$$RPD = \frac{|X - Y|}{(X + Y) / 2} \times 100\%$$

where:

X = Primary sample concentration (primary field investigative sample, MS, or LCS)
Y = Duplicate sample concentration (laboratory duplicate, field duplicate [FD], MSD, or LCSD)

To evaluate precision, the RPDs for MS/MSDs, laboratory duplicates, and LCS/LCSDs were compared to laboratory historical limits. The RPDs for FDs were compared to the project precision goal of 50 percent for aqueous samples.

The RSD is the standard deviation of a set of values divided by the average value expressed as a percent as shown in the following equation:

$$RSD = S/\overline{X} \times 100$$

where:

S = The standard deviation of the sample data
$\overline{X}$ = The arithmetic mean of the sample data

RSDs can be used to evaluate the linearity of the initial calibration (EPA, 1986).

Accuracy is a measure of the agreement of an analytical result with the true value. Accuracy, as discussed in Section A3.3.2 in the *QAP*, is typically expressed as a percent recovery (%R) calculated by the ratio of the measurement and accepted true value as shown in the following equation:

$$\%R = ((Xs - Xu) / K) \times 100\%$$

where:

Xs = Measured value of the spiked sample
Xu = Measured value of the unspiked sample
K = Known amount of the spike in the sample

Analytical accuracy is assessed through the analysis of spikes such as surrogates, MS/MSDs and LCS/LCSDs, performance evaluation samples, standard reference materials and calibration check samples. Surrogates and MS/MSDs are spiked into the actual sample matrix and are accuracy indicators that take into account the nature of the matrix in question and the native concentration of the analyte spiked. Matrix variability or interferences from high concentrations of native compounds may adversely affect spike recovery and yield less than

conclusive data. Accuracy checks that focus on analytical method and consist of compounds spiked in a blank or non-interfering matrix (e.g., LCSs or calibration check samples) address the accuracy of the method or instrumentation at detecting the target analyte(s) at a certain quantification level and are not considered to be subject to matrix effects. The accuracy of sample results can also be affected by holding time violations.

Representativeness, as described in Section A3.3.3 in the *QAP*, is a qualitative parameter that expresses the degree to which sample data actually represent the matrix conditions. For example, in conducting groundwater monitoring, representativeness requires proper location of wells and the collection of samples under consistent, documented procedures. Wells are located based upon the results of the hydrogeologic study in progress and are designed to provide maximum coverage of the flow conditions. Requirements and procedures for sample collection and handling are designed to maximize sample representativeness. Representativeness can also be monitored by reviewing field documentation and by performing field QA audits.

Completeness, as discussed in Section A3.3.4 in the *QAP*, represents the percentage of valid data collected from a sampling/analytical program or measurement system compared to the amount achieved under optimal conditions. The completeness goal for investigative samples is 95 percent. Completeness is calculated using the following formula:

$$\text{Percent Complete} = \frac{\text{Valid Data}}{\text{Total Data}} \times 100\%$$

Valid data are identified during the data review process as being acceptable for use or usable as qualified. Invalid data are identified as rejected.

Comparability, as discussed in Section A3.3.5 of the *QAP*, is a qualitative parameter expressing the confidence with which one data set can be compared with another. Comparability for sampling and analysis tasks is achieved by:

- Specifying well-recognized techniques and accepted standard methods for sampling and analysis, and using well-trained sampling and analysis technicians to execute the prescribed methods consistently.
- Requiring that sampling and analysis personnel produce adequate documentation to record how the prescribed methods were actually executed.
- Noting non-conformances and corrective measures taken.

Specifying standardized laboratory methods helps to ensure that the data generated for a sampling event are comparable to past and future sampling events.

Sensitivity is used broadly here to describe the method detection limits (MDLs) or reporting limits (RLs) established to meet project-specific data quality objectives (DQOs). In addition, sensitivity can be used to describe the capability of a method or instrument to discriminate between measurement responses. Several limits have been established to describe sensitivity requirements as specified in Section A3.3.6 of the *QAP*. Reported instrument detection limits

(IDLs) and MDLs are typically based upon a reagent water matrix or purified solid, and ignore sample matrix interferences and the resulting effects on the limits. For this reason, published MDLs or IDLs may not be achievable for environmental samples. The *QAP* RLs were generated by the laboratory and may exceed Risk-Based Target Levels (RBTLs) due to instrument limitations. Section 6.2 discusses the comparisons between the RBTLs and the laboratory RLs and MDLs for the sampling events.

2.4 ANALYTICAL SERVICES

EMAX Laboratories, Inc (EMAX), Torrance, California, provided analytical services for the sampling conducted by MES.

2.4.1 Analytical Program

The *QAP* lists the EPA analytical methods used to meet definitive data requirements. Method SW8260B volatile organic compounds (VOCs) by Gas Chromatography/Mass Spectrometry (GC/MS) was used to analyze constituents of concern in groundwater samples collected at the Site during the May 2017, August 2076, November 2017, and February 2018 sampling events.

2.4.2 Quality Control

The *QAP* describes the analytical QC requirements. The results of the analytical QC data review for this sampling event are presented in Section 5.0.

3.0 DEVIATIONS FROM PLANNED FIELD ACTIVITIES

No deviations from the planned field activities were noted during the preparation of this DQS.

4.0 ASSESSMENT OF DATA QUALITY

Data quality is assessed through two review processes. The contracted analytical laboratory performs the first data review to assess compliance with *QAP*-approved analytical methods (MES, 2004) and with laboratory standard operating procedures. MES performs the second data review to assess compliance with the QA objectives, and to assess hard copy and electronic deliverable consistency and integrity.

4.1 LABORATORY DATA QUALITY ASSESSMENT

The laboratory data quality assessment includes an analytical data review to ensure accurate and complete data reporting and compliance with the analytical method specifications.

4.1.1 Laboratory Qualification of Data

The laboratory will flag analytical results, when necessary, to indicate potential impacts to data usability and to alert the user to special analytical conditions. More than one qualifier may be used to indicate multiple conditions or situations that apply to an individual result. The following laboratory qualifiers were used during this investigation:

FLAG	DESCRIPTION
E	Result exceeds the calibration range of the instrument.
J	Estimated value. The analyte is positively identified and the concentration is less than the RL but greater than the MDL.
U	Analyte is not detected above the RL.
V	Detected value.

4.2 MES DATA QUALITY AND USABILITY ASSESSMENT

The following sections describe the procedures that MES followed to assess the quality and usability of both field measurement and definitive data. Data assessment is complete when 100 percent of the information have been collected and reviewed. Based on the results of the review process, data are categorized as fully usable, usable as qualified, or rejected.

4.2.1 Data Review and Validation

MES reviewed the analytical data in accordance with the *QAP* (MES, 2013), analytical methods (EPA, 1986), and *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (EPA, 2014). The data review process included reviewing and evaluating 100 percent of the hard copy data for (1) extraction and analysis holding times, (2) surrogate recoveries, (3) blank detections, (4) LCS/LCSD recoveries and RPDs, (5) MS/MSD recoveries and RPDs, (6) FD RPDs, (7) laboratory duplicate RPDs, if applicable, (8) initial calibrations (ICALs) and continuing calibrations (CCALs), (9) instrument tuning and performance, (10) reporting limits, and (11) completeness of the chain-of-custody (COC) forms.

Hard copy data packages were checked to verify that the following items were included:

- Case narrative
- Data summary sheets
- ICALs and CCALs
- Method or preparation blanks (at least one per QC batch)
- MS/MSD (5 percent of client samples)
- LCS/LCSD (one per QC batch)
- Duplicate analyses (laboratory duplicate sample, LCS/LCSD, MS/MSD, as applicable)
- Holding times
- Retention time window calculation (if applicable)
- Standard preparation sheets
- Linear range calculations (correlation coefficients)

The results of the review of the chemical data obtained during this investigation are included in Section 5.0. The laboratory data forms showing the validated results are included in Attachment D1.

4.2.2 MES Qualification of Data

Based on the data review, MES may assign final qualifiers to analytical results on both the hard copy results and in the database. The following final qualifiers may be assigned to the results to describe data quality and usability:

FLAG	DESCRIPTION
J	Estimated detection. The associated numerical value is the approximate concentration of the analyte in the sample.
UJ	Analyte was analyzed for, but was not detected. The reported quantitation limit is estimated.
U	Result was qualified as not detected above the RL or reported sample quantitation limit.

In addition to the qualifier, a sub-qualifier is applied to describe the specific multiple conditions or situations that apply to an individual result. These qualifiers and sub-qualifiers are collectively referred to as validation codes.

Whenever duplicate sets of results were reported by the laboratory due to dilutions, re-analyses, re-extractions, or dual column analytical methods, the MES reviewer chose the "most-preferred" results based on the data review. In Section 5.0, only the reportable data (flagged "Y") are shown in Tables D5-2 to D5-6.

5.0 RESULTS OF QUALITY CONTROL ANALYSES

Table D5-1 lists samples and analytical methods included in the May 2017 to February 2018 sampling events for the Site. To evaluate the data quality, the results were compared to method requirements and laboratory historical control limits. Based on the data review performed on the samples collected from May 2017 to February 2018, none of the reportable analytical data were qualified and none of the analytical data were rejected. The results of the data review process are discussed further in the following sections.

5.1 QUALITY CONTROL PROCEDURES AND RESULTS OF QUALITY CONTROL ANALYSES

Two types of QC results were used to evaluate data quality: field QC samples were collected and analyzed to evaluate field sampling activities, and laboratory QC samples were analyzed to evaluate laboratory analytical procedures and maintain control of the analytical methods.

5.1.1 Field Quality Control Procedures and Analyses

Field QC samples included MS/MSD samples, FDs, material blanks, and trip blanks (TBs). The *QAP* was used as the guidance document to identify the appropriate number of field QC samples, procedures for their collection and analysis, and evaluation of results required for this sampling event. The evaluation procedures for the field QC sample analyses are summarized below.

5.1.1.1 Matrix Spike/Matrix Spike Duplicate Samples

MS and MSD samples are investigative samples spiked by the laboratory with known concentrations of target analytes. MS and MSD sample results are used to evaluate possible matrix interferences. The formulas used to calculate the %Rs and RPDs are presented in Section 2.3.

Accuracy was assessed by calculating the MS and MSD %Rs of the concentrations of the target analytes added to the investigative sample. The %Rs were then compared to laboratory historical control limits. When both the MS and MSD %Rs were outside laboratory historical control limits, MS/MSD qualifiers were applied only to the results for the investigative sample used for the MS/MSD. When only an MS was analyzed, qualifiers were applied when the MS %R was outside laboratory historical control limits. Low recoveries in an MS/MSD may indicate the matrix has negatively influenced the results. Constituent concentrations could be potentially higher in samples with low MS/MSD recoveries. High MS/MSD recoveries may indicate the matrix has positively influenced the results. Constituent concentrations may be potentially lower in samples with high MS/MSD recoveries.

Precision was assessed by calculating the RPDs for the MS/MSD sample pairs. The MS/MSD RPD values were reviewed to assess the precision of the analytical results based on the magnitude of the RPD values. In cases where a target analyte was not detected in at least one of the MS/MSD sample pair, an RPD would not be valid, and therefore, was not calculated. Qualifiers were not applied based on the MS/MSD RPD values, however, the MS/MSD RPD

values were compared to laboratory historical control limits to assess if further evaluation of the data was warranted.

Groundwater samples from well PPMP-66-MW08 were collected and analyzed for the MS and MSD for the May 2017, August 2017, and February 2018 sampling events. Groundwater sample from well PPMP-66-MW06R was collected and analyzed for the MS and MSD for the November 2017 sampling event. The MS/MSD %Rs met criteria.

A summary of the MS/MSD %R data is shown in Table D5-2. The overall accuracy of the analytical results is considered to be acceptable.

5.1.1.2 Field Duplicate Samples

FD samples were collected and analyzed as specified in the *QAP* (Section A6.3.5). FD samples are independent samples collected simultaneously or in immediate succession with the original investigative samples such that they are expected to be equally representative of the medium at the time of sampling. These samples provide precision information for the entire measurement system, including sample collection, handling, shipping, storage, preparation, and analysis. The precision of FD pairs was assessed by calculating the RPDs using the equation in Section 2.3. In cases where a target analyte was not detected in either sample or was detected in only one of the samples, an RPD would not be valid, and therefore, was not calculated.

Four groundwater FD samples were collected for the sampling events included in this DQS. Table D5-3 lists the original station name from the COC forms (i.e. COC IDs used to disguise the sample's identity when the sample was sent to the laboratory), the parent station name, and the methods analyzed. The results for the FD and associated investigative sample analyses were reviewed to assess the precision of the analytical results based on the magnitude of the RPD values.

Table D5-4 shows the RPDs calculated for the investigative and FD sample pair. The criterion of 50 percent for aqueous samples was used to assess if further evaluation of the data was warranted. None of the aqueous RPD values exceeded 50 percent. Therefore, the overall variability of the precision measurements is considered acceptable.

5.1.1.3 Material Blank and Trip Blank Analyses

A material blank sample is defined as a sample of a "clean" reagent source such as deionized water, a chemical reagent source, or a sampling medium such as air filter or sorbent cartridge considered "analyte-free" or "background-free" of contamination. If these blanks show elevated concentrations of target analytes, the corresponding data set may be considered biased (MES, 2013). Material blanks were collected on a weekly basis to monitor the final rinse water used by the sampler for potential contaminants. One material blank each was collected for the May 2017, August 2017, November 2017, and February 2018 sampling events. No target analytes were detected in the material blanks collected during the May 2017 to February 2018 sampling events.

TBs are used to assess the potential introduction of contaminants from sample containers or during the sampling, transportation, and storage procedures (MES, 2013). A TB sample consists of VOC sample vials filled in the laboratory with American Society of Testing and Materials Type II reagent grade water, transported to the sampling site, handled like an environmental sample and returned to the laboratory for analysis. TBs are not opened in the field and are only prepared when aqueous VOC samples are scheduled to be collected and analyzed by the laboratory. Sample results are considered affected by TB contamination when the sample concentration is less than five times the blank concentration (ten times for common laboratory contaminants acetone, methylene chloride, and 2-butanone). Affected sample results less than the reporting limit and less than five times the associated blank concentration are considered non-detects at the reporting limit. Affected sample results greater than the reporting limit and less than five times the blank concentration are considered non-detects at the concentration observed in the sample. One TB each was collected for the May 2017, August 2017, November 2017, and February 2018 sampling events. No target analytes were detected in the TBs, therefore, no qualifiers were required based on TB results.

5.1.2 Laboratory Quality Control Procedures and Analyses

Laboratory QC checks include internal system checks and QC samples used to monitor the possible effect of laboratory activities on sample results. The analytical method and method-specific SOPs developed by the laboratory define the types of laboratory QC checks required. QC procedures followed by the laboratory include sample container inspection, COC documentation review, sample holding time review, LCS/LCSD analyses, method blank analyses, and surrogate spike percent recovery evaluation. The laboratories are also responsible for analytical instrument calibration, which includes method-specific criteria for initial and continuing calibrations for external and internal standard calibration procedures.

5.1.2.1 Initial Sample Inspection and Chain-of-Custody Documentation

The laboratory inspected the shipping containers upon receipt and compared the contents with the COC form associated with each cooler. Information from the sample check-in procedure was recorded on the Sample Receipt Form, including sample receipt anomalies. These forms were used by the laboratory to document that sample identifications listed on the COC forms agreed with the samples contained in the coolers. The laboratory verified that COC forms were filled out properly, sample containers were not broken, custody seals were intact, the pH met method-specific criteria for water samples (if applicable), and cooler temperatures were maintained at ≤6 degrees Celsius. The completed forms are included in the laboratory analytical packages and were reviewed during the data review process. The samples arrived at the laboratory at the proper temperature, and no sample containers were damaged during transit.

MES compared the data on the COC forms with the laboratory reports and documented any differences. If minor discrepancies were found and verified by the laboratory, the laboratory reports and MES electronic databases were corrected. In addition to the COC checks, MES reviewers verified approximately 10 percent of the laboratory hard copy reports against the laboratory electronic data deliverables.

5.1.2.2 Holding Times

Samples were shipped regularly in coordination with the analytical laboratory to ensure analyses were conducted within the required holding times. The time elapsed between sample collection and sample extraction/analysis was calculated as part of the review process to evaluate if holding times were met. Holding time criteria were met for the sampling events included in this DQS, therefore, accuracy of the analytical results is acceptable with regards to holding time.

5.1.2.3 Laboratory Control Sample/Laboratory Control Sample Duplicate

The laboratory analyzed LCS/LCSD pairs with each analytical batch of field samples to assess internal precision and accuracy. LCS/LCSD pairs consisted of analyte-free water spiked with selected target constituents of known concentration. The LCS/LCSD %Rs and RPDs are used to determine laboratory accuracy and precision, respectively. The formulas used to calculate the %Rs and RPDs are presented in Section 2.3. The %Rs and RPDs were then compared to laboratory historical control limits. When the LCS and LCSD %Rs were outside laboratory historical control limits, the LCS/LCSD qualifications were applied to investigative samples within the same analytical batch. Qualifiers were applied only when both the LCS and LCSD %Rs were outside laboratory historical control limits. In cases where only an LCS was analyzed, qualifiers were applied when the LCS %R was outside laboratory historical control limits. Qualifiers were not applied based on LCS/LCSD RPD values, however, the LCS/LCSD RPD values were compared to laboratory historical control limits to assess if further evaluation of the data was warranted. For the sampling events included in this DQS, MES reviewed the LCS/LCSD %Rs and RPDs for Method SW8260B.

Table D5-5 shows the LCS/LCSD %R and RPD data. The LCS/LCSD %Rs and RPDs met criteria. Because no qualifiers were required based on the LCS/LCSD %Rs, and because 100 percent of the RPD results were within the laboratory control limits, the overall accuracy and precision measurements are considered to be acceptable.

5.1.2.4 Method Blank Samples

Method blanks are prepared and analyzed by the laboratory to assess the level of background interferences and possible contamination in the analytical system. The method blank must be carried through the complete procedure and contain analyte-free reagents in the same volumes as used in processing the samples. The goal is to conduct investigative sample analysis in such a manner that sample contamination is not introduced by the analytical methods, equipment, or reagents. If such contamination occurs, it is usually identified by the detection of target analytes at trace or low concentrations in the method blanks. When these detections are found, the laboratory investigates the source, qualifies the affected data as appropriate according to the magnitude of the detections, and implements corrective measures as appropriate. For the sampling events included in this DQS, method blanks were prepared and analyzed with each analytical batch for Method SW8260B.

No target analytes were detected in the method blanks associated with the sampling events included in this DQS.

5.1.2.5 Surrogate Recovery

Surrogate spike compounds were added to investigative samples during organic analyses to assess the individual matrix effect of investigative samples and to monitor overall analytical system performance. Surrogate recoveries that are outside the laboratory historical control limits may indicate performance problems with the analytical system and extraction procedures, or significant matrix effects when evaluated in conjunction with the MS/MSD results. MES reviewers used laboratory historical control limits to assess percent recoveries for surrogate spike constituents. For sample results affected by surrogate percent recoveries less than the lower control limit, detects were qualified as estimated (JS) and may be biased low, and non-detects were qualified as estimated (UJS) and may be potential false negatives. For sample results affected by surrogate percent recoveries greater than the upper control limit, detects were qualified as estimated (JS) and may be biased high. No qualifiers are required for non-detect results based on high surrogate recoveries.

A summary of the surrogate percent recovery data is provided in Table D5-6. No qualifiers were required for sample results based on surrogate recoveries.

5.1.2.6 Internal Standards

Adherence to method-specific internal standards (ISs) criteria ensures that GC/MS sensitivity and response are stable during each analysis. *SW-846* (EPA, 1986) recommended ISs are often brominated, fluorinated, or stable isotopically labeled analogs of specific target compounds, or are closely related compounds whose presence in environmental samples is unlikely. The IS spike solution is added after the preparation or extraction of a sample. ISs are used in internal calibration methods to correct sample results affected by column injection loss, purging loss, or viscosity effects. ISs are added to environmental samples, control standards, and blanks, in accordance with method requirements and laboratory standard operating procedures (MES, 2004). No qualifiers were required for sample results based on the IS data.

5.1.2.7 Initial and Continuing Calibration

The calibration of an analytical instrument involves the delineation of the relationship between the response of the instrument and the concentration of an analyte introduced into the instrument. An ICAL is performed on an analytical instrument prior to the analysis of samples to ensure that the equipment is capable of producing acceptable qualitative and quantitative data. The CCAL is the verification of the ICAL at periodic intervals. The CCAL demonstrates that the instrument is capable of acceptable performance during the course of the analytical analysis. Review of the ICAL data included the evaluation of the correlation coefficients and relative standard deviations. Review of the CCAL data included the evaluation of the percent difference between the concentration of the CCAL standard and the expected concentration. For sample results associated with CCAL data that did not meet method-specific criteria, detects and non-detects were qualified as estimated (JC and UJC, respectively). No qualifiers were required for sample results based on the ICAL or CCAL data.

5.1.2.8 Miscellaneous Qualifiers

Cis-1,2-dichloroethene and trichloroethene were detected at concentrations above the calibration range of the instrument in some of the investigative samples. These results were flagged with an "E" by the laboratory and qualified "JX" by the MES reviewer. However, the laboratory re-analyzed these samples at dilutions and the results from the diluted analyses were used for this investigation. Therefore, the "E-flagged" results for the undiluted analyses for these samples are considered to be the "least-preferred" results and are not shown in the tables in Section 5.0.

5.2 SUMMARY OF DATA QUALITY INDICATORS

A summary of the data quality indicators in terms of the PARCCS are described in this section.

5.2.1 Precision

As discussed in Section 2.3, the precision evaluation included field precision (FDs), laboratory precision (LCS/LCSDs), and combined field/laboratory precision (MS/MSDs). The MS/MSD, FD, and LCS/LCSD RPDs are discussed in Sections 5.1.1.1, 5.1.1.2, and 5.1.2.3 of this report, respectively. Based on this evaluation, the precision of the data is acceptable for its intended use.

5.2.2 Accuracy

As discussed in Section 2.3, the accuracy evaluation included a comparison of spike recoveries from field samples (surrogate and MS/MSD spikes) and laboratory QC samples (LCS and LCSD), and assessing holding time. The MS/MSD, LCS/LCSD, and surrogate spike recoveries are discussed in Sections 5.1.1.1, 5.1.2.3, and 5.1.2.5, respectively, and holding time is discussed in Section 5.1.2.2. Recoveries from MS/MSDs, LCS/LCSD and surrogate percent recoveries were compared to laboratory historical control limits to determine a laboratory's ability to accurately determine both qualitative and quantitative results. The investigative sample results were within the required percent recovery limits. The investigative sample results were within the required holding time limits. Based on this evaluation, the accuracy of the data is acceptable for its intended use.

5.2.3 Representativeness

Representativeness is the degree to which the data accurately and precisely portray the environmental conditions being studied. For this investigation, sampling procedures and locations were selected to accurately represent overall Site conditions and were biased toward areas that were likely to exhibit evidence of past releases. Sampling was conducted using known, approved field procedures to minimize variability introduced during field sampling. The investigative and FD analyses indicate that the overall combined variability introduced by the sampling procedures, sample matrix, and laboratory analysis is acceptable, and the FD samples are representative of the data associated with the investigative sample.

5.2.4 Completeness

Completeness refers to the amount of valid data obtainable from a measurement system compared to the expected amount of data. Data that have not been qualified as rejected during the data validation process are considered to be valid. As presented in the *QAP* (MES, 2013), a completeness goal of 95 percent was established for investigations. Of the 180 investigative and field duplicate sample records from the four sampling events, no records were qualified as rejected based on MES' review of the data. Therefore a completeness of 100 percent was calculated for the sampling event, which exceeds project goals. One hundred percent of the results are usable and are acceptable for their intended use.

5.2.5 Comparability

Comparability expresses the confidence with which one data set can be compared to another. Comparability objectives were met by minimizing the number of contract laboratories used, using EPA methods for analyses, and reporting results in standardized units. The comparability objective for the project was fulfilled.

6.0 REPORTING LIMITS AND DATA USES

This section discusses the laboratory reporting limits and how they compare to RBTLs. Chemical-specific RBTLs were established for use as goals to achieve the Corrective Action Objectives at the Site using the *Alabama Risk-Based Corrective Action Guidance Manual (ARBCA)* (ADEM, 2017). As per the *ARBCA*, RBTLs were developed based on a 10^{-5} risk. Based on the proposed future land use of the Site (adult educational campus and passive recreation) exposure to the groundskeeper was considered appropriate for the Site.

6.1 LABORATORY REPORTING LIMITS

EMAX confirms reporting limits on an annual or quarterly basis by performing MDL studies. The MDL is defined as the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is generated from the analysis of a sample in a given matrix containing the analyte (40 Code of Federal Regulations, Chapter 1, Part 136, Appendix B). The reporting limit is defined as the lowest concentration of the target analyte required to be reported. This value is based on project-specific criteria.

The laboratory reports detections that are below the reporting limit as estimated values by assigning a flag to the analytical result. This flag is assigned because the laboratory cannot accurately quantify analyte concentrations at levels below the reporting limit. For detections in the concentration range between the MDL and the reporting limit, the laboratory is confident of the analyte identification and detection but can only estimate the analyte concentration.

6.2 COMPARISON OF LABORATORY REPORTING LIMITS TO RBTLS

For this assessment, the laboratory RLs and MDLs were compared to the groundskeeper RBTLs, shown in Table D6-1. The laboratory RLs and MDLs for the investigative samples were less than the groundskeeper RBTLs.

7.0 CONCLUSIONS

This DQS presents in specific terms the QA and QC practices used to achieve the project objectives for the Site during the May 2017, August 2076, November 2017, and February 2018 sampling events. Samples were collected and analyzed in accordance with EPA methods and using laboratory-specific QA/QC procedures. These procedures were followed to generate legally and technically defensible data.

Several sample results were qualified "JX" because they were detected at concentrations above the calibration range of the instrument (Section 5.1.2.8). However, the laboratory re-analyzed these samples at dilutions and the results from the diluted analyses, which met criteria, were used for this investigation. Based on this review, the analytical data generated for this investigation are acceptable and adequate to fulfill program objectives and may be used to evaluate the effectiveness of the selected remedy for the Site.

8.0 REFERENCES

Alabama Department of Environmental Management (ADEM). 2017. *Alabama Risk-Based Corrective Action Guidance Manual (ARBCA)*, *Revision 3*. February.

Matrix Environmental Services, LLC (MES). 2013. *Final Installation Wide Sampling and Analysis Plan)*. December.

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EPA. 1994. *Guidance for the Data Quality Objectives Process,* EPA/600/R-96/055. September.

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TABLES

Table D5-1: Sample Index
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Site Name	Delivery Group	Station Name	QC Code	Matrix	Sample Date	Lab	Laboratory Sample ID	Method
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17E159	PPMP-66-MW02RR	NS	WG	5/18/2017	EMXT	E159-01	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17E159	PPMP-66-MW02RR	FD	WG	5/18/2017	EMXT	E159-10	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17H041	PPMP-66-MW02RR	NS	WG	8/7/2017	EMXT	H041-01	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17K201	PPMP-66-MW02RR	NS	WG	11/20/2017	EMAX	K201-01	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	18B056	PPMP-66-MW02RR	NS	WG	2/8/2018	EMAX	B056-01	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	18B056	PPMP-66-MW02RR	NS	WG	2/8/2018	EMAX	B056-01I	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17E159	PPMP-66-MW06R	NS	WG	5/18/2017	EMXT	E159-02	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17H041	PPMP-66-MW06R	NS	WG	8/7/2017	EMXT	H041-02	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17K201	PPMP-66-MW06R	NS	WG	11/20/2017	EMAX	K201-02	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17K201	PPMP-66-MW06R	MS	WG	11/20/2017	EMAX	K201-02M	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17K201	PPMP-66-MW06R	MSD	WG	11/20/2017	EMAX	K201-02S	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	18B056	PPMP-66-MW06R	NS	WG	2/8/2018	EMAX	B056-02	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	18B056	PPMP-66-MW06R	FD	WG	2/8/2018	EMAX	B056-10	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17E159	PPMP-66-MW08	NS	WG	5/18/2017	EMXT	E159-03	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17E159	PPMP-66-MW08	MS	WG	5/18/2017	EMXT	E159-03M	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17E159	PPMP-66-MW08	MSD	WG	5/18/2017	EMXT	E159-03S	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17H041	PPMP-66-MW08	NS	WG	8/7/2017	EMXT	H041-03	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17H041	PPMP-66-MW08	MS	WG	8/7/2017	EMXT	H041-03M	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17H041	PPMP-66-MW08	MSD	WG	8/7/2017	EMXT	H041-03S	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17K201	PPMP-66-MW08	NS	WG	11/20/2017	EMAX	K201-03	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	18B056	PPMP-66-MW08	NS	WG	2/8/2018	EMAX	B056-03	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	18B056	PPMP-66-MW08	MS	WG	2/8/2018	EMAX	B056-03M	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	18B056	PPMP-66-MW08	MSD	WG	2/8/2018	EMAX	B056-03S	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17E159	PPMP-66-MW16	NS	WG	5/18/2017	EMXT	E159-04	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17H041	PPMP-66-MW16	NS	WG	8/7/2017	EMXT	H041-04	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17K201	PPMP-66-MW16	NS	WG	11/20/2017	EMAX	K201-04	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	18B056	PPMP-66-MW16	NS	WG	2/8/2018	EMAX	B056-04	SW8260B

Table D5-1: Sample Index
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Site Name	Delivery Group	Station Name	QC Code	Matrix	Sample Date	Lab	Laboratory Sample ID	Method
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17K201	PPMP-66-MW17	FD	WG	11/20/2017	EMAX	K201-10	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17E159	PPMP-66-MW17	NS	WG	5/18/2017	EMXT	E159-05	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17H041	PPMP-66-MW17	NS	WG	8/7/2017	EMXT	H041-05	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17K201	PPMP-66-MW17	NS	WG	11/20/2017	EMAX	K201-05	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	18B056	PPMP-66-MW17	NS	WG	2/8/2018	EMAX	B056-05	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17E159	PPMP-66-MW18R	NS	WG	5/18/2017	EMXT	E159-06	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17H041	PPMP-66-MW18R	NS	WG	8/7/2017	EMXT	H041-06	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17K201	PPMP-66-MW18R	NS	WG	11/20/2017	EMAX	K201-06	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	18B056	PPMP-66-MW18R	NS	WG	2/8/2018	EMAX	B056-06	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17E159	PPMP-66-MW23R	NS	WG	5/18/2017	EMXT	E159-07	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17E159	PPMP-66-MW23R	NS	WG	5/18/2017	EMXT	E159-07I	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17H041	PPMP-66-MW23R	NS	WG	8/7/2017	EMXT	H041-07	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17K201	PPMP-66-MW23R	NS	WG	11/20/2017	EMAX	K201-07	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17K201	PPMP-66-MW23R	NS	WG	11/20/2017	EMAX	K201-07I	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	18B056	PPMP-66-MW23R	NS	WG	2/8/2018	EMAX	B056-07	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	18B056	PPMP-66-MW23R	NS	WG	2/8/2018	EMAX	B056-07I	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17H041	PPMP-66-MW24R	FD	WG	8/7/2017	EMXT	H041-10	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17E159	PPMP-66-MW24R	NS	WG	5/18/2017	EMXT	E159-08	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17H041	PPMP-66-MW24R	NS	WG	8/7/2017	EMXT	H041-08	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	17K201	PPMP-66-MW24R	NS	WG	11/20/2017	EMAX	K201-08	SW8260B
PARCEL 66(7), FMR SMALL WEAPONS REPAIR SH	18B056	PPMP-66-MW24R	NS	WG	2/8/2018	EMAX	B056-08N	SW8260B
MCCLELLAN FIELD QC	17K201	Material Blank (Material080)	WS	W	11/20/2017	EMAX	K201-09	SW8260B
MCCLELLAN FIELD QC	17H041	Material Blank (Material077)	WS	W	8/7/2017	EMXT	H041-09	SW8260B
MCCLELLAN FIELD QC	17E159	Material Blank (Material077)	WS	W	5/18/2017	EMXT	E159-09	SW8260B
MCCLELLAN FIELD QC	18B056	Material Blank (Material082)	WS	W	2/8/2018	EMAX	B056-09	SW8260B
MCCLELLAN FIELD QC	17E159	Trip Blank (TB451	TB	W	5/18/2017	EMXT	E159-11	SW8260B
MCCLELLAN FIELD QC	17H041	Trip Blank (TB452)	TB	W	8/7/2017	EMXT	H041-11	SW8260B

Table D5-1: Sample Index
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Site Name	Delivery Group	Station Name	QC Code	Matrix	Sample Date	Lab	Laboratory Sample ID	Method
MCCLELLAN FIELD QC	17K201	Trip Blank (TB466)	TB	W	11/20/2017	EMAX	K201-11	SW8260B
MCCLELLAN FIELD QC	18B056	Trip Blank (TB469)	TB	W	2/8/2018	EMAX	B056-11	SW8260B

Notes:
EMXT = EMAX Laboratories, Torrance, CA
FD = Field duplicate
ID = Identification
MS = Matrix spike
MSD = Matrix spike duplicate
NS = Normal sample
QC = Quality Control
TB = Trip blank
W = Water
WG = Groundwater
WS = Source water

Table D5-2: Summary of MS/MSD Recoveries and RPDs
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Station Name	Matrix	Sample Date	Delivery Group	Method	Parameter Name	MS %R	MSD %R	%R LCL	%R UCL	RPD	RPD Limit
PPMP-66-MW08	WG	5/18/17	17E159	SW8260B	1,1-Dichloroethene	91	93	75	125	2.2	20
PPMP-66-MW08	WG	5/18/17	17E159	SW8260B	Cis-1,2-Dichloroethene	102	104	73	133	1.9	20
PPMP-66-MW08	WG	5/18/17	17E159	SW8260B	Trans-1,2-Dichloroethene	105	106	78	134	0.9	20
PPMP-66-MW08	WG	5/18/17	17E159	SW8260B	Trichloroethene	96	98	67	128	2.1	20
PPMP-66-MW08	WG	5/18/17	17E159	SW8260B	Vinyl Chloride	82	81	73	134	1.2	20
PPMP-66-MW08	WG	8/7/17	17H041	SW8260B	1,1-Dichloroethene	111	100	75	125	10.4	20
PPMP-66-MW08	WG	8/7/17	17H041	SW8260B	Cis-1,2-Dichloroethene	112	105	73	133	6.5	20
PPMP-66-MW08	WG	8/7/17	17H041	SW8260B	Trans-1,2-Dichloroethene	115	100	78	134	14.0	20
PPMP-66-MW08	WG	8/7/17	17H041	SW8260B	Trichloroethene	111	99	67	128	11.4	20
PPMP-66-MW08	WG	8/7/17	17H041	SW8260B	Vinyl Chloride	113	103	73	134	9.3	20
PPMP-66-MW06R	WG	11/20/17	17K201	SW8260B	1,1-Dichloroethene	107	105	75	125	1.9	20
PPMP-66-MW06R	WG	11/20/17	17K201	SW8260B	Cis-1,2-Dichloroethene	93	90	73	133	3.3	20
PPMP-66-MW06R	WG	11/20/17	17K201	SW8260B	Trans-1,2-Dichloroethene	101	100	78	134	1.0	20
PPMP-66-MW06R	WG	11/20/17	17K201	SW8260B	Trichloroethene	82	76	67	128	7.6	20
PPMP-66-MW06R	WG	11/20/17	17K201	SW8260B	Vinyl Chloride	104	101	73	134	2.9	20
PPMP-66-MW08	WG	2/8/18	18B056	SW8260B	1,1-Dichloroethene	104	107	75	125	2.8	20
PPMP-66-MW08	WG	2/8/18	18B056	SW8260B	Cis-1,2-Dichloroethene	107	113	73	133	5.5	20
PPMP-66-MW08	WG	2/8/18	18B056	SW8260B	Trans-1,2-Dichloroethene	106	106	78	134	0.0	20
PPMP-66-MW08	WG	2/8/18	18B056	SW8260B	Trichloroethene	102	112	67	128	9.3	20
PPMP-66-MW08	WG	2/8/18	18B056	SW8260B	Vinyl Chloride	95	91	73	134	4.3	20

Notes:

%R = Percent recovery
LCL = Lower control limit
UCL = Upper control limit
MS = Matrix spike
MSD = Matrix spike duplicate
RPD = Relative percent difference
WG = Groundwater

Indicates the %R is less than the LCL.

Indicates the %R is greater than the UCL or the RPD is greater than the RPD Limit.

Table D5-3: Field Duplicate Cross Reference
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Matrix	COC ID	Parent Station Name	Sample Date	Delivery Group	Method
WG	DUP253	PPMP-66-MW02RR	5/18/17	17E159	SW8260B
WG	DUP254	PPMP-66-MW24R	8/7/17	17H041	SW8260B
WG	DUP274	PPMP-66-MW17	11/20/17	17K201	SW8260B
WG	DUP275	PPMP-66-MW06R	2/8/18	18B056	SW8260B

Notes:
COC = Chain-of-Custody
ID = Identification
WG = Groundwater

Table D5-4: Comparison of Investigative and Field Duplicate Sample Detections
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Station Name	Matrix	Sample Date	Delivery Group	Method	Parameter Name	FD Value	FD Lab Flag	NS Value	NS Lab Flag	Units	RPD	MDL	RL
PPMP-66-MW02RR	WG	5/18/17	17E159	SW8260B	1,1-Dichloroethene	0.44	J	0.34	J	µg/L	25.6	0.2	1
PPMP-66-MW02RR	WG	5/18/17	17E159	SW8260B	Cis-1,2-Dichloroethene	24		25		µg/L	4.1	0.2	1
PPMP-66-MW02RR	WG	5/18/17	17E159	SW8260B	Trans-1,2-Dichloroethene	13		11		µg/L	16.7	0.2	1
PPMP-66-MW02RR	WG	5/18/17	17E159	SW8260B	Trichloroethene	19		21		µg/L	10.0	0.2	1
PPMP-66-MW02RR	WG	5/18/17	17E159	SW8260B	Vinyl Chloride	5.4		5.4		µg/L	0.0	0.2	0.8
PPMP-66-MW06R	WG	2/8/18	18B056	SW8260B	1,1-Dichloroethene	0.5	J	0.49	J	µg/L	2.0	0.2	1
PPMP-66-MW06R	WG	2/8/18	18B056	SW8260B	Cis-1,2-Dichloroethene	15		16		µg/L	6.5	0.2	1
PPMP-66-MW06R	WG	2/8/18	18B056	SW8260B	Trans-1,2-Dichloroethene	3.7		3.8		µg/L	2.7	0.2	1
PPMP-66-MW06R	WG	2/8/18	18B056	SW8260B	Trichloroethene	46		49		µg/L	6.3	0.2	1
PPMP-66-MW06R	WG	2/8/18	18B056	SW8260B	Vinyl Chloride	6.1		6.1		µg/L	0.0	0.2	0.8
PPMP-66-MW24R	WG	8/7/17	17H041	SW8260B	Cis-1,2-Dichloroethene	1.1		0.93	J	µg/L	16.7	0.2	1
PPMP-66-MW24R	WG	8/7/17	17H041	SW8260B	Trichloroethene	0.44	J	0.38	J	µg/L	14.6	0.2	1

Notes:
FD = Field duplicate
MDL = Method detection limit
µg/L = micrograms per liter
NS = Normal sample
RL = Reporting limit
RPD = Relative percent difference
WG = Groundwater

Lab Flag:
J = Estimated value. The analyte is positively identified and the concentration is less than the reporting limit, but greater than the method detection limit.

Table D5-5: Summary of LCS/LCSD Recoveries and RPDs
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Method	Delivery Group	Analysis Date	Analytical Batch	Matrix	Parameter Name	LCS %R	LCSD %R	LCL	UCL	RPD	RPD Limit
SW8260B	17E159	5/19/17	VO67E15	W	1,1-Dichloroethene	92	94	75	125	2.2	20
SW8260B	17E159	5/19/17	VO67E15	W	Cis-1,2-Dichloroethene	102	103	73	133	0.98	20
SW8260B	17E159	5/19/17	VO67E15	W	Trans-1,2-Dichloroethene	105	108	78	134	2.8	20
SW8260B	17E159	5/19/17	VO67E15	W	Trichloroethene	98	100	67	128	2.0	20
SW8260B	17E159	5/19/17	VO67E15	W	Vinyl Chloride	86	90	73	134	4.5	20
SW8260B	17E159	5/23/17	VO94E13	W	1,1-Dichloroethene	88	89	75	125	1.1	20
SW8260B	17E159	5/23/17	VO94E13	W	Cis-1,2-Dichloroethene	106	107	73	133	0.94	20
SW8260B	17E159	5/23/17	VO94E13	W	Trans-1,2-Dichloroethene	96	96	78	134	0	20
SW8260B	17E159	5/23/17	VO94E13	W	Trichloroethene	110	111	67	128	0.90	20
SW8260B	17E159	5/23/17	VO94E13	W	Vinyl Chloride	105	104	73	134	0.96	20
SW8260B	17E159	5/24/17	VO94E14	W	1,1-Dichloroethene	87	88	75	125	1.1	20
SW8260B	17E159	5/24/17	VO94E14	W	Cis-1,2-Dichloroethene	107	107	73	133	0	20
SW8260B	17E159	5/24/17	VO94E14	W	Trans-1,2-Dichloroethene	96	96	78	134	0	20
SW8260B	17E159	5/24/17	VO94E14	W	Trichloroethene	111	111	67	128	0	20
SW8260B	17E159	5/24/17	VO94E14	W	Vinyl Chloride	101	105	73	134	3.9	20
SW8260B	17H041	8/8/17	VO06H06	W	1,1-Dichloroethene	99	102	75	125	3.0	20
SW8260B	17H041	8/8/17	VO06H06	W	Cis-1,2-Dichloroethene	99	104	73	133	4.9	20
SW8260B	17H041	8/8/17	VO06H06	W	Trans-1,2-Dichloroethene	98	102	78	134	4.0	20
SW8260B	17H041	8/8/17	VO06H06	W	Trichloroethene	97	100	67	128	3.0	20
SW8260B	17H041	8/8/17	VO06H06	W	Vinyl Chloride	107	92	73	134	15	20
SW8260B	17K201	11/22/17	VO67K14	W	1,1-Dichloroethene	105	105	75	125	0	20
SW8260B	17K201	11/22/17	VO67K14	W	Cis-1,2-Dichloroethene	102	102	73	133	0	20
SW8260B	17K201	11/22/17	VO67K14	W	Trans-1,2-Dichloroethene	104	103	78	134	0.97	20
SW8260B	17K201	11/22/17	VO67K14	W	Trichloroethene	105	105	67	128	0	20
SW8260B	17K201	11/22/17	VO67K14	W	Vinyl Chloride	97	97	73	134	0	20
SW8260B	17K201	11/27/17	VO67K15	W	1,1-Dichloroethene	105	105	75	125	0	20
SW8260B	17K201	11/27/17	VO67K15	W	Cis-1,2-Dichloroethene	101	102	73	133	0.99	20
SW8260B	17K201	11/27/17	VO67K15	W	Trans-1,2-Dichloroethene	104	104	78	134	0	20
SW8260B	17K201	11/27/17	VO67K15	W	Trichloroethene	106	106	67	128	0	20
SW8260B	17K201	11/27/17	VO67K15	W	Vinyl Chloride	93	97	73	134	4.2	20
SW8260B	18B056	2/9/18	VO06B08	W	1,1-Dichloroethene	102	101	75	125	0.99	20
SW8260B	18B056	2/9/18	VO06B08	W	Cis-1,2-Dichloroethene	105	107	73	133	1.9	20

Table D5-5: Summary of LCS/LCSD Recoveries and RPDs
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Method	Delivery Group	Analysis Date	Analytical Batch	Matrix	Parameter Name	LCS %R	LCSD %R	LCL	UCL	RPD	RPD Limit
SW8260B	18B056	2/9/18	VO06B08	W	Trans-1,2-Dichloroethene	103	100	78	134	3.0	20
SW8260B	18B056	2/9/18	VO06B08	W	Trichloroethene	107	107	67	128	0	20
SW8260B	18B056	2/9/18	VO06B08	W	Vinyl Chloride	85	88	73	134	3.5	20
SW8260B	18B056	2/12/18	VO06B09	W	1,1-Dichloroethene	96	93	75	125	3.2	20
SW8260B	18B056	2/12/18	VO06B09	W	Cis-1,2-Dichloroethene	108	103	73	133	4.7	20
SW8260B	18B056	2/12/18	VO06B09	W	Trans-1,2-Dichloroethene	97	96	78	134	1.0	20
SW8260B	18B056	2/12/18	VO06B09	W	Trichloroethene	108	106	67	128	1.9	20
SW8260B	18B056	2/12/18	VO06B09	W	Vinyl Chloride	92	84	73	134	9.1	20
SW8260B	18B056	2/13/18	VO06B10	W	1,1-Dichloroethene	101	99	75	125	2.0	20
SW8260B	18B056	2/13/18	VO06B10	W	Cis-1,2-Dichloroethene	105	104	73	133	0.96	20
SW8260B	18B056	2/13/18	VO06B10	W	Trans-1,2-Dichloroethene	101	97	78	134	4.0	20
SW8260B	18B056	2/13/18	VO06B10	W	Trichloroethene	104	99	67	128	4.9	20
SW8260B	18B056	2/13/18	VO06B10	W	Vinyl Chloride	81	84	73	134	3.64	20

Notes:

%R = Percent recovery

LCL = Lower control limit

UCL = Upper control limit

LCS = Laboratory control sample

LCSD = Laboratory control sample duplicate

RPD = Relative percent difference

W = Water

Indicates the %R is less than the LCL.

Indicates the %R is greater than the UCL or the RPD is greater than the RPD Limit.

Table D5-6: Summary of Surrogate Recoveries
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Delivery Group	Station Name	Sample Date	Matrix	QC Code	Method	Parameter Name	%R	LCL	UCL
17E159	PPMP-66-MW02RR	5/18/17	WG	FD	SW8260B	1,2-Dichloroethane-D4	108	63	132
17E159	PPMP-66-MW02RR	5/18/17	WG	FD	SW8260B	4-Bromofluorobenzene	96.7	73	129
17E159	PPMP-66-MW02RR	5/18/17	WG	FD	SW8260B	Toluene-D8	100	75	122
17E159	PPMP-66-MW02RR	5/18/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	87.8	63	132
17E159	PPMP-66-MW02RR	5/18/17	WG	NS	SW8260B	4-Bromofluorobenzene	91.6	73	129
17E159	PPMP-66-MW02RR	5/18/17	WG	NS	SW8260B	Toluene-D8	96	75	122
17H041	PPMP-66-MW02RR	8/7/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	105	63	132
17H041	PPMP-66-MW02RR	8/7/17	WG	NS	SW8260B	4-Bromofluorobenzene	94.7	73	129
17H041	PPMP-66-MW02RR	8/7/17	WG	NS	SW8260B	Toluene-D8	96.1	75	122
17K201	PPMP-66-MW02RR	11/20/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	101	63	132
17K201	PPMP-66-MW02RR	11/20/17	WG	NS	SW8260B	4-Bromofluorobenzene	94.2	73	129
17K201	PPMP-66-MW02RR	11/20/17	WG	NS	SW8260B	Toluene-D8	96.2	75	122
18B056	PPMP-66-MW02RR	2/8/18	WG	NS	SW8260B	1,2-Dichloroethane-D4	111	63	132
18B056	PPMP-66-MW02RR	2/8/18	WG	NS	SW8260B	1,2-Dichloroethane-D4	115	63	132
18B056	PPMP-66-MW02RR	2/8/18	WG	NS	SW8260B	4-Bromofluorobenzene	91.8	73	129
18B056	PPMP-66-MW02RR	2/8/18	WG	NS	SW8260B	4-Bromofluorobenzene	95.7	73	129
18B056	PPMP-66-MW02RR	2/8/18	WG	NS	SW8260B	Toluene-D8	91	75	122
18B056	PPMP-66-MW02RR	2/8/18	WG	NS	SW8260B	Toluene-D8	102	75	122
17E159	PPMP-66-MW06R	5/18/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	88.8	63	132
17E159	PPMP-66-MW06R	5/18/17	WG	NS	SW8260B	4-Bromofluorobenzene	93.7	73	129
17E159	PPMP-66-MW06R	5/18/17	WG	NS	SW8260B	Toluene-D8	95.5	75	122
17H041	PPMP-66-MW06R	8/7/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	107	63	132
17H041	PPMP-66-MW06R	8/7/17	WG	NS	SW8260B	4-Bromofluorobenzene	96.8	73	129
17H041	PPMP-66-MW06R	8/7/17	WG	NS	SW8260B	Toluene-D8	98.2	75	122
17K201	PPMP-66-MW06R	11/20/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	101	63	132
17K201	PPMP-66-MW06R	11/20/17	WG	NS	SW8260B	4-Bromofluorobenzene	93.3	73	129
17K201	PPMP-66-MW06R	11/20/17	WG	NS	SW8260B	Toluene-D8	96.8	75	122
18B056	PPMP-66-MW06R	2/8/18	WG	NS	SW8260B	1,2-Dichloroethane-D4	114	63	132
18B056	PPMP-66-MW06R	2/8/18	WG	NS	SW8260B	4-Bromofluorobenzene	95.2	73	129
18B056	PPMP-66-MW06R	2/8/18	WG	NS	SW8260B	Toluene-D8	102	75	122
18B056	PPMP-66-MW06R	2/8/18	WG	FD	SW8260B	1,2-Dichloroethane-D4	118	63	132
18B056	PPMP-66-MW06R	2/8/18	WG	FD	SW8260B	4-Bromofluorobenzene	91.7	73	129
18B056	PPMP-66-MW06R	2/8/18	WG	FD	SW8260B	Toluene-D8	104	75	122
17E159	PPMP-66-MW08	5/18/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	104	63	132

Table D5-6: Summary of Surrogate Recoveries
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Delivery Group	Station Name	Sample Date	Matrix	QC Code	Method	Parameter Name	%R	LCL	UCL
17E159	PPMP-66-MW08	5/18/17	WG	NS	SW8260B	4-Bromofluorobenzene	96.9	73	129
17E159	PPMP-66-MW08	5/18/17	WG	NS	SW8260B	Toluene-D8	101	75	122
17H041	PPMP-66-MW08	8/7/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	106	63	132
17H041	PPMP-66-MW08	8/7/17	WG	NS	SW8260B	4-Bromofluorobenzene	94.8	73	129
17H041	PPMP-66-MW08	8/7/17	WG	NS	SW8260B	Toluene-D8	96.2	75	122
17K201	PPMP-66-MW08	11/20/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	102	63	132
17K201	PPMP-66-MW08	11/20/17	WG	NS	SW8260B	4-Bromofluorobenzene	93.8	73	129
17K201	PPMP-66-MW08	11/20/17	WG	NS	SW8260B	Toluene-D8	97	75	122
18B056	PPMP-66-MW08	2/8/18	WG	NS	SW8260B	1,2-Dichloroethane-D4	113	63	132
18B056	PPMP-66-MW08	2/8/18	WG	NS	SW8260B	4-Bromofluorobenzene	94.4	73	129
18B056	PPMP-66-MW08	2/8/18	WG	NS	SW8260B	Toluene-D8	102	75	122
17E159	PPMP-66-MW16	5/18/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	107	63	132
17E159	PPMP-66-MW16	5/18/17	WG	NS	SW8260B	4-Bromofluorobenzene	98.8	73	129
17E159	PPMP-66-MW16	5/18/17	WG	NS	SW8260B	Toluene-D8	102	75	122
17H041	PPMP-66-MW16	8/7/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	103	63	132
17H041	PPMP-66-MW16	8/7/17	WG	NS	SW8260B	4-Bromofluorobenzene	95.4	73	129
17H041	PPMP-66-MW16	8/7/17	WG	NS	SW8260B	Toluene-D8	98.2	75	122
17K201	PPMP-66-MW16	11/20/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	99.9	63	132
17K201	PPMP-66-MW16	11/20/17	WG	NS	SW8260B	4-Bromofluorobenzene	93.5	73	129
17K201	PPMP-66-MW16	11/20/17	WG	NS	SW8260B	Toluene-D8	98	75	122
18B056	PPMP-66-MW16	2/8/18	WG	NS	SW8260B	1,2-Dichloroethane-D4	115	63	132
18B056	PPMP-66-MW16	2/8/18	WG	NS	SW8260B	4-Bromofluorobenzene	93.3	73	129
18B056	PPMP-66-MW16	2/8/18	WG	NS	SW8260B	Toluene-D8	102	75	122
17E159	PPMP-66-MW17	5/18/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	105	63	132
17E159	PPMP-66-MW17	5/18/17	WG	NS	SW8260B	4-Bromofluorobenzene	96.9	73	129
17E159	PPMP-66-MW17	5/18/17	WG	NS	SW8260B	Toluene-D8	102	75	122
17H041	PPMP-66-MW17	8/7/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	107	63	132
17H041	PPMP-66-MW17	8/7/17	WG	NS	SW8260B	4-Bromofluorobenzene	97.3	73	129
17H041	PPMP-66-MW17	8/7/17	WG	NS	SW8260B	Toluene-D8	96.7	75	122
17K201	PPMP-66-MW17	11/20/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	101	63	132
17K201	PPMP-66-MW17	11/20/17	WG	NS	SW8260B	4-Bromofluorobenzene	93.1	73	129
17K201	PPMP-66-MW17	11/20/17	WG	NS	SW8260B	Toluene-D8	96.9	75	122
17K201	PPMP-66-MW17	11/20/17	WG	FD	SW8260B	1,2-Dichloroethane-D4	102	63	132
17K201	PPMP-66-MW17	11/20/17	WG	FD	SW8260B	4-Bromofluorobenzene	92.3	73	129

Table D5-6: Summary of Surrogate Recoveries
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Delivery Group	Station Name	Sample Date	Matrix	QC Code	Method	Parameter Name	%R	LCL	UCL
17K201	PPMP-66-MW17	11/20/17	WG	FD	SW8260B	Toluene-D8	95.8	75	122
18B056	PPMP-66-MW17	2/8/18	WG	NS	SW8260B	1,2-Dichloroethane-D4	120	63	132
18B056	PPMP-66-MW17	2/8/18	WG	NS	SW8260B	4-Bromofluorobenzene	94.2	73	129
18B056	PPMP-66-MW17	2/8/18	WG	NS	SW8260B	Toluene-D8	102	75	122
17E159	PPMP-66-MW18R	5/18/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	89.7	63	132
17E159	PPMP-66-MW18R	5/18/17	WG	NS	SW8260B	4-Bromofluorobenzene	90.8	73	129
17E159	PPMP-66-MW18R	5/18/17	WG	NS	SW8260B	Toluene-D8	97.9	75	122
17H041	PPMP-66-MW18R	8/7/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	106	63	132
17H041	PPMP-66-MW18R	8/7/17	WG	NS	SW8260B	4-Bromofluorobenzene	95.4	73	129
17H041	PPMP-66-MW18R	8/7/17	WG	NS	SW8260B	Toluene-D8	99.4	75	122
17K201	PPMP-66-MW18R	11/20/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	102	63	132
17K201	PPMP-66-MW18R	11/20/17	WG	NS	SW8260B	4-Bromofluorobenzene	92.5	73	129
17K201	PPMP-66-MW18R	11/20/17	WG	NS	SW8260B	Toluene-D8	96	75	122
18B056	PPMP-66-MW18R	2/8/18	WG	NS	SW8260B	1,2-Dichloroethane-D4	115	63	132
18B056	PPMP-66-MW18R	2/8/18	WG	NS	SW8260B	4-Bromofluorobenzene	90.6	73	129
18B056	PPMP-66-MW18R	2/8/18	WG	NS	SW8260B	Toluene-D8	110	75	122
17E159	PPMP-66-MW23R	5/18/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	89.2	63	132
17E159	PPMP-66-MW23R	5/18/17	WG	NS	SW8260B	4-Bromofluorobenzene	93.1	73	129
17E159	PPMP-66-MW23R	5/18/17	WG	NS	SW8260B	Toluene-D8	96.8	75	122
17H041	PPMP-66-MW23R	8/7/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	105	63	132
17H041	PPMP-66-MW23R	8/7/17	WG	NS	SW8260B	4-Bromofluorobenzene	93.2	73	129
17H041	PPMP-66-MW23R	8/7/17	WG	NS	SW8260B	Toluene-D8	94.9	75	122
17K201	PPMP-66-MW23R	11/20/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	102	63	132
17K201	PPMP-66-MW23R	11/20/17	WG	NS	SW8260B	4-Bromofluorobenzene	93.5	73	129
17K201	PPMP-66-MW23R	11/20/17	WG	NS	SW8260B	Toluene-D8	96.8	75	122
18B056	PPMP-66-MW23R	2/8/18	WG	NS	SW8260B	1,2-Dichloroethane-D4	117	63	132
18B056	PPMP-66-MW23R	2/8/18	WG	NS	SW8260B	1,2-Dichloroethane-D4	115	63	132
18B056	PPMP-66-MW23R	2/8/18	WG	NS	SW8260B	4-Bromofluorobenzene	93	73	129
18B056	PPMP-66-MW23R	2/8/18	WG	NS	SW8260B	4-Bromofluorobenzene	97.5	73	129
18B056	PPMP-66-MW23R	2/8/18	WG	NS	SW8260B	Toluene-D8	94.7	75	122
18B056	PPMP-66-MW23R	2/8/18	WG	NS	SW8260B	Toluene-D8	103	75	122
17E159	PPMP-66-MW24R	5/18/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	91	63	132
17E159	PPMP-66-MW24R	5/18/17	WG	NS	SW8260B	4-Bromofluorobenzene	91.7	73	129
17E159	PPMP-66-MW24R	5/18/17	WG	NS	SW8260B	Toluene-D8	95.9	75	122

Table D5-6: Summary of Surrogate Recoveries
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Delivery Group	Station Name	Sample Date	Matrix	QC Code	Method	Parameter Name	%R	LCL	UCL
17H041	PPMP-66-MW24R	8/7/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	104	63	132
17H041	PPMP-66-MW24R	8/7/17	WG	NS	SW8260B	4-Bromofluorobenzene	95.5	73	129
17H041	PPMP-66-MW24R	8/7/17	WG	NS	SW8260B	Toluene-D8	99.1	75	122
17H041	PPMP-66-MW24R	8/7/17	WG	FD	SW8260B	1,2-Dichloroethane-D4	103	63	132
17H041	PPMP-66-MW24R	8/7/17	WG	FD	SW8260B	4-Bromofluorobenzene	92	73	129
17H041	PPMP-66-MW24R	8/7/17	WG	FD	SW8260B	Toluene-D8	93.8	75	122
17K201	PPMP-66-MW24R	11/20/17	WG	NS	SW8260B	1,2-Dichloroethane-D4	**10.6**	63	132
17K201	PPMP-66-MW24R	11/20/17	WG	NS	SW8260B	4-Bromofluorobenzene	93.1	73	129
17K201	PPMP-66-MW24R	11/20/17	WG	NS	SW8260B	Toluene-D8	96.5	75	122
18B056	PPMP-66-MW24R	2/8/18	WG	NS	SW8260B	1,2-Dichloroethane-D4	112	63	132
18B056	PPMP-66-MW24R	2/8/18	WG	NS	SW8260B	4-Bromofluorobenzene	100	73	129
18B056	PPMP-66-MW24R	2/8/18	WG	NS	SW8260B	Toluene-D8	96.8	75	122
17E159	MATERIAL077	5/18/17	W	WS	SW8260B	1,2-Dichloroethane-D4	108	63	132
17E159	MATERIAL077	5/18/17	W	WS	SW8260B	4-Bromofluorobenzene	98.1	73	129
17E159	MATERIAL077	5/17/18	W	WS	SW8260B	Toluene-D8	101	75	122
17E159	TB451	5/18/17	W	TB	SW8260B	1,2-Dichloroethane-D4	109	63	132
17E159	TB451	5/18/17	W	TB	SW8260B	4-Bromofluorobenzene	96.2	73	129
17E159	TB451	5/17/18	W	TB	SW8260B	Toluene-D8	101	75	122
17H041	MATERIAL077	8/7/17	W	WS	SW8260B	1,2-Dichloroethane-D4	104	63	132
17H041	MATERIAL077	8/7/17	W	WS	SW8260B	4-Bromofluorobenzene	96.7	73	129
17H041	MATERIAL077	8/7/17	W	WS	SW8260B	Toluene-D8	98.8	75	122
17H041	TB452	8/7/17	W	TB	SW8260B	1,2-Dichloroethane-D4	107	63	132
17H041	TB452	8/7/17	W	TB	SW8260B	4-Bromofluorobenzene	94.8	73	129
17H041	TB452	8/7/17	W	TB	SW8260B	Toluene-D8	97.9	75	122
17K201	TB466	11/20/17	W	TB	SW8260B	1,2-Dichloroethane-D4	102	63	132
17K201	TB466	11/20/17	W	TB	SW8260B	4-Bromofluorobenzene	95.1	73	129
17K201	TB466	11/20/17	W	TB	SW8260B	Toluene-D8	95.9	75	122
17K201	MATERIAL 080	11/20/17	W	NS	SW8260B	1,2-Dichloroethane-D4	102	63	132
17K201	MATERIAL 080	11/20/17	W	NS	SW8260B	4-Bromofluorobenzene	91.7	73	129
17K201	MATERIAL 080	11/20/17	W	NS	SW8260B	Toluene-D8	95	75	122
18B056	MATERIAL082	2/8/18	W	WS	SW8260B	1,2-Dichloroethane-D4	118	63	132
18B056	MATERIAL082	2/8/18	W	WS	SW8260B	4-Bromofluorobenzene	93	73	129
18B056	MATERIAL082	2/8/18	W	WS	SW8260B	Toluene-D8	103	75	122
18B056	TB469	2/8/18	W	TB	SW8260B	1,2-Dichloroethane-D4	115	63	132

Table D5-6: Summary of Surrogate Recoveries
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Delivery Group	Station Name	Sample Date	Matrix	QC Code	Method	Parameter Name	%R	LCL	UCL
18B056	TB469	2/8/18	W	TB	SW8260B	4-Bromofluorobenzene	93.1	73	129
18B056	TB469	2/8/18	W	TB	SW8260B	Toluene-D8	104	75	122

Indicates the %R is less than the LCL.

Indicates the %R is greater than the UCL.

Notes:
FD = Field duplicate
LCL = Lower control limit
NS = Normal sample
QC = Quality control
%R = Percent recovery
TB = Trip blank
UCL = Upper control limit
W = Water
WG = Groundwater
WS = Source water

Table D6-1: Reporting Limits and Method Detection Limits Compared to RBTLs
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Annison, Alabama

Matrix	Method	Parameter Name	MDL	RL	Units	GS RBTL
WG	SW8260B	1,1-Dichloroethene	0.2	1	µg/L	4800
WG	SW8260B	Cis-1,2-Dichloroethene	0.2	1	µg/L	991
WG	SW8260B	Trans-1,2-Dichloroethene	0.2	1	µg/L	1950
WG	SW8260B	Trichloroethene	0.2	1	µg/L	205
WG	SW8260B	Vinyl Chloride	0.2	0.8	µg/L	3.86

Notes:
-- = Not applicable
GS = Groundskeeper
MDL = Method detection limit
µg/L = micrograms per liter
RL = Reporting limit
RBTL = Risk-Based Target Level
WG = Groundwater

ATTACHMENT D1

Laboratory Data Forms

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 05/18/17
Project : MCCLELLAN, PARCEL 66	Date Received: 05/19/17
Batch No. : 17E159	Date Extracted: 05/24/17 16:19
Sample ID: PPMP-66-MW02RR	Date Analyzed: 05/24/17 16:19
Lab Samp ID: E159-01	Dilution Factor: 1
Lab File ID: RED322	Matrix : WATER
Ext Btch ID: V094E14	% Moisture : NA
Calib. Ref.: RDD007	Instrument ID : T-094

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	0.34J	1.0	0.20
CIS-1,2-DICHLOROETHENE	25	1.0	0.20
TRANS-1,2-DICHLOROETHENE	11	1.0	0.20
TRICHLOROETHENE	21	1.0	0.20
VINYL CHLORIDE	5.4	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	8.78	10.00	87.8	63-132
TOLUENE-D8	9.60	10.00	96.0	75-122
4-BROMOFLUOROBENZENE	9.16	10.00	91.6	73-129

6/27/17 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 05/18/17
Project : MCCLELLAN, PARCEL 66	Date Received: 05/19/17
Batch No. : 17E159	Date Extracted: 05/24/17 16:50
Sample ID: PPMP-66-MW06R	Date Analyzed: 05/24/17 16:50
Lab Samp ID: E159-02	Dilution Factor: 1
Lab File ID: RED323	Matrix : WATER
Ext Btch ID: V094E14	% Moisture : NA
Calib. Ref.: RDD007	Instrument ID : T-094

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	0.29J	1.0	0.20
CIS-1,2-DICHLOROETHENE	13	1.0	0.20
TRANS-1,2-DICHLOROETHENE	3.3	1.0	0.20
TRICHLOROETHENE	55	1.0	0.20
VINYL CHLORIDE	3.8	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	8.88	10.00	88.8	63-132
TOLUENE-D8	9.55	10.00	95.5	75-122
4-BROMOFLUOROBENZENE	9.37	10.00	93.7	73-129

6/20/17 BMP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 05/18/17
Project : MCCLELLAN, PARCEL 66	Date Received: 05/19/17
Batch No. : 17E159	Date Extracted: 05/19/17 21:01
Sample ID: PPMP-66-MW08	Date Analyzed: 05/19/17 21:01
Lab Samp ID: E159-03	Dilution Factor: 1
Lab File ID: REC356	Matrix : WATER
Ext Btch ID: V067E15	% Moisture : NA
Calib. Ref.: RCC528	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.4	10.00	104	63-132
TOLUENE-D8	10.1	10.00	101	75-122
4-BROMOFLUOROBENZENE	9.69	10.00	96.9	73-129

6/27/17 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 05/18/17
Project : MCCLELLAN, PARCEL 66	Date Received: 05/19/17
Batch No. : 17E159	Date Extracted: 05/19/17 18:01
Sample ID: PPMP-66-MW16	Date Analyzed: 05/19/17 18:01
Lab Samp ID: E159-04	Dilution Factor: 1
Lab File ID: REC349	Matrix : WATER
Ext Btch ID: V067E15	% Moisture : NA
Calib. Ref.: RCC528	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.7	10.00	107	63-132
TOLUENE-D8	10.2	10.00	102	75-122
4-BROMOFLUOROBENZENE	9.88	10.00	98.8	73-129

6/27/17 BLP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 05/18/17
Project : MCCLELLAN, PARCEL 66	Date Received: 05/19/17
Batch No. : 17E159	Date Extracted: 05/19/17 18:27
Sample ID: PPMP-66-MW17	Date Analyzed: 05/19/17 18:27
Lab Samp ID: E159-05	Dilution Factor: 1
Lab File ID: REC350	Matrix : WATER
Ext Btch ID: V067E15	% Moisture : NA
Calib. Ref.: RCC528	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.5	10.00	105	63-132
TOLUENE-D8	10.2	10.00	102	75-122
4-BROMOFLUOROBENZENE	9.69	10.00	96.9	73-129

6/27/17 BMP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 05/18/17
Project : MCCLELLAN, PARCEL 66	Date Received: 05/19/17
Batch No. : 17E159	Date Extracted: 05/23/17 21:47
Sample ID: PPMP-66-MW18R	Date Analyzed: 05/23/17 21:47
Lab Samp ID: E159-06	Dilution Factor: 1
Lab File ID: RED306	Matrix : WATER
Ext Btch ID: V094E13	% Moisture : NA
Calib. Ref.: RDD007	Instrument ID : T-094

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	0.28J	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	0.74J	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	8.97	10.00	89.7	63-132
TOLUENE-D8	9.79	10.00	97.9	75-122
4-BROMOFLUOROBENZENE	9.08	10.00	90.8	73-129

6/27/17 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCCLELLAN, PARCEL 66
Batch No. : 17E159
Sample ID: PPMP-66-MW23R
Lab Samp ID: E159-07 #E159-07I
Lab File ID: RED307 #RED324
Ext Btch ID: VO94E13 #VO94E14
Calib. Ref.: RDD007 #RDD007

Date Collected: 05/18/17
Date Received: 05/19/17
Date Extracted: 05/23/17 22:18 # 05/24/17 17:20
Date Analyzed: 05/23/17 22:18 # 05/24/17 17:20
Dilution Factor: 1 # 10
Matrix : WATER
% Moisture : NA
Instrument ID : T-094

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	4.9	1.0	0.20
# CIS-1,2-DICHLOROETHENE	110	10	2.0
TRANS-1,2-DICHLOROETHENE	29	1.0	0.20
TRICHLOROETHENE	89	1.0	0.20
VINYL CHLORIDE	16	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	8.92	10.00	89.2	63-132
TOLUENE-D8	9.68	10.00	96.8	75-122
4-BROMOFLUOROBENZENE	9.31	10.00	93.1	73-129
# 1,2-DICHLOROETHANE-D4	89.5	100.0	89.5	63-132
# TOLUENE-D8	95.1	100.0	95.1	75-122
# 4-BROMOFLUOROBENZENE	93.5	100.0	93.5	73-129

6/27/17 BVP

Members of the Associated File
RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 05/18/17
Project : MCCLELLAN, PARCEL 66	Date Received: 05/19/17
Batch No. : 17E159	Date Extracted: 05/23/17 22:18
Sample ID: PPMP-66-MW23R	Date Analyzed: 05/23/17 22:18
Lab Samp ID: E159-07	Dilution Factor: 1
Lab File ID: RED307	Matrix : WATER
Ext Btch ID: VO94E13	% Moisture : NA
Calib. Ref.: RDD007	Instrument ID : T-094

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	4.9	1.0	0.20
~~CIS-1,2-DICHLOROETHENE~~	~~100E~~	~~1.0~~	~~0.20~~
TRANS-1,2-DICHLOROETHENE	29	1.0	0.20
TRICHLOROETHENE	89	1.0	0.20
VINYL CHLORIDE	16	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	8.92	10.00	89.2	63-132
TOLUENE-D8	9.68	10.00	96.8	75-122
4-BROMOFLUOROBENZENE	9.31	10.00	93.1	73-129

RL: Reporting Limit

6/27/17 BMP

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 05/18/17
Project : MCCLELLAN, PARCEL 66	Date Received: 05/19/17
Batch No. : 17E159	Date Extracted: 05/24/17 17:20
Sample ID: PPMP-66-MW23RDL	Date Analyzed: 05/24/17 17:20
Lab Samp ID: E159-07I	Dilution Factor: 10
Lab File ID: RED324	Matrix : WATER
Ext Btch ID: VO94E14	% Moisture : NA
Calib. Ref.: RDD007	Instrument ID : T-094

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	5.1J	10	2.0
CIS-1,2-DICHLOROETHENE	110	10	2.0
TRANS-1,2-DICHLOROETHENE	31	10	2.0
TRICHLOROETHENE	92	10	2.0
VINYL CHLORIDE	17	8.0	2.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	89.5	100.0	89.5	63-132
TOLUENE-D8	95.1	100.0	95.1	75-122
4-BROMOFLUOROBENZENE	93.5	100.0	93.5	73-129

RL: Reporting Limit

6/27/17 BVP

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 05/18/17
Project : MCCLELLAN, PARCEL 66	Date Received: 05/19/17
Batch No. : 17E159	Date Extracted: 05/23/17 22:48
Sample ID: PPMP-66-MW24R	Date Analyzed: 05/23/17 22:48
Lab Samp ID: E159-08	Dilution Factor: 1
Lab File ID: RED308	Matrix : WATER
Ext Btch ID: V094E13	% Moisture : NA
Calib. Ref.: RDD007	Instrument ID : T-094

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	0.59J	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	0.32J	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	9.10	10.00	91.0	63-132
TOLUENE-D8	9.59	10.00	95.9	75-122
4-BROMOFLUOROBENZENE	9.17	10.00	91.7	73-129

RL: Reporting Limit

6/27/17 BVP

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 05/18/17
Project : MCCLELLAN, PARCEL 66	Date Received: 05/19/17
Batch No. : 17E159	Date Extracted: 05/19/17 18:53
Sample ID: MATERIAL077	Date Analyzed: 05/19/17 18:53
Lab Samp ID: E159-09	Dilution Factor: 1
Lab File ID: REC351	Matrix : WATER
Ext Btch ID: V067E15	% Moisture : NA
Calib. Ref.: RCC528	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.8	10.00	108	63-132
TOLUENE-D8	10.1	10.00	101	75-122
4-BROMOFLUOROBENZENE	9.81	10.00	98.1	73-129

RL: Reporting Limit

6/27/17 BVP

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 05/18/17
Project : MCCLELLAN, PARCEL 66	Date Received: 05/19/17
Batch No. : 17E159	Date Extracted: 05/19/17 19:18
Sample ID: DUP253	Date Analyzed: 05/19/17 19:18
Lab Samp ID: E159-10	Dilution Factor: 1
Lab File ID: REC352	Matrix : WATER
Ext Btch ID: V067E15	% Moisture : NA
Calib. Ref.: RCC528	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	0.44J	1.0	0.20
CIS-1,2-DICHLOROETHENE	24	1.0	0.20
TRANS-1,2-DICHLOROETHENE	13	1.0	0.20
TRICHLOROETHENE	19	1.0	0.20
VINYL CHLORIDE	5.4	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.8	10.00	108	63-132
TOLUENE-D8	10.0	10.00	100	75-122
4-BROMOFLUOROBENZENE	9.67	10.00	96.7	73-129

6/22/17 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 05/18/17
Project : MCCLELLAN, PARCEL 66	Date Received: 05/19/17
Batch No. : 17E159	Date Extracted: 05/19/17 19:44
Sample ID: TB451	Date Analyzed: 05/19/17 19:44
Lab Samp ID: E159-11	Dilution Factor: 1
Lab File ID: REC353	Matrix : WATER
Ext Btch ID: V067E15	% Moisture : NA
Calib. Ref.: RCC528	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.9	10.00	109	63-132
TOLUENE-D8	10.1	10.00	101	75-122
4-BROMOFLUOROBENZENE	9.62	10.00	96.2	73-129

RL: Reporting Limit

6/22/17 BW

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/07/17
Project : MCCLELLAN, PARCEL 66	Date Received: 08/08/17
Batch No. : 17H041	Date Extracted: 08/08/17 17:28
Sample ID: PPMP-66-MW02RR	Date Analyzed: 08/08/17 17:28
Lab Samp ID: H041-01	Dilution Factor: 1
Lab File ID: RHW152	Matrix : WATER
Ext Btch ID: VOO6H06	% Moisture : NA
Calib. Ref.: RGW051	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	0.68J	1.0	0.20
CIS-1,2-DICHLOROETHENE	39	1.0	0.20
TRANS-1,2-DICHLOROETHENE	19	1.0	0.20
TRICHLOROETHENE	23	1.0	0.20
VINYL CHLORIDE	13	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.5	10.00	105	63-132
TOLUENE-D8	9.61	10.00	96.1	75-122
4-BROMOFLUOROBENZENE	9.47	10.00	94.7	73-129

BJP 1/24/18

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/07/17
Project : MCCLELLAN, PARCEL 66	Date Received: 08/08/17
Batch No. : 17H041	Date Extracted: 08/08/17 17:53
Sample ID: PPMP-66-MW06R	Date Analyzed: 08/08/17 17:53
Lab Samp ID: H041-02	Dilution Factor: 1
Lab File ID: RHW153	Matrix : WATER
Ext Btch ID: VO06H06	% Moisture : NA
Calib. Ref.: RGW051	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	0.66J	1.0	0.20
CIS-1,2-DICHLOROETHENE	19	1.0	0.20
TRANS-1,2-DICHLOROETHENE	5.2	1.0	0.20
TRICHLOROETHENE	64	1.0	0.20
VINYL CHLORIDE	5.7	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.7	10.00	107	63-132
TOLUENE-D8	9.82	10.00	98.2	75-122
4-BROMOFLUOROBENZENE	9.68	10.00	96.8	73-129

BVP 1/24/18

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/07/17
Project : MCCLELLAN, PARCEL 66	Date Received: 08/08/17
Batch No. : 17H041	Date Extracted: 08/08/17 18:19
Sample ID: PPMP-66-MW08	Date Analyzed: 08/08/17 18:19
Lab Samp ID: H041-03	Dilution Factor: 1
Lab File ID: RHW154	Matrix : WATER
Ext Btch ID: VOO6H06	% Moisture : NA
Calib. Ref.: RGW051	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.6	10.00	106	63-132
TOLUENE-D8	9.62	10.00	96.2	75-122
4-BROMOFLUOROBENZENE	9.48	10.00	94.8	73-129

BVP 1/24/18

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/07/17
Project : MCCLELLAN, PARCEL 66	Date Received: 08/08/17
Batch No. : 17H041	Date Extracted: 08/08/17 18:44
Sample ID: PPMP-66-MW16	Date Analyzed: 08/08/17 18:44
Lab Samp ID: H041-04	Dilution Factor: 1
Lab File ID: RHW155	Matrix : WATER
Ext Btch ID: V006H06	% Moisture : NA
Calib. Ref.: RGW051	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.3	10.00	103	63-132
TOLUENE-D8	9.82	10.00	98.2	75-122
4-BROMOFLUOROBENZENE	9.54	10.00	95.4	73-129

BLP 1/24/18

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/07/17
Project : MCCLELLAN, PARCEL 66	Date Received: 08/08/17
Batch No. : 17H041	Date Extracted: 08/08/17 19:09
Sample ID: PPMP-66-MW17	Date Analyzed: 08/08/17 19:09
Lab Samp ID: H041-05	Dilution Factor: 1
Lab File ID: RHW156	Matrix : WATER
Ext Btch ID: V006H06	% Moisture : NA
Calib. Ref.: RGW051	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.7	10.00	107	63-132
TOLUENE-D8	9.67	10.00	96.7	75-122
4-BROMOFLUOROBENZENE	9.73	10.00	97.3	73-129

BVP 1/24/18

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/07/17
Project : MCCLELLAN, PARCEL 66	Date Received: 08/08/17
Batch No. : 17H041	Date Extracted: 08/08/17 19:35
Sample ID: PPMP-66-MW18R	Date Analyzed: 08/08/17 19:35
Lab Samp ID: H041-06	Dilution Factor: 1
Lab File ID: RHW157	Matrix : WATER
Ext Btch ID: VOO6H06	% Moisture : NA
Calib. Ref.: RGW051	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	1.1	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	0.76J	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.6	10.00	106	63-132
TOLUENE-D8	9.94	10.00	99.4	75-122
4-BROMOFLUOROBENZENE	9.54	10.00	95.4	73-129

11/24/18 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/07/17
Project : MCCLELLAN, PARCEL 66	Date Received: 08/08/17
Batch No. : 17H041	Date Extracted: 08/08/17 20:00
Sample ID: PPMP-66-MW23R	Date Analyzed: 08/08/17 20:00
Lab Samp ID: H041-07	Dilution Factor: 1
Lab File ID: RHW158	Matrix : WATER
Ext Btch ID: VOO6H06	% Moisture : NA
Calib. Ref.: RGW051	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	5.6	1.0	0.20
CIS-1,2-DICHLOROETHENE	90	1.0	0.20
TRANS-1,2-DICHLOROETHENE	37	1.0	0.20
TRICHLOROETHENE	78	1.0	0.20
VINYL CHLORIDE	24	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.5	10.00	105	63-132
TOLUENE-D8	9.49	10.00	94.9	75-122
4-BROMOFLUOROBENZENE	9.32	10.00	93.2	73-129

1/24/18 DUP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/07/17
Project : MCCLELLAN, PARCEL 66	Date Received: 08/08/17
Batch No. : 17H041	Date Extracted: 08/08/17 20:26
Sample ID: PPMP-66-MW24R	Date Analyzed: 08/08/17 20:26
Lab Samp ID: H041-08	Dilution Factor: 1
Lab File ID: RHW159	Matrix : WATER
Ext Btch ID: VOO6H06	% Moisture : NA
Calib. Ref.: RGW051	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	0.93J	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	0.38J	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.4	10.00	104	63-132
TOLUENE-D8	9.91	10.00	99.1	75-122
4-BROMOFLUOROBENZENE	9.55	10.00	95.5	73-129

1/24/18 BCP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/07/17
Project : MCCLELLAN, PARCEL 66	Date Received: 08/08/17
Batch No. : 17H041	Date Extracted: 08/08/17 20:51
Sample ID: MATERIAL077	Date Analyzed: 08/08/17 20:51
Lab Samp ID: H041-09	Dilution Factor: 1
Lab File ID: RHW160	Matrix : WATER
Ext Btch ID: VOO6H06	% Moisture : NA
Calib. Ref.: RGW051	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.4	10.00	104	63-132
TOLUENE-D8	9.88	10.00	98.8	75-122
4-BROMOFLUOROBENZENE	9.67	10.00	96.7	73-129

1/24/18 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/07/17
Project : MCCLELLAN, PARCEL 66	Date Received: 08/08/17
Batch No. : 17H041	Date Extracted: 08/08/17 21:16
Sample ID: DUP254	Date Analyzed: 08/08/17 21:16
Lab Samp ID: H041-10	Dilution Factor: 1
Lab File ID: RHW161	Matrix : WATER
Ext Btch ID: VO06H06	% Moisture : NA
Calib. Ref.: RGW051	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	1.1	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	0.44J	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.3	10.00	103	63-132
TOLUENE-D8	9.38	10.00	93.8	75-122
4-BROMOFLUOROBENZENE	9.20	10.00	92.0	73-129

1/24/18 BCP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/07/17
Project : MCCLELLAN, PARCEL 66	Date Received: 08/08/17
Batch No. : 17H041	Date Extracted: 08/08/17 17:02
Sample ID: TB452	Date Analyzed: 08/08/17 17:02
Lab Samp ID: H041-11	Dilution Factor: 1
Lab File ID: RHW151	Matrix : WATER
Ext Btch ID: VOO6H06	% Moisture : NA
Calib. Ref.: RGW051	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.7	10.00	107	63-132
TOLUENE-D8	9.79	10.00	97.9	75-122
4-BROMOFLUOROBENZENE	9.48	10.00	94.8	73-129

1/24/18 BCP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 11/20/17
Project : MCCLELLAN, PARCEL 66	Date Received: 11/21/17
Batch No. : 17K201	Date Extracted: 11/22/17 15:59
Sample ID: PPMP-66-MW02RR	Date Analyzed: 11/22/17 15:59
Lab Samp ID: K201-01	*Dilution Factor:* 1
Lab File ID: RKC373	Matrix : WATER
Ext Btch ID: V067K14	% Moisture : NA
Calib. Ref.: RJC007	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	0.55J	1.0	0.20
CIS-1,2-DICHLOROETHENE	32	1.0	0.20
TRANS-1,2-DICHLOROETHENE	15	1.0	0.20
TRICHLOROETHENE	19	1.0	0.20
VINYL CHLORIDE	7.6	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.1	10.00	101	63-132
TOLUENE-D8	9.62	10.00	96.2	75-122
4-BROMOFLUOROBENZENE	9.42	10.00	94.2	73-129

3/12/18 DVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCCLELLAN, PARCEL 66
Batch No. : 17K201
Sample ID: PPMP-66-MW06R
Lab Samp ID: K201-02
Lab File ID: RKC383
Ext Btch ID: V067K14
Calib. Ref.: RJC007

Date Collected: 11/20/17
Date Received: 11/21/17
Date Extracted: 11/22/17 20:14
Date Analyzed: 11/22/17 20:14
Dilution Factor: 1
Matrix : WATER
% Moisture : NA
Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	0.45J	1.0	0.20
CIS-1,2-DICHLOROETHENE	14	1.0	0.20
TRANS-1,2-DICHLOROETHENE	3.3	1.0	0.20
TRICHLOROETHENE	45	1.0	0.20
VINYL CHLORIDE	3.5	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.1	10.00	101	63-132
TOLUENE-D8	9.68	10.00	96.8	75-122
4-BROMOFLUOROBENZENE	9.33	10.00	93.3	73-129

RL: Reporting Limit

3/12/18 BVP

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 11/20/17
Project : MCCLELLAN, PARCEL 66	Date Received: 11/21/17
Batch No. : 17K201	Date Extracted: 11/22/17 16:25
Sample ID: PPMP-66-MW08	Date Analyzed: 11/22/17 16:25
Lab Samp ID: K201-03	Dilution Factor: 1
Lab File ID: RKC374	Matrix : WATER
Ext Btch ID: V067K14	% Moisture : NA
Calib. Ref.: RJC007	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.2	10.00	102	63-132
TOLUENE-D8	9.70	10.00	97.0	75-122
4-BROMOFLUOROBENZENE	9.38	10.00	93.8	73-129

RL: Reporting Limit

3/12/18 BVP

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCCLELLAN, PARCEL 66
Batch No. : 17K201
Sample ID: PPMP-66-MW16
Lab Samp ID: K201-04
Lab File ID: RKC375
Ext Btch ID: V067K14
Calib. Ref.: RJC007

Date Collected: 11/20/17
Date Received: 11/21/17
Date Extracted: 11/22/17 16:50
Date Analyzed: 11/22/17 16:50
Dilution Factor: 1
Matrix : WATER
% Moisture : NA
Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	9.99	10.00	99.9	63-132
TOLUENE-D8	9.80	10.00	98.0	75-122
4-BROMOFLUOROBENZENE	9.35	10.00	93.5	73-129

3/12/18 BCP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 11/20/17
Project : MCCLELLAN, PARCEL 66	Date Received: 11/21/17
Batch No. : 17K201	Date Extracted: 11/22/17 17:16
Sample ID: PPMP-66-MW17	Date Analyzed: 11/22/17 17:16
Lab Samp ID: K201-05	Dilution Factor: 1
Lab File ID: RKC376	Matrix : WATER
Ext Btch ID: V067K14	% Moisture : NA
Calib. Ref.: RJC007	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.1	10.00	101	63-132
TOLUENE-D8	9.69	10.00	96.9	75-122
4-BROMOFLUOROBENZENE	9.31	10.00	93.1	73-129

3/12/18 BRP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 11/20/17
Project : MCCLELLAN, PARCEL 66	Date Received: 11/21/17
Batch No. : 17K201	Date Extracted: 11/22/17 17:42
Sample ID: PPMP-66-MW18R	Date Analyzed: 11/22/17 17:42
Lab Samp ID: K201-06	Dilution Factor: 1
Lab File ID: RKC377	Matrix : WATER
Ext Btch ID: V067K14	% Moisture : NA
Calib. Ref.: RJC007	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	0.73J	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	0.34J	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.2	10.00	102	63-132
TOLUENE-D8	9.60	10.00	96.0	75-122
4-BROMOFLUOROBENZENE	9.25	10.00	92.5	73-129

3/12/18 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 11/20/17
Project : MCCLELLAN, PARCEL 66	Date Received: 11/21/17
Batch No. : 17K201	Date Extracted: 11/22/17 18:07 # 11/27/17 12:32
Sample ID: PPMP-66-MW23R	Date Analyzed: 11/22/17 18:07 # 11/27/17 12:32
Lab Samp ID: K201-07 #K201-07I	Dilution Factor: 1 # 5
Lab File ID: RKC378 #RKC398	Matrix : WATER
Ext Btch ID: V067K14 #V067K15	% Moisture : NA
Calib. Ref.: RJC007 #RJC007	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	7.5	1.0	0.20
# CIS-1,2-DICHLOROETHENE	130	5.0	1.0
TRANS-1,2-DICHLOROETHENE	41	1.0	0.20
# TRICHLOROETHENE	120	5.0	1.0
VINYL CHLORIDE	21	0.80	0.20

3/12/18 BVP

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.2	10.00	102	63-132
TOLUENE-D8	9.68	10.00	96.8	75-122
4-BROMOFLUOROBENZENE	9.35	10.00	93.5	73-129
# 1,2-DICHLOROETHANE-D4	48.0	50.00	96.1	63-132
# TOLUENE-D8	48.3	50.00	96.7	75-122
# 4-BROMOFLUOROBENZENE	47.2	50.00	94.5	73-129

Members of the Associated File
RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 11/20/17
Project : MCCLELLAN, PARCEL 66	Date Received: 11/21/17
Batch No. : 17K201	Date Extracted: 11/22/17 18:07
Sample ID: PPMP-66-MW23R	Date Analyzed: 11/22/17 18:07
Lab Samp ID: K201-07	Dilution Factor: 1
Lab File ID: RKC378	Matrix : WATER
Ext Btch ID: VO67K14	% Moisture : NA
Calib. Ref.: RJC007	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	7.5	1.0	0.20
CIS-1,2-DICHLOROETHENE	110E	1.0	0.20
TRANS-1,2-DICHLOROETHENE	41	1.0	0.20
TRICHLOROETHENE	100E	1.0	0.20
VINYL CHLORIDE	21	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.2	10.00	102	63-132
TOLUENE-D8	9.68	10.00	96.8	75-122
4-BROMOFLUOROBENZENE	9.35	10.00	93.5	73-129

3/12/18 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 11/20/17
Project : MCCLELLAN, PARCEL 66	Date Received: 11/21/17
Batch No. : 17K201	Date Extracted: 11/27/17 12:32
Sample ID: PPMP-66-MW23RDL	Date Analyzed: 11/27/17 12:32
Lab Samp ID: K201-07I	Dilution Factor: 5
Lab File ID: RKC398	Matrix : WATER
Ext Btch ID: VO67K15	% Moisture : NA
Calib. Ref.: RJC007	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	8.0	5.0	1.0
CIS-1,2-DICHLOROETHENE	130	5.0	1.0
TRANS-1,2-DICHLOROETHENE	46	5.0	1.0
TRICHLOROETHENE	120	5.0	1.0
VINYL CHLORIDE	22	4.0	1.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	48.0	50.00	96.1	63-132
TOLUENE-D8	48.3	50.00	96.7	75-122
4-BROMOFLUOROBENZENE	47.2	50.00	94.5	73-129

12/12/18 BLP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCCLELLAN, PARCEL 66
Batch No. : 17K201
Sample ID: PPMP-66-MW24R
Lab Samp ID: K201-08
Lab File ID: RKC379
Ext Btch ID: VO67K14
Calib. Ref.: RJC007

Date Collected: 11/20/17
Date Received: 11/21/17
Date Extracted: 11/22/17 18:32
Date Analyzed: 11/22/17 18:32
Dilution Factor: 1
Matrix : WATER
% Moisture : NA
Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	0.65J	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	0.46J	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.6	10.00	106	63-132
TOLUENE-D8	9.65	10.00	96.5	75-122
4-BROMOFLUOROBENZENE	9.31	10.00	93.1	73-129

RL: Reporting Limit

11/21/18 BMP

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 11/20/17
Project : MCCLELLAN, PARCEL 66	Date Received: 11/21/17
Batch No. : 17K201	Date Extracted: 11/22/17 18:58
Sample ID: MATERIAL080	Date Analyzed: 11/22/17 18:58
Lab Samp ID: K201-09	Dilution Factor: 1
Lab File ID: RKC380	Matrix : WATER
Ext Btch ID: VO67K14	% Moisture : NA
Calib. Ref.: RJC007	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.2	10.00	102	63-132
TOLUENE-D8	9.50	10.00	95.0	75-122
4-BROMOFLUOROBENZENE	9.17	10.00	91.7	73-129

3/12/18 RVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCCLELLAN, PARCEL 66
Batch No. : 17K201
Sample ID: DUP274
Lab Samp ID: K201-10
Lab File ID: RKC381
Ext Btch ID: VO67K14
Calib. Ref.: RJC007

Date Collected: 11/20/17
Date Received: 11/21/17
Date Extracted: 11/22/17 19:23
Date Analyzed: 11/22/17 19:23
Dilution Factor: 1
Matrix : WATER
% Moisture : NA
Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.2	10.00	102	63-132
TOLUENE-D8	9.58	10.00	95.8	75-122
4-BROMOFLUOROBENZENE	9.23	10.00	92.3	73-129

3/12/18 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 11/20/17
Project : MCCLELLAN, PARCEL 66	Date Received: 11/21/17
Batch No. : 17K201	Date Extracted: 11/22/17 19:48
Sample ID: TB466	Date Analyzed: 11/22/17 19:48
Lab Samp ID: K201-11	Dilution Factor: 1
Lab File ID: RKC382	Matrix : WATER
Ext Btch ID: VO67K14	% Moisture : NA
Calib. Ref.: RJC007	Instrument ID : 67

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	10.2	10.00	102	63-132
TOLUENE-D8	9.59	10.00	95.9	75-122
4-BROMOFLUOROBENZENE	9.51	10.00	95.1	73-129

3/12/18 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCCLELLAN, PARCEL 66
Batch No. : 18B056
Sample ID: PPMP-66-MW02RR
Lab Samp ID: B056-01 #B056-01I
Lab File ID: RBW145 #RBW209
Ext Btch ID: V006B08 #V006B10
Calib. Ref.: RAW123 #RAW123

Date Collected: 02/08/18
Date Received: 02/09/18
Date Extracted: 02/09/18 19:26 # 02/13/18 17:22
Date Analyzed: 02/09/18 19:26 # 02/13/18 17:22
Dilution Factor: 1 # 10
Matrix : WATER
% Moisture : NA
Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	0.77J	1.0	0.20
CIS-1,2-DICHLOROETHENE	57	1.0	0.20
TRANS-1,2-DICHLOROETHENE	27	1.0	0.20
TRICHLOROETHENE	31	1.0	0.20
# VINYL CHLORIDE	15	8.0	2.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	11.1	10.00	111	63-132
TOLUENE-D8	10.2	10.00	102	75-122
4-BROMOFLUOROBENZENE	9.57	10.00	95.7	73-129
# 1,2-DICHLOROETHANE-D4	115	100.0	115	63-132
# TOLUENE-D8	91.0	100.0	91.0	75-122
# 4-BROMOFLUOROBENZENE	91.8	100.0	91.8	73-129

3/14/18VP

Members of the Associated File
RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCCLELLAN, PARCEL 66
Batch No. : 18B056
Sample ID: PPMP-66-MW02RR
Lab Samp ID: B056-01
Lab File ID: RBW145
Ext Btch ID: VOO6B08
Calib. Ref.: RAW123

Date Collected: 02/08/18
Date Received: 02/09/18
Date Extracted: 02/09/18 19:26
Date Analyzed: 02/09/18 19:26
Dilution Factor: 1
Matrix : WATER
% Moisture : NA
Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	0.77J	1.0	0.20
CIS-1,2-DICHLOROETHENE	57	1.0	0.20
TRANS-1,2-DICHLOROETHENE	27	1.0	0.20
TRICHLOROETHENE	31	1.0	0.20
VINYL CHLORIDE	22E	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	11.1	10.00	111	63-132
TOLUENE-D8	10.2	10.00	102	75-122
4-BROMOFLUOROBENZENE	9.57	10.00	95.7	73-129

3/15/16 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 02/08/18
Project : MCCLELLAN, PARCEL 66	Date Received: 02/09/18
Batch No. : 18B056	Date Extracted: 02/13/18 17:22
Sample ID: PPMP-66-MW02RRDL	Date Analyzed: 02/13/18 17:22
Lab Samp ID: B056-01I	Dilution Factor: 10
Lab File ID: RBW209	Matrix : WATER
Ext Btch ID: V006B10	% Moisture : NA
Calib. Ref.: RAW123	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	10	2.0
CIS-1,2-DICHLOROETHENE	50	10	2.0
TRANS-1,2-DICHLOROETHENE	21	10	2.0
TRICHLOROETHENE	24	10	2.0
VINYL CHLORIDE	15	8.0	2.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	115	100.0	115	63-132
TOLUENE-D8	91.0	100.0	91.0	75-122
4-BROMOFLUOROBENZENE	91.8	100.0	91.8	73-129

3/15/16 BMP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 02/08/18
Project : MCCLELLAN, PARCEL 66	Date Received: 02/09/18
Batch No. : 18B056	Date Extracted: 02/09/18 19:51
Sample ID: PPMP-66-MW06R	Date Analyzed: 02/09/18 19:51
Lab Samp ID: B056-02	Dilution Factor: 1
Lab File ID: RBW146	Matrix : WATER
Ext Btch ID: V006B08	% Moisture : NA
Calib. Ref.: RAW123	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	0.49J	1.0	0.20
CIS-1,2-DICHLOROETHENE	16	1.0	0.20
TRANS-1,2-DICHLOROETHENE	3.8	1.0	0.20
TRICHLOROETHENE	49	1.0	0.20
VINYL CHLORIDE	6.1	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	11.4	10.00	114	63-132
TOLUENE-D8	10.2	10.00	102	75-122
4-BROMOFLUOROBENZENE	9.52	10.00	95.2	73-129

3/15/16 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 02/08/18
Project : MCCLELLAN, PARCEL 66	Date Received: 02/09/18
Batch No. : 18B056	Date Extracted: 02/09/18 20:16
Sample ID: PPMP-66-MW08	Date Analyzed: 02/09/18 20:16
Lab Samp ID: B056-03	Dilution Factor: 1
Lab File ID: RBW147	Matrix : WATER
Ext Btch ID: VOO6B08	% Moisture : NA
Calib. Ref.: RAW123	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	11.3	10.00	113	63-132
TOLUENE-D8	10.2	10.00	102	75-122
4-BROMOFLUOROBENZENE	9.44	10.00	94.4	73-129

3/15/18 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 02/08/18
Project : MCCLELLAN, PARCEL 66	Date Received: 02/09/18
Batch No. : 18B056	Date Extracted: 02/09/18 21:57
Sample ID: PPMP-66-MW16	Date Analyzed: 02/09/18 21:57
Lab Samp ID: B056-04	Dilution Factor: 1
Lab File ID: RBW151	Matrix : WATER
Ext Btch ID: VO06B08	% Moisture : NA
Calib. Ref.: RAW123	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	11.5	10.00	115	63-132
TOLUENE-D8	10.2	10.00	102	75-122
4-BROMOFLUOROBENZENE	9.33	10.00	93.3	73-129

3/15/18 PM

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 02/08/18
Project : MCCLELLAN, PARCEL 66	Date Received: 02/09/18
Batch No. : 18B056	Date Extracted: 02/09/18 22:22
Sample ID: PPMP-66-MW17	Date Analyzed: 02/09/18 22:22
Lab Samp ID: B056-05	Dilution Factor: 1
Lab File ID: RBW152	Matrix : WATER
Ext Btch ID: VO06B08	% Moisture : NA
Calib. Ref.: RAW123	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	12.0	10.00	120	63-132
TOLUENE-D8	10.3	10.00	103	75-122
4-BROMOFLUOROBENZENE	9.42	10.00	94.2	73-129

3/15/16 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCCLELLAN, PARCEL 66
Batch No. : 18B056
Sample ID: PPMP-66-MW18R
Lab Samp ID: B056-06
Lab File ID: RBW185
Ext Btch ID: VO06B09
Calib. Ref.: RAW123

Date Collected: 02/08/18
Date Received: 02/09/18
Date Extracted: 02/13/18 01:23
Date Analyzed: 02/13/18 01:23
Dilution Factor: 1
Matrix : WATER
% Moisture : NA
Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	0.37J	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	0.28J	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	11.5	10.00	115	63-132
TOLUENE-D8	11.0	10.00	110	75-122
4-BROMOFLUOROBENZENE	9.06	10.00	90.6	73-129

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCCLELLAN, PARCEL 66
Batch No. : 18B056
Sample ID: PPMP-66-MW23R
Lab Samp ID: B056-07 #B056-07I
Lab File ID: RBW153 #RBW210
Ext Btch ID: V006B08 #V006B10
Calib. Ref.: RAW123 #RAW123

Date Collected: 02/08/18
Date Received: 02/09/18
Date Extracted: 02/09/18 22:47 # 02/13/18 17:48
Date Analyzed: 02/09/18 22:47 # 02/13/18 17:48
Dilution Factor: 1 # 10
Matrix : WATER
% Moisture : NA
Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	11	1.0	0.20
# CIS-1,2-DICHLOROETHENE	140	10	2.0
TRANS-1,2-DICHLOROETHENE	57	1.0	0.20
# TRICHLOROETHENE	130	10	2.0
# VINYL CHLORIDE	24	8.0	2.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	11.5	10.00	115	63-132
TOLUENE-D8	10.3	10.00	103	75-122
4-BROMOFLUOROBENZENE	9.30	10.00	93.0	73-129
# 1,2-DICHLOROETHANE-D4	117	100.0	117	63-132
# TOLUENE-D8	94.7	100.0	94.7	75-122
# 4-BROMOFLUOROBENZENE	97.5	100.0	97.5	73-129

3/15/16 BMP

Members of the Associated File
RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 02/08/18
Project : MCCLELLAN, PARCEL 66	Date Received: 02/09/18
Batch No. : 18B056	Date Extracted: 02/09/18 22:47
Sample ID: PPMP-66-MW23R	Date Analyzed: 02/09/18 22:47
Lab Samp ID: B056-07	Dilution Factor: 1
Lab File ID: RBW153	Matrix : WATER
Ext Btch ID: VO06B08	% Moisture : NA
Calib. Ref.: RAW123	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	11	1.0	0.20
~~CIS-1,2-DICHLOROETHENE~~	~~150E~~	~~1.0~~	~~0.20~~
TRANS-1,2-DICHLOROETHENE	57	1.0	0.20
~~TRICHLOROETHENE~~	~~140E~~	~~1.0~~	~~0.20~~
~~VINYL CHLORIDE~~	~~32E~~	~~0.80~~	~~0.20~~

3/15/16 BVP

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	11.5	10.00	115	63-132
TOLUENE-D8	10.3	10.00	103	75-122
4-BROMOFLUOROBENZENE	9.30	10.00	93.0	73-129

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCCLELLAN, PARCEL 66
Batch No. : 18B056
Sample ID: PPMP-66-MW23RDL
Lab Samp ID: B056-07I
Lab File ID: RBW210
Ext Btch ID: VOO6B10
Calib. Ref.: RAW123

Date Collected: 02/08/18
Date Received: 02/09/18
Date Extracted: 02/13/18 17:48
Date Analyzed: 02/13/18 17:48
Dilution Factor: 10
Matrix : WATER
% Moisture : NA
Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
~~1,1-DICHLOROETHENE~~	~~8.9J~~	~~10~~	~~2.0~~
CIS-1,2-DICHLOROETHENE	140	10	2.0
~~TRANS-1,2-DICHLOROETHENE~~	~~48~~	~~10~~	~~2.0~~
TRICHLOROETHENE	130	10	2.0
VINYL CHLORIDE	24	8.0	2.0

3/15/16 BWP

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	117	100.0	117	63-132
TOLUENE-D8	94.7	100.0	94.7	75-122
4-BROMOFLUOROBENZENE	97.5	100.0	97.5	73-129

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 02/08/18
Project : MCCLELLAN, PARCEL 66	Date Received: 02/09/18
Batch No. : 18B056	Date Extracted: 02/13/18 18:13
Sample ID: PPMP-66-MW24R	Date Analyzed: 02/13/18 18:13
Lab Samp ID: B056-08N	Dilution Factor: 1
Lab File ID: RBW211	Matrix : WATER
Ext Btch ID: V006B10	% Moisture : NA
Calib. Ref.: RAW123	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	0.73J	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	0.49J	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

3/15/16 BVP

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	11.2	10.00	112	63-132
TOLUENE-D8	9.68	10.00	96.8	75-122
4-BROMOFLUOROBENZENE	10.0	10.00	100	73-129

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 02/08/18
Project : MCCLELLAN, PARCEL 66	Date Received: 02/09/18
Batch No. : 18B056	Date Extracted: 02/09/18 23:37
Sample ID: MATERIAL082	Date Analyzed: 02/09/18 23:37
Lab Samp ID: B056-09	Dilution Factor: 1
Lab File ID: RBW155	Matrix : WATER
Ext Btch ID: VOO6B08	% Moisture : NA
Calib. Ref.: RAW123	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	11.8	10.00	118	63-132
TOLUENE-D8	10.3	10.00	103	75-122
4-BROMOFLUOROBENZENE	9.30	10.00	93.0	73-129

3/15/16 BVP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 02/08/18
Project : MCCLELLAN, PARCEL 66	Date Received: 02/09/18
Batch No. : 18B056	Date Extracted: 02/10/18 00:03
Sample ID: DUP275	Date Analyzed: 02/10/18 00:03
Lab Samp ID: B056-10	Dilution Factor: 1
Lab File ID: RBW156	Matrix : WATER
Ext Btch ID: VO06B08	% Moisture : NA
Calib. Ref.: RAW123	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	0.50J	1.0	0.20
CIS-1,2-DICHLOROETHENE	15	1.0	0.20
TRANS-1,2-DICHLOROETHENE	3.7	1.0	0.20
TRICHLOROETHENE	46	1.0	0.20
VINYL CHLORIDE	6.1	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	11.8	10.00	118	63-132
TOLUENE-D8	10.4	10.00	104	75-122
4-BROMOFLUOROBENZENE	9.17	10.00	91.7	73-129

3/15/16 BWP

RL: Reporting Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 02/08/18
Project : MCCLELLAN, PARCEL 66	Date Received: 02/09/18
Batch No. : 18B056	Date Extracted: 02/10/18 00:28
Sample ID: TB469	Date Analyzed: 02/10/18 00:28
Lab Samp ID: B056-11	Dilution Factor: 1
Lab File ID: RBW157	Matrix : WATER
Ext Btch ID: VO06B08	% Moisture : NA
Calib. Ref.: RAW123	Instrument ID : 06

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1-DICHLOROETHENE	ND	1.0	0.20
CIS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRANS-1,2-DICHLOROETHENE	ND	1.0	0.20
TRICHLOROETHENE	ND	1.0	0.20
VINYL CHLORIDE	ND	0.80	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	11.5	10.00	115	63-132
TOLUENE-D8	10.4	10.00	104	75-122
4-BROMOFLUOROBENZENE	9.31	10.00	93.1	73-129

3/15/18 BVP

RL: Reporting Limit