

# *Premier* Environmental Services

DATA VALIDATION SUMMARY REPORT  
OF THE  
LAWRENCE AVIATION SUPERFUND SITE  
PORT JEFFERSON, NY

ORGANIC AND INORGANIC ANALYSES  
IN AQUEOUS SAMPLES

TEST AMERICA LABORATORIES, INC.  
SOUTH BURLINGTON, VT

SDG NUMBER: 136246

June, 2010

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**DATA VALIDATION FOR:** Volatile Organic Compounds (VOC's)  
**SITE:** Lawrence Aviation Superfund Site  
**CONTRACT LAB:** Test America Laboratories, Inc.  
South Burlington, VT  
**PROJECT NO.:** 136246  
**REVIEWER:** Renee Cohen  
**DATE REVIEW COMPLETED:** May, 2010  
**MATRIX:** Aqueous

The data validation was performed according to the guidelines in the USEPA National Functional Guidelines for Superfund Organic Methods Data Review (EPA-540-R-08-01, June 2008). All data are considered valid and acceptable except those analytes which have been deemed unusable "R" (unreliable). Due to various QC problems some analytes may have been qualified with a "J" (estimated), "N" (presumptive evidence for the presence of the material), "U" (non-detect), or "JN" (presumptive evidence for the presence of the material at an estimated value) flag. All actions are detailed on the attached sheets.

Table 1 of this report includes a cross reference between the field sample ID and laboratory sample ID used to perform data validation. Definitions of the data qualifiers that may be used in this report are located in Appendix A of this report. Qualified data result pages are located in Appendix B of this report. Copies of the Chain of Custody (COC) documents are located in Appendix C of this report.

This sample set included one (1) aqueous sample. This data assessment is for the volatile organic analyses listed on the COC documents that accompanied the samples to the laboratory. The sample was collected March 5, 2010 and received at Test America Laboratories located in South Burlington, VT on March 6, 2010 for the analyses requested on the COC documentation. The sample in this data set was analyzed for Volatile Organic Analytes (VOA) in accordance with USEPA CLP Method SOM01.2 for Trace Level analyses. The sample was also analyzed for metals and other inorganic parameters. The review of the other analytes is located in stand-alone data reports.

## ORGANIC DATA ASSESSMENT

### 1. OVERVIEW:

Samples associated with this data set were analyzed for Volatile Organic Analytes (VOA) as noted by the COC documentation that accompanied the sample set to the laboratory. All analyses were performed in accordance with USEPA CLP Methods SOM01.2 for Trace Level Water Analyses. A summary of the applicable QC will be discussed at each section of the report.

Laboratory report 136246 consists of one (1) aqueous sample for Volatile Organic Analytes. The Chain of Custody documents listed the field sample ID's that are summarized in Table 1 of this report.

Sample MW-04 was received at Test America Laboratories on March 6, 2010. The sample was transferred to the VOA sample refrigerators on March 8, 2010. The storage blank sample VHBLK01 was placed in the refrigerator on March 8, 2010 with site sample.

### 2. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. The USEPA CLP method specifies Technical Holding times for aqueous and solid and soil samples. The Technical Holding Time is based on collection date. The holding time for a properly preserved aqueous sample that is cooled and pH preserved to 2 or below is fourteen (14) days from sample collection. The holding time for non-aqueous samples that are properly cooled and preserved with NaHSO<sub>4</sub> is fourteen (14) days from sample collection.

Sample MW-04 was collected March 5, 2010 and was received at the laboratory on March 6, 2010. The initial and dilution analyses associated with this sample were completed by March 12, 2010. All sample analyses were performed within the technical holding time.

### 3. SURROGATES:

Samples to be analyzed for Volatile Organic Analytes (VOA) are fortified with either thirteen (13) or fourteen (14) Deuterated Monitoring Compounds (DMC's). These DMC's are added to each sample prior to sample purging. The method recommended Deuterated Monitoring Surrogate Compounds include:

Vinyl Chloride-d3	Chloroethane-d5
1,1-Dichloroethene-d2	2-Butanone-d5
Chloroform-d	1,2-Dichloroethane-d4
Benzene-d6	1,2-Dichloropropane-d6
Toluene-d8	trans-1,3-Dichloropropene-d4
2-Hexanone-d5	1,4-Dioxane-d8**
1,1,2,2-Tetrachloroethane-d2	1,2-Dichlorobenzene-d4

\*\* only reported in the low/medium non-aqueous Volatile Organic Analyses.

The laboratory reported CLP method specified recovery limits that are cited for both aqueous and non-aqueous samples reported in this data set. 1,4-Dioxane-d8 is not added as a Deuterated Monitoring Compound (DMC) in the Trace Volatile Organic Analyses associated with this data set.

The aqueous samples are fortified with thirteen (13) method specified DMC's prior to analysis. The method cites recovery limits for each surrogate. The percent recovery of each DMC met the method specified QC criteria in sample MW-04 and MW04DL.

## ORGANIC DATA ASSESSMENT

### 4. MATRIX SPIKE/SPIKE DUPLICATE, MS/MSD:

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data.

Site Specific MS/MSD analysis was not reported with the samples in this data set.

### 5. BLANK CONTAMINATION:

Quality assurance (QA) blanks, such as the method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. Samples were only qualified with those QC samples associated with the particular blank.

This method requires the preparation and analysis of a laboratory storage blank. This laboratory storage blank is kept with the site samples and analyzed with the site samples.

#### A) Method Blank contamination

One (1) method blank sample is associated with the Trace Level Volatile Organic analyses (aqueous samples) in this data set. The method blank samples was free from contamination of target analytes with the exception of Chloromethane (0.28 J ug/l), Acetone (1.4 J ug/l), 1,2,4-Trichlorobenzene (0.29 J ug/l) and 1,2,3-Trichlorobenzene (0.32 J ug/l) and one (1) unknown Tentatively Identified Compound (TIC) at retention time 10.52. This TIC has been qualified "J" estimated and "X" to indicate a contaminant this is related to the Deuterated Monitoring Compound (DMC) and column bleed. Acetone was detected in the initial 1:5 analysis. Acetone has been negated and qualified "U". The unknown Tentatively Identified Compound was detected in sample MW-04 and MW-04DL. It has been negated and qualified "U".

Qualified data result pages are located in Appendix B of this report.

The aqueous storage blank sample associated with the soils in this data set is identified as VHBLK01. This storage blank sample is free from contamination of target analytes. This storage blank sample contains one (1) TIC at retention time 10:53 (5.8 JXB ug/l.). This is the TIC that was identified in the associated method blank sample and been previously negated in sample MW-04 and MW-04DL.

#### B) Field or Equipment Rinse Blank (ERB) contamination

A Field Blank or Equipment Blank sample is not associated with this data set.

#### C) Trip Blank contamination

A Trip Blank sample is not associated with this data set.

## ORGANIC DATA ASSESSMENT

### 6. GC/MS CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance. USEPA CLP method states the concentration levels of target analytes that must be analyzed and reported for Initial Calibration of the GC/MS.

#### A) RESPONSE FACTOR

**Trace Volatile Organic Analysis** - The response factor measures the instrument's response to specific chemical compounds. USEPA CLP criteria of the cited method requires that the response factor of all target analytes listed in Table 3 and the DMC's must be greater than or equal to 0.010. All other target analytes must have an RRF greater than or equal to 0.050 in both initial and continuing calibration analyses. Target analytes are qualified if the minimum RRF criteria are not in either the initial calibration analysis or the opening and closing continuing calibration standard analysis. Positive results are qualified "J". Non-detect results are qualified if the minimum RRF <0.050 (or 0.010 for specifics) are qualified "R", unusable

**Trace Level Volatile Organic Analysis** - The laboratory performed an aqueous (Trace Volatile Organic Analysis) initial calibration on March 1, 2020 (Inst. N.i). The laboratory summarized the RRF data on the CLP Form 6A. The laboratory included all raw data and instrument summary forms in the data report for review. The RRF of all target compounds met QC criteria in this initial calibration curve analysis.

One (1) opening and one (1) closing continuation calibration standard are associated with this sample analysis. The CCV was analyzed March 11, 2010 – March 12, 2010. The opening and closing CCV standards are reported on each day of analysis. The RRF criteria for each of the opening and closing CCV standards met the QC criteria specified in the cited data validation guidelines.

## ORGANIC DATA ASSESSMENT

### 6. GC/MS CALIBRATION:

#### **B) PERCENT RELATIVE STANDARD DEVIATION (RSD) AND PERCENT DIFFERENCE (%D):**

**Trace Volatile Organic Analyses - Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the compounds in the continuing calibration standard to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. US EPA data validation criteria states that the percent RSD must be less than or equal to 40% for the volatile compounds and surrogate compounds listed in Table 3 and there associated Deuterated Monitoring compounds. All other %RSD must be less than or equal to 30% in the initial calibration curve analysis.**

**The %D in the opening CCV standard must be <40% for the compounds listed in Table 3 of the method. All other volatile organic compounds have a criteria <50% in the closing continuing calibration standard. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects may be flagged "UJ", based on professional judgment. If %RSD and %D grossly exceed QC criteria (>90%), non-detects data may be qualified "R", unusable.**

**Trace Volatile Organic Analyses - The laboratory performed an aqueous (Trace Volatile Organic Analysis) initial calibration on March 1, 2010 (Inst. N.i). The laboratory summarized the %RSD data on the CLP Form 6A. The laboratory included all raw data and instrument summary forms in the data report for review. The %RSD of all target compounds met QC criteria in this initial calibration curve analysis.**

**The aqueous samples in this data set were analyzed March 11, 2010 through March 12, 2010. The opening and closing CCV standards are reported on each day of analysis. The %Difference criteria for each of the opening and closing CCV standard met the QC criteria specified in the cited data validation guidelines.**

### 7. GC/MS MASS SPECTROMETER TUNING:

**Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds, and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is Bromofluorobenzene (BFB).**

**The tune criteria listed in the data report met or exceeded that required by the method. All tuning criteria associated with these sample analyses were met.**

## ORGANIC DATA ASSESSMENT

### 8. GC/MS INTERNAL STANDARDS PERFORMANCE:

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every run. The method recommends that the internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The method recommends that the retention time of the internal standard must not vary more than  $\pm 30$  seconds from the associated continuing calibration standard. The EPA CLP validation guidelines state that if the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified estimated, "J", and all non-detects below 50% are qualified "UJ", non-detects above 100% should not be qualified or "R" if there is a severe loss of sensitivity. The internal standard area count evaluation criteria are applied to all field and QC samples.

All samples were spiked with the internal standards Chlorobenzene-d5, 1,4-Difluorobenzene and 1,4-Dichlorobenzene-d4 prior to analysis. The area counts and retention time of each internal standard met QC criteria in all field samples and QC samples associated with this data set.

### 9. COMPOUND IDENTIFICATION:

Target compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within  $\pm 0.06$  RRT units of the standard compound, and have an ion spectra which has a ratio of the primary and secondary ion intensities with 20% of that in the standard compound. The laboratory reported each sample to the Contract Required Quantitation Limit (CRQL) listed in the cited method.

One (1) aqueous sample is associated with this data set. The sample was analyzed using USEPA CLP Method SOM01.2. Tentatively Identified Compounds (TIC's) were reported when detected with this data set. Sample MW-04 was initially analyzed at a secondary dilution (1:62.8) to report the concentration of target analytes on March 11, 2010. The laboratory performed a more concentrated analysis on March 11, 2010 to report the other target analytes with a lower detection limit.

Sample MW-04 (821987) was initially analyzed using a 1:5 dilution based on the results of preliminary screening. The concentration of Trichloroethene exceeded the calibration range in the 1:5 dilution analysis. The sample was reanalyzed using a 1:62.8 dilution to report the concentration of Trichloroethene (750 D ug/l) at this sample point.

### 10. FIELD DUPLICATE ANALYSES:

Field duplicate samples are collected and analyzed as an indication of overall precision. Field duplicate results are expected to have more variability than laboratory duplicate samples. Field duplicate samples are not associated with this data set.

## **ORGANIC DATA ASSESSMENT**

### **11. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT**

Analytical/method QC criteria was met for these analyses except where explained in the laboratory case narrative and the detailed in this validation report. The data reported by the laboratory agrees with the raw data provided in the final report. The laboratory provided a complete data package and reported all data using acceptable protocols and laboratory qualifiers as defined in the report package. All QC anomalies associated with this data set have been explained in the above sections of this data validation report.

All sample results are reported to the method detection limit except where detailed above. Reporting limits and positive results are adjusted based on the sample volume/weight utilized for each extraction procedure. The data reported in this data set is acceptable for use, with the noted data qualifiers.

Appendix B of this report contains copies of qualified data result pages.



**DATA VALIDATION FOR:** Target Analyte List of Metals (TAL)  
**SITE:** Lawrence Aviation Superfund Site  
**CONTRACT LAB:** Test America Laboratories  
South Burlington, VT  
**SDG NO.:** 136246  
**REVIEWER:** Renee Cohen  
**DATE REVIEW COMPLETED:** June, 2010  
**MATRIX:** Aqueous

The Chain of Custody (COC) documentation associated with this data set listed one (1) aqueous sample. This sample was collected March 5, 2010 and delivered to Test America Laboratories located in South Burlington, VT on March 6, 2010.

The data evaluation was performed according to the guidelines noted in the "National Functional Guidelines for Inorganic Data Review", February 1999 and the USEPA Region II SOP for the Review of Inorganic Data (HW-2, Rev. 13 (10/06)).

Several factors should be noted for all persons using this data. Persons using this data should be aware that no result is guaranteed to be accurate even if it has passed all QC tests. The main purpose of this review is to appropriately qualify outliers and to determine whether the results presented meet the specific site/project criteria for data quality and data use.

Table 1 of this report contains a cross reference between the Field Sample ID's and the Laboratory Sample ID's. Appendix A of this report contains a summary of the data qualifiers that may be used in the report. Appendix B contains the qualified data result pages. Appendix C contains the Chain of Custody (COC) documents associated with this data set.

The sample in this data set was analyzed for TAL metals. It was also analyzed for Volatile Organic Analytes (VOA) and miscellaneous wet chemistry analytes. The data review associated with these analyses is located in stand alone data reports that are enclosed with this complete report.

## **1. OVERVIEW**

One (1) sample was collected on March 5, 2010 and delivered to Test America Laboratories located in South Burlington, VT on March 6, 2010. The sample is reported in laboratory SDG 136246. Table 1 of this report lists each of the field sample and laboratory sample ID's. The samples were analyzed for the parameters listed on the COC documents. A full deliverable report was required to report the sample results. Sample MW-04 was prepared and analyzed for the TAL Metal list of analytes.

## **2. HOLDING TIME**

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Metals with the exception of Mercury, is required to be digested and analyzed within 180 days of Verified Time of Sample Receipt (VTSR). Mercury samples are to be digested and analyzed within 26 days of VTSR.

One (1) aqueous sample was prepared and analyzed for the Target Analyte Metals (TAL). The ICP Metals were prepared in one batch on March 12, 2010. The digestate was analyzed in two (2) sequences on March 15, 2010 and March 16, 2010. The sample was prepared for Mercury analysis on March 15, 2010. It was analyzed in one (1) sequence on March 15, 2010.

All sample digestion and analyses associated with this data set were performed within the method holding time.

## **3. CALIBRATION ANALYSIS**

Inductively Coupled Plasma (ICP) was utilized for these analyses. The ICP was calibrated using the calibration standards required by the manufacturer. An initial calibration verification (ICV) standard is then analyzed to verify instrument calibration. One (1) continuing calibration standard was analyzed after each ten (10) field samples. Two (2) analytical sequences are associated with this data set. All target analytes with the exception of Aluminum and Arsenic were analyzed on March 15, 2010. Arsenic and Aluminum were analyzed in an analytical sequence on March 16, 2010. The laboratory reported provided raw data of each sequence for review. All ICV and CCV standards associated with this data set met QC criteria in each of these analytical sequences.

The Mercury analyses were performed in one (1) analytical sequence. The sample associated with this data set was analyzed on March 15, 2010. The laboratory reported provided raw data for this sequence to review. Review of the raw data to the results reported on the summary forms was made. All raw data matched that reported on the summary forms. All QC criteria were met in the data associated with this data set.

## **4. ICP CRDL STANDARD**

The CRDL standard is used for the verification of instrument linearity near the CRDL. The CRDL standard control limits are 70%-130% recovery. If the CRDL standard falls outside of the control limits, associated data less than or equal to the 10X the CRDL are qualified estimated (J or UJ) or rejected (R) depending on the recovery of the CRDL standard and the concentration of the analyte in the sample. When the CRDL standard exceeds the control limit, indicating a high bias samples are qualified estimated (J or UJ).

The laboratory analyzed one (1) CRDL standard with each of the ICP analytical sequences. The recovery of all target analytes met QC criteria in each of the ICP analytical sequences.

## **5. ICP INTERFERENCE CHECK STANDARD**

The Interference Check Standard (ICS) is used to verify the laboratory interelement and background correction factors of the ICP. Two solutions comprise the ICS A and ICS AB. Solution A consists of the interferent metals while solution AB is the group of target analytes and the interferent metals. An ICS analysis consists of analyzing both solutions consecutively for all wavelengths used for each analyte reported by ICP. The ICP ICS standards are to be analyzed at the beginning and end of each analytical run. The results are to fall within control limits of +/-20% of the true value.

The laboratory analyzed one (1) ICSA and one (1) ICSAB standard with each ICP analytical sequence. These QC samples are used to verify the laboratories interelement and background correction factors of the ICP. The recovery of all target analytes met QC criteria in each of the analytical sequences associated with this data set.

## **6. MATRIX SPIKE (MS) ANALYSIS**

The spike sample analysis provides information about the effect of the sample matrix upon the digestion and measurement methodology. The spike control limits are 75%-125% when the sample concentration is less than four (4) times the spike added. If the matrix spike recoveries fall in the range of 30%-74%, the sample results are may be biased low and are qualified as estimated (J or UJ). If the matrix spike recoveries fall in the range of 126%-200%, sample results may be biased high. Positive results are qualified estimated (J). If the spike recovery is greater than 125% and the reported sample results are less than the IDL the data point is acceptable for use. If the matrix spike recovery is greater than 200%, the associated sample data are unusable and are rejected (R). If matrix spike results are less than 30%, the associated non-detect results are qualified unusable and rejected (R), and the results reported above the IDL are qualified estimated (J).

Site specific MS analysis was not prepared or analyzed with these ICP Metal or CVAA Mercury analyses.

## **7. POST DIGESTION SPIKE ANALYSIS**

The post digestion spike sample analysis provides additional information about the effect of the sample matrix upon the digestion and measurement methodology. The post digestion spike is performed for each analyte that the pre-digestion spike recovery falls outside the 75-125% control limit.

Post digestion spike analysis was not reported with this data set.

## **8. DUPLICATE SAMPLE ANALYSIS**

The laboratory duplicate sample analysis is used to evaluate the laboratory precision of the method for each analyte. If the duplicate sample analysis results for a particular analyte fall outside the control windows of 20% RPD or +/- CRDL, whichever is appropriate depending upon the concentration of the sample, the associated sample results are qualified "J" estimated.

Laboratory duplicate analysis was not reported with this data set.

## **9. ICP SERIAL DILUTION**

The serial dilution analysis indicates whether significant physical or chemical interference's exist due to the sample matrix. If the concentration of any analyte in the original sample is greater than 50 times the instrument detection limit (IDL), an analysis of a 5-fold dilution samples must yield results which have a percent difference (%D) of less than or equal to 10 with the original sample results. If the %D of the serial dilution exceeds the 10% (and is not greater than 100%) for a particular analyte, all the associated sample results are qualified estimated (J).

Serial dilution analysis was performed on sample MW-04. The %Difference of all target analytes in the serial dilution analysis met QC criteria.

## **10. BLANKS**

Blank analyses are assessed to determine the existence and magnitude of contamination problems. The criteria for the evaluation of blanks applies to all blanks, including but not limited to reagent blanks, method blanks and field blanks. The responsibility for action in the case of an unsuitable blank result depends upon the circumstances and the origin of the blank itself. If the problem with any blank exists, then all associated data must be carefully evaluated to determine whether there is inherent variability in the data for that case, or the problem is an isolated occurrence not affecting other data.

The laboratory provided a summary report form for the method blank associated with each of the sample preparation batches. The ICP preparation blank was free from contamination of all target analytes above the reporting limit with the exception of Iron (22.73 J ug/l) and Zinc (0.680 J ug/l). The concentration of Iron detected in sample MW-04 may be attributed to that from the preparation blank. Iron has been negated and qualified "U". The concentration of Zinc may not be attributed to the method blank sample. Zinc has not been qualified in this sample result.

Qualified data result pages are located in Appendix B of this report,

The preparation blank associated with the Mercury sample analysis was free from contamination.

The laboratory provided summary forms to report the ICB and CCB analyses. All QC criteria were met in the ICB/CCB analyses associated with this data set.

## **11. LABORATORY CONTROL SAMPLE ANALYSIS (LCS)**

The laboratory control sample (LCS) analysis provides information about the efficiency of the laboratory digestion procedure. If the recovery of any analyte is outside the established control limits, then laboratory performance and method accuracy are in question. Professional judgment is used to determine of data should be qualified or rejected.

The ICP LCS sample was fortified with all target analytes. Recovery limits of 80%-120% were applied to each target analyte. The recovery of all target analytes met QC criteria in the LCS sample.

All recoveries in the Mercury Laboratory Control Sample associated with this data set met QC criteria.

## **12. INSTRUMENT QC DATA**

The laboratory provided the required annual and semiannual ICP Instrument QC summary report forms in this data report. This information was not reviewed by this data validator. All annual and semiannual QC studies were performed by the laboratory.

### **13. COMPOUND IDENTIFICATION**

One (1) aqueous sample was analyzed for TAL Metals. The sample was analyzed in accordance with the required method (ILM05.4). The samples data was reported in the units ug/l (ppb). All sample results are reported on a dry weight basis.

### **14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT**

This data set included the reporting of one (1) aqueous sample. The sample was analyzed for the TAL metals list. A copy of the Chain of Custody is located in Appendix C of this report. The sample results are reported in accordance with the cited methods.

Qualified data result pages are located in Appendix B of this report.

## Data Validation Report

**DATA VALIDATION FOR:**                   **Miscellaneous Wet Chemistry**

**SITE:**                                       **Lawrence Aviation Superfund Site**

**CONTRACT LAB:**                       **Test America Laboratories**  
  **South Burlington, VT**

**SDG:**                                       **136246**

**REVIEWER:**                              **Renee Cohen**

**DATE REVIEW COMPLETED:**       **June, 2010**

**MATRIX:**                                 **Aqueous**

The Chain of Custody (COC) documentation associated with this data set included one (1) aqueous sample. The sample was collected on March 5, 2010. The sample was delivered to Test America Laboratories located in South Burlington, VT on March 6, 2010. The sample was then subcontracted to the Test America Laboratories location in Savannah, GA. The sample was received in Georgia on March 9, 2010.

The data evaluation was performed in accordance with the QAPP that was developed for this site as well as method recommended QC practices. Several factors should be noted for all persons using this data. Persons using this data should be aware that no result is guaranteed to be accurate even if it has passed all QC tests. The main purpose of this review is to appropriately qualify outliers and to determine whether the results presented meet the specific site/project criteria for data quality and data use.

Table 1 of this report contains a cross reference between the Field Sample ID's and the Laboratory Sample ID's. Appendix A of this report contains a summary of the data qualifiers that may be used in the report. Appendix B contains the qualified data result pages. Appendix C contains the Chain of Custody (COC) documents associated with this data set.

Sample MW-04 was analyzed for Miscellaneous Wet Chemistry parameters that were specified on the COC documents that accompanied the samples to the laboratory. This data review is associated with these Miscellaneous Wet Chemistry Analyses.

## **1. OVERVIEW**

One (1) aqueous sample was collected on March 5, 2010 and received at the laboratory for the cited analyses on March 6, 2010. The Wet Chemistry analytes were subcontracted to the Test America Laboratory located in Savannah GA.

Table 1 is a summary of the field sample ID and laboratory sample ID. The samples in this data set were analyzed for the parameters listed on the COC documents. A full data deliverable was generated to report these analyses. Sample MW-04 was analyzed for Chloride (EPA Method 300.0), Sulfate (EPA Method 300.0), Total Dissolved Solids (SM2540C), Total Suspended Solids (SM2540D), Alkalinity (SM2320B) and Total Organic Carbon (SM5310B).

## **2. HOLDING TIME**

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. The miscellaneous wet chemistry analytes have specific holding times cited in the approved method.

Sample MW-04 was prepared and analyzed for the cited analyses within the method specified holding times.

## **3. CALIBRATION ANALYSIS**

The laboratory summarized the initial and continuing calibration data associated with each of the wet chemistry analytes where applicable. All initial and continuing calibration standard analyses associated with this data set met QC criteria.

## **4. MATRIX SPIKE (MS) ANALYSIS**

Multiple samples were utilized for the matrix spike analyses for each of these parameters. Acceptable recovery of the MS is +/- 25% of the True Value. Site specific matrix spike analysis was performed on sample MW-04 for Chloride and Sulfate by Ion Chromatography (EPA Method 300.0). The recovery of the matrix spike in each of these analyses met QC criteria.

## **5. DUPLICATE SAMPLE ANALYSIS**

The laboratory duplicate sample analysis is used to evaluate the laboratory precision of the method for each analyte. If the duplicate sample analysis results for a particular analyte fall outside the control windows of 20% RPD or +/- CRDL, whichever is appropriate depending upon the concentration of the sample, the associated sample results are qualified "J" estimated.

## **6. BLANKS**

Blank analyses are assessed to determine the existence and magnitude of contamination problems. The criteria for the evaluation of blanks applies to all blanks, including but not limited to reagent blanks, method blanks and field blanks. The responsibility for action in the case of an unsuitable blank result depends upon the circumstances and the origin of the blank itself. If the problem with any blank exists, then all associated data must be carefully evaluated to determine whether there is inherent variability in the data for that case, or the problem is an isolated occurrence not affecting other data.

The laboratory provided Method Blank data results for all the Wet Chemistry analytes. The method blank and/or preparation blank associated with all of the miscellaneous Wet Chemistry methods was free from contamination of the target analyte above the reporting limit.

## **7. LABORATORY CONTROL SAMPLE ANALYSIS (LCS)**

The laboratory control sample (LCS) analysis provides information about the efficiency of the laboratory digestion procedure. If the recovery of any analyte is outside the established control limits, then laboratory performance and method accuracy are in question. Professional judgment is used to determine if data should be qualified or rejected.

The laboratory reported LCS/LCSD recoveries for TDS and TSS analyses. The recovery of all LCS and LCSD met QC criteria.

## **8. COMPOUND IDENTIFICATION**

All samples results are reported in accordance with the cited methods. Sample MW-04 was analyzed using a 1:5 dilution to report the concentration of Chloride (24 mg/l) and Sulfate (37 mg/l) detected at this sample point.

## **9. FIELD DUPLICATE DATA RESULTS:**

Field duplicate samples are taken and analyzed as an indication of overall precision. These measure both field and laboratory precision; therefore, the results may have more variability than lab duplicate samples. Soil samples are also expected to have a greater variance due to the difficulties associated with collecting exact duplicate soil samples. Data was not qualified based on the results of the field duplicate sample data.

Field duplicate analysis was not reported with this data set.

## **10. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT**

The inorganic analyses associated with this data set included the reporting of one (1) aqueous sample. The sample was analyzed for Miscellaneous Wet Chemistry analytes as noted on the COC documents that accompanied the data set. A copy of the Chain of Custody is located in Appendix C of this report. The sample results are reported in accordance with the cited methods.

The Inorganic data results are acceptable for use without data qualifiers.



**TABLE 1**

**FIELD SAMPLE ID**

**LABORATORY ID**

**MW-04**

**821987**

**MW-04**

**821988**

**MW-04**

**821989**

**MW-04**

**821990**

**MW-04**

**821991**

**MW-04**

**821992**

**VHBLK01**

**821999**

## **APPENDIX A**

## **DATA QUALIFIER DEFINITIONS**

**U** - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

**J** - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

**N** - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a “tentative identification.”

**NJ** - The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents its approximate concentration.

**UJ** - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

**R** - The sample results are unreliable/unusable. The presence or absence of the analyte cannot be verified.

**K** – The analyte is present. The reported value may be biased high. The actual value is expected to be lower than reported.

**L** - The analyte is present. The reported value may be biased low. The actual value is expected to be higher than reported.

**UL** – The analyte was not detected, and the reported quantitation limit is probably higher than reported.

## **APPENDIX B**

1A - FORM I VOA-1  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-04

Lab Name: TESTAMERICA BURLINGTON Contract: 29000  
 Lab Code: STLV Case No.: LASS Mod. Ref No.: SDG No.: 136246  
 Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 821987  
 Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 821987D2  
 Level: (TRACE/LOW/MED) TRACE Date Received: 03/06/2010  
 % Moisture: not dec. Date Analyzed: 03/12/2010  
 GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 5.0  
 Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)  
 Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/kg)	ug/L	
75-71-8	Dichlorodifluoromethane		2.5	U
74-87-3	Chloromethane		2.5	U
75-01-4	Vinyl chloride		2.5	U
74-83-9	Bromomethane		2.5	U
75-00-3	Chloroethane		2.5	U
75-69-4	Trichlorofluoromethane		2.5	U
75-35-4	1,1-Dichloroethene		2.5	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane		2.5	U
67-64-1	Acetone		20	<del>U</del> U
75-15-0	Carbon disulfide		2.5	U
79-20-9	Methyl acetate		2.5	U
75-09-2	Methylene chloride		2.5	U
156-60-5	trans-1,2-Dichloroethene		2.5	U
1634-04-4	Methyl tert-butyl ether		2.5	U
75-34-3	1,1-Dichloroethane		2.5	U
156-59-2	cis-1,2-Dichloroethene		1.3	J
78-93-3	2-Butanone		25	U
74-97-5	Bromochloromethane		2.5	U
67-66-3	Chloroform		2.5	U
71-55-6	1,1,1-Trichloroethane		2.5	U
110-82-7	Cyclohexane		2.5	U
56-23-5	Carbon tetrachloride		2.5	U
71-43-2	Benzene		2.5	U
107-06-2	1,2-Dichloroethane		2.5	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2

1B - FORM I VOA-2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-04

Lab Name: TESTAMERICA BURLINGTON Contract: 29000  
 Lab Code: STLV Case No.: LASS Mod. Ref No.: SDG No.: 136246  
 Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 821987  
 Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 821987D2  
 Level: (TRACE/LOW/MED) TRACE Date Received: 03/06/2010  
 % Moisture: not dec. Date Analyzed: 03/12/2010  
 GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 5.0  
 Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)  
 Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/kg)	ug/L	
79-01-6	Trichloroethene		660	E
108-87-2	Methylcyclohexane		2.5	U
78-87-5	1,2-Dichloropropane		2.5	U
75-27-4	Bromodichloromethane		2.5	U
10061-01-5	cis-1,3-Dichloropropene		2.5	U
108-10-1	4-Methyl-2-pentanone		25	U
108-88-3	Toluene		2.5	U
10061-02-6	trans-1,3-Dichloropropene		2.5	U
79-00-5	1,1,2-Trichloroethane		2.5	U
127-18-4	Tetrachloroethene		4.3	
591-78-6	2-Hexanone		25	U
124-48-1	Dibromochloromethane		2.5	U
106-93-4	1,2-Dibromoethane		2.5	U
108-90-7	Chlorobenzene		2.5	U
100-41-4	Ethylbenzene		2.5	U
95-47-6	o-Xylene		2.5	U
179601-23-1	m,p-Xylene		2.5	U
100-42-5	Styrene		2.5	U
75-25-2	Bromoform		2.5	U
98-82-8	Isopropylbenzene		2.5	U
79-34-5	1,1,2,2-Tetrachloroethane		2.5	U
541-73-1	1,3-Dichlorobenzene		2.5	U
106-46-7	1,4-Dichlorobenzene		2.5	U
95-50-1	1,2-Dichlorobenzene		2.5	U
96-12-8	1,2-Dibromo-3-chloropropane		2.5	U
120-82-1	1,2,4-Trichlorobenzene		2.5	U
87-61-6	1,2,3-Trichlorobenzene		2.5	U

SOM01.2

1J - FORM I VOA-TIC  
 VOLATILE ORGANICS ANALYSIS DATA SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.  
 MW-04

Lab Name: TESTAMERICA BURLINGTON Contract: 29000  
 Lab Code: STLV Case No.: LASS Mod. Ref No.: SDG No.: 136246  
 Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 821987  
 Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 821987D2  
 Level: (TRACE or LOW/MED) TRACE Date Received: 03/06/2010  
 % Moisture: not dec. Date Analyzed: 03/12/2010  
 GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 5.0  
 Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)  
 CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		<del>Unknown</del>	<del>10.53</del>	<del>28</del>	<del>JXB</del>
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796(1)	Total Alkanes	N/A		

(1) EPA-designated Registry Number.

SOM01.2



1A - FORM I VOA-1  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-04DL

Lab Name: TESTAMERICA BURLINGTON Contract: 29000  
 Lab Code: STLV Case No.: LASS Mod. Ref No.: SDG No.: 136246  
 Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 821987D1  
 Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 821987D  
 Level: (TRACE/LOW/MED) TRACE Date Received: 03/06/2010  
 % Moisture: not dec. Date Analyzed: 03/11/2010  
 GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 62.8  
 Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)  
 Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	ug/L
75-71-8	Dichlorodifluoromethane	31	U
74-87-3	Chloromethane	31	U
75-01-4	Vinyl chloride	31	U
74-83-9	Bromomethane	31	U
75-00-3	Chloroethane	31	U
75-69-4	Trichlorofluoromethane	31	U
75-35-4	1,1-Dichloroethene	31	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	31	U
67-64-1	Acetone	310	U
75-15-0	Carbon disulfide	31	U
79-20-9	Methyl acetate	31	U
75-09-2	Methylene chloride	31	U
156-60-5	trans-1,2-Dichloroethene	31	U
1634-04-4	Methyl tert-butyl ether	31	U
75-34-3	1,1-Dichloroethane	31	U
156-59-2	cis-1,2-Dichloroethene	31	U
78-93-3	2-Butanone	310	U
74-97-5	Bromochloromethane	31	U
67-66-3	Chloroform	31	U
71-55-6	1,1,1-Trichloroethane	31	U
110-82-7	Cyclohexane	31	U
56-23-5	Carbon tetrachloride	31	U
71-43-2	Benzene	31	U
107-06-2	1,2-Dichloroethane	31	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2

1B - FORM I VOA-2  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-04DL

Lab Name: TESTAMERICA BURLINGTON Contract: 29000  
 Lab Code: STLV Case No.: LASS Mod. Ref No.: SDG No.: 136246  
 Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 821987D1  
 Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 821987D  
 Level: (TRACE/LOW/MED) TRACE Date Received: 03/06/2010  
 % Moisture: not dec. Date Analyzed: 03/11/2010  
 GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 62.8  
 Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)  
 Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	750	D
108-87-2	Methylcyclohexane	31	U
78-87-5	1,2-Dichloropropane	31	U
75-27-4	Bromodichloromethane	31	U
10061-01-5	cis-1,3-Dichloropropene	31	U
108-10-1	4-Methyl-2-pentanone	310	U
108-88-3	Toluene	31	U
10061-02-6	trans-1,3-Dichloropropene	31	U
79-00-5	1,1,2-Trichloroethane	31	U
127-18-4	Tetrachloroethene	31	U
591-78-6	2-Hexanone	70	DJ
124-48-1	Dibromochloromethane	31	U
106-93-4	1,2-Dibromoethane	31	U
108-90-7	Chlorobenzene	31	U
100-41-4	Ethylbenzene	31	U
95-47-6	o-Xylene	31	U
179601-23-1	m,p-Xylene	31	U
100-42-5	Styrene	31	U
75-25-2	Bromoform	31	U
98-82-8	Isopropylbenzene	31	U
79-34-5	1,1,2,2-Tetrachloroethane	31	U
541-73-1	1,3-Dichlorobenzene	31	U
106-46-7	1,4-Dichlorobenzene	31	U
95-50-1	1,2-Dichlorobenzene	31	U
96-12-8	1,2-Dibromo-3-chloropropane	31	U
120-82-1	1,2,4-Trichlorobenzene	31	U
87-61-6	1,2,3-Trichlorobenzene	31	U

SOM01.2

1J - FORM I VOA-TIC  
 VOLATILE ORGANICS ANALYSIS DATA SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.  
 MW-04DL

Lab Name: TESTAMERICA BURLINGTON Contract: 29000  
 Lab Code: STLV Case No.: LASS Mod. Ref No.: SDG No.: 136246  
 Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 821987D1  
 Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 821987D  
 Level: (TRACE or LOW/MED) TRACE Date Received: 03/06/2010  
 % Moisture: not dec. Date Analyzed: 03/11/2010  
 GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 62.8  
 Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)  
 CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		<del>Unknown</del>	<del>10.53</del>	<del>360</del>	<del>JXBD</del>
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796(1)	Total Alkanes	N/A		

(1) EPA-designated Registry Number.

SOM01.2

USEPA-CLP FORMS  
IA-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-04

Lab Name: TestAmerica Burlington Contract: 29000  
 Lab Code: STLVT Case No.: LASS NRAS No.: \_\_\_\_\_ SDG NO.: 136246  
 Matrix (soil/water): WATER Lab Sample ID: 821989  
 Level (low/med): LOW Date Received: 03/06/2010  
 % Solids: 0.0  
 Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-22-4	Silver	10.0	U		P
7440-36-0	Antimony	60.0	U		P
7429-90-5	Aluminum	15800			P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	44.1	J		P
7440-41-7	Beryllium	2.2	J		P
7440-70-2	Calcium	16400			P
7440-43-9	Cadmium	1.1	J		P
7440-48-4	Cobalt	43.9	J		P
7440-47-3	Chromium	11.0			P
7440-50-8	Copper	3.8	J		P
7439-89-6	Iron	186			P
7439-95-4	Magnesium	7000			P
7439-97-6	Mercury	0.20	U		CV
7439-96-5	Manganese	1120			P
7440-23-5	Sodium	26300			P
7440-02-0	Nickel	236			P
7439-92-1	Lead	5.2	J		P
7440-09-7	Potassium	12500			P
7782-49-2	Selenium	35.0	U		P
7440-28-0	Thallium	3.8	J		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	45.8	J		P

Color Before: colorless Clarity Before: clear Texture: \_\_\_\_\_  
 Color After: colorless Clarity After: clear Artifacts: \_\_\_\_\_

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## **APPENDIX C**



**Burlington**  
 30 Community Drive, Suite 11  
 South Burlington, VT 05403 Tel: 802 660 1990

**CHAIN OF CUSTODY RECORD**

Report to: Company: <u>Panther Technologies, Inc</u>		Invoice to: Company: _____		ANALYSIS REQUESTED	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">Lab Use Only Due Date:</div> <div style="border: 1px solid black; padding: 2px;">Temp. of coolers when received (C°): <u>3.7</u></div> </div> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20px;">1</td> <td style="width: 20px;">2</td> <td style="width: 20px;">3</td> <td style="width: 20px;">4</td> <td style="width: 20px;">5</td> </tr> <tr> <td colspan="3">Custody Seal</td> <td>N</td> <td>Y</td> </tr> <tr> <td colspan="3">Intact</td> <td>N</td> <td>Y</td> </tr> </table> <div style="margin-top: 5px;">                 Screened For Radioactivity <input type="checkbox"/> </div>					1	2	3	4	5	Custody Seal			N	Y	Intact			N	Y
1	2	3	4							5														
Custody Seal			N							Y														
Intact			N							Y														
Address: <u>220 ROUTE TO EAST, STE B MEDFORD, NJ 08055</u>		Address: <u>SAME</u>																						
Contact: <u>K. Dyson</u>		Contact: _____																						
Phone: <u>609-714-2420</u>		Phone: _____																						
Fax: <u>609-714-2495</u>		Fax: _____																						
Contract/ Quote: _____		Contract/ Quote: _____																						
Sampler's Name <u>CHAD GIVENS</u>		Sampler's Signature <u>Chad Givens</u>		ANALYSIS REQUESTED  VOA TOC METALS TSS Cl / SULFATE / ALK TDS																				
Proj. No. <u>J303001</u>	Project Name <u>LAWRENCE AVIATION SPFD SITE</u>		No/Type of Containers? <u>1/6</u>																					
Matrix <sup>1</sup>	Date	Time	Com p						Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	Lab / Sample ID (Lab Use Only)									
W	3/5/10	1230							X	MW-04	3		1											
		1235																						
		1240																						
		1245																						
Relinquished by: (Signature) <u>Chad Givens</u>		Date	Time	Received by: (Signature) <u>Cherish</u>		Date	Time	Remarks  Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.																
Relinquished by: (Signature)		Date	Time	Received by: (Signature)		Date	Time																	
Relinquished by: (Signature)		Date	Time	Received by: (Signature)		Date	Time																	
<sup>1</sup> Matrix    WW - Wastewater    W - Water    S - Soil    L - Liquid    A - Air bag    C - Charcoal Tube    SL - Sludge    O - Oil <sup>2</sup> Container    VOA - 40 ml vial    A/G - Amber / Or Glass 1 Liter    250 ml - Glass wide mouth    P/O - Plastic or other _____		TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919																						

TAL-8234(1007)