APPENDIX F.3

Data Quality Assessment Report

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LIST OF ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

ADR	Automated Data Review
AOC	Area of Concern
CCV	Continuing Calibration Verification
DoD	U.S. Department of Defense
DQA	Data Quality Assessment
DQO	Data Quality Objective
EDD	Electronic Data Deliverable
FCR	Field Change Request
FWGWMP	Facility-wide Groundwater Monitoring Program
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LOD	Level of Detection
LOQ	Level of Quantitation
MDL	Method Detection Level
MPC	Measurement Performance Criteria
MPR	Monthly Progress Report
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PAH	Polycyclic Aromatic Hydrocarbon
PARCC	Precision, Accuracy, Representativeness, Comparability, and Completeness
PCB	Polychlorinated Biphenyl
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
QSM	Quality Systems Manual
REIMS	RVAAP Environmental Information Management System
RI	Remedial Investigation
RIWP	Remedial Investigation Work Plan
RPD	Relative Percent Difference
RVAAP	Ravenna Army Ammunition Plant
SVOC	Semi-volatile Organic Compound
TestAmerica	TestAmerica Laboratories, Inc.
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound

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F.3 PROJECT QUALITY ASSURANCE SUMMARY

F.3.1 PURPOSE OF THIS REPORT

Environmental data must be evaluated relative to their known limitations and intended use. As can be expected in environmental media, some analytical results and data points require the user to be cautioned relative to the quality of the project information presented. The data verification/validation process and this data quality assessment (DQA) are performed to assist current and future data users in interpreting these data.

The purpose of this DQA report is to document the following:

- The quality control (QC) procedures followed to ensure data generated by Leidos, during the implementation of the October 2018 sampling event to support the Facility-wide Groundwater Monitoring Program (FWGWMP) at the former Ravenna Army Ammunition Plant (RVAAP), meet project requirements;
- The quality of the data collected; and
- Any problems encountered during the course of the study and their solutions.

This DQA report provides an assessment of the analytical information generated during the implementation of the *Facility-wide Groundwater Monitoring Addendum for 2018* (TEC-Weston 2019; herein referred to as the 2018 Addendum). Implementation of the 2018 Addendum was done so in accordance with the *Remedial Investigation Work Plan for Groundwater and Environmental Services for RVAAP-66 Facility-wide Groundwater* (TEC-Weston 2016; herein referred to as the Remedial Investigation Work Plan [RIWP]), Appendix A.2 Quality Assurance Project Plan (QAPP).

This DQA documents the quality of the data collected during the October 2018 sampling event and assesses if quality assurance (QA)/QC objectives were met. The primary intent of this assessment is to document that, except as noted, data generated for this investigation can withstand scientific scrutiny; are appropriate for their intended purpose; are technically defensible; and are of known and adequate quality (i.e., sensitivity, precision, accuracy, representativeness, comparability, and completeness [PARCC]).

Multiple activities were performed to achieve the required data quality for this project. Data quality objectives (DQOs) along with a QA program were established to guide the implementation of the field sampling and laboratory analysis per the 2018 Addendum (TEC-Weston 2019). The QA program was established to standardize procedures and document activities per the FWGWMP Plan (Portage Environmental 2004) and RIWP. This program provided a means to detect and correct any deficiencies in the process. Upon receipt by the project team, results provided in the electronic data deliverable (EDD) were subjected to electronic review by an automated data review (ADR) process to identify and qualify problems related to the analysis. This was followed by manual verification/validation of QC results not included in the EDD/ADR review. These combined

verification/validation results are summarized in this DQA to document that data used in the remedial investigation (RI) are identified as having met the criteria and are being utilized appropriately.

F.3.2 QUALITY ASSURANCE PROGRAM

The QAPP within the RIWP (TEC-Weston 2016) and field change request (FCR) LEIDOS_FWGW_004 were developed to enumerate the quantity and type of environmental samples needed and to define the quantity and type of QA/QC samples to be used to evaluate data quality. These documents established requirements for field and laboratory QC procedures. In general, field QC duplicate samples were required at a frequency of 10%; volatile organic compound (VOC) trip blanks were to accompany each cooler containing water samples for VOC determinations; field blanks and equipment blanks were collected to demonstrate equipment decontamination and clean ambient field conditions; and analytical laboratory QC samples, including duplicates, matrix spikes (MSs), laboratory control samples (LCSs), and method blanks, were required for each preparation batch of 20 samples or less for each parameter.

A primary goal of the QA program is to ensure that the quality of results for all environmental measurements is appropriate for their intended use and that standardized field procedures guide the investigation. Through the process of readiness review, training, equipment calibration, QC implementation, and detailed documentation, the project has successfully accomplished the goals set for the QA program.

F.3.2.1 Monthly Progress Reports

Monthly Progress Reports (MPRs) were completed by the Leidos Project Manager for the duration of the project. The MPRs contained information on work completed, a summary of anticipated upcoming work, discussion of any health and safety issues, and a summary of investigation-derived waste staged at the facility. These reports were issued to the U.S. Army Corps of Engineers (USACE) Louisville District Contracting Officer's Representative and Project Manager by email.

F.3.2.2 Daily Activity Logs

The Field Manager completed Daily Activity Logs. These include information such as, but not limited to, on-site sub-tier contractors, on-site equipment, work performed summaries, QC activities, health and safety activities, problems encountered, and corrective actions.

F.3.2.3 Laboratory "Definitive" Level Data Reporting

The QAPP for this project identified requirements for laboratory data reporting. White Water Associates of Amasa, Michigan, and their subcontracted partner TestAmerica Laboratories, Inc. (TestAmerica) of Denver, Colorado, performed the analysis of the samples. The TestAmerica facility in Denver, Colorado, performed all analyses, except nitroguanidine and nitrocellulose, which were performed at the TestAmerica facility in Sacramento, California, and hexavalent chromium, which was performed at the Test America facility in North Canton, Ohio. TestAmerica Denver and

Sacramento are accredited by the U.S. Department of Defense (DoD) for the analyses they performed. Test America in North Canton, Ohio, is not DoD accredited for hexavalent chromium; due to the short holding time associated with this analysis, an FCR (FCR No. 08, June 8, 2017) was sought and approved to use the North Canton laboratory due to its proximity to the site, which eliminated the delay of shipping samples to the laboratory. All analytical procedures were completed in accordance with U.S. Environmental Protection Agency (USEPA) requirements; the DoD Quality Systems Manual (QSM), Version 5.0 (DoD 2017); and the QAPP. USEPA "definitive" data have been reported, including laboratory-level IV data packages meeting QSM Appendix A guidance.

This information from the laboratory, along with field information, provides the basis for subsequent data evaluation relative to sensitivity and PARCC.

F.3.2.4 Field Change Requests

Prior to and during the implementation of the October 2018 sampling event, six FCRs were provided and are presented in Appendix H. Of these six FCRs, five were pertinent to the FWGWMP field activities and are briefly described below. LEIDOS_FWGW_005 is not discussed here, as that FCR pertained to the production well abandonment activities. The five pertinent FCRs to the FWGWMP field activities are:

- LEIDOS_FWGW_001 – Specifies that, due to the permanent bladder pumps, total depths of wells will not be collected during the facility-wide comprehensive water level measurements.
- LEIDOS_FWGW_002 – Provides guidance for evaluation and potential re-collection of wells sampled and analyzed only in the spring of 2018, as specified in the 2018 Addendum.
- LEIDOS_FWGW_003 – Provided new locations of monitoring wells within the floodplain at the Sand Creek Disposal Road Landfill area of concern (AOC).
- LEIDOS_FWGW_004 – Specifies the field QC sampling frequency.
- LEIDOS_FWGW_006 – Documents the micro-purge procedure to be implemented during groundwater sampling collected by micro-purging with dedicated bladder pumps.

F.3.3 DATA VERIFICATION/VALIDATION

The objective when evaluating the project data quality is to determine its usability. The evaluation is based on the interpretation of laboratory QC measures, field QC measures, and project DQOs. This project implemented ADR software to facilitate laboratory data review. The ADR output was reviewed by the project-designated verification staff, as discussed below.

F.3.3.1 Field Data Verification

Field-generated documents, such as sampling logs, boring logs, daily health and safety summaries, daily safety inspections, equipment calibration and maintenance logs, and sample management logs, were peer-reviewed on site.

F.3.3.2 Laboratory Data Verification/Validation

Analytical data generated for this project have been subjected to a process of automated and manual data verification, validation, and review. Criteria and protocols were established in the following documents:

- 2018 Addendum (TEC-Weston 2019);
- RIWP, including Appendix A.2 QAPP (TEC-Weston 2016);
- DoD QSM, Version 5.0 (DoD 2017);
- USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review*, EPA-540/R-99/008 (USEPA 1999);
- USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, EPA-540/R-04/004(USEPA 2004); and
- Leidos Technical Support Contractor QA Standard Operating Procedure (ESE-DM-05), *Data Verification and Validation.*

Upon receipt of analytical data, QA staff performed a systematic examination of 100% of the reports, including ADR outputs. Discrepancies identified during this process were recorded and documented. Any discrepancies were resolved prior to database flag entry. QA Program Nonconformance Report and Corrective Action systems were implemented as required.

During the verification phase of the review and evaluation process, data were subjected to a systematic technical review by examining all field sample and analytical QC results against the measurement performance criteria (MPC) specified in the QAPP, following USEPA functional guidelines, DoD QSM criteria, and Leidos internal procedures for laboratory data review. These guidelines describe methods for evaluating the review criteria and actions to be taken resulting from the review of these criteria. The primary objectives of this phase were to assess and summarize the quality and reliability of the data for the intended use and to document factors that may affect the usability of the data. This data verification/validation and analytical review process included, but was not necessarily limited to, the following parameters:

- Data completeness;
- Analytical holding times and sample preservation;
- Calibration (initial and continuing);
- Method blanks and calibration blanks;
- Sample results verification;
- Surrogate recovery (organics);
- LCS analysis;

- Internal standard performance;
- MS/matrix spike duplicate (MSD) recovery;
- Serial dilution/post digestion spike, interference check standards (inorganics);
- Field duplicate analysis comparison;
- Reported detection limits; and
- Secondary dilutions.

As a result of this review, data were qualified based on the technical evaluations of QC sample results compared to MPC specified in the QAPP. Qualifiers were applied as needed to field and analytical results to indicate the usability of the data for its intended purpose.

F.3.3.3 Definitions of Data Qualifiers (Flags)

During the data verification/validation process, laboratory data were assigned appropriate data qualification flags with reason codes. Qualification flags are defined as follows:

- "U" Indicates the analyte was analyzed for, but not detected above, the level of the associated value.
- "J" Indicates the analyte was positively identified; however, the associated numerical value is an approximate concentration of the analyte in the sample.
- "UJ" Indicates the analyte was analyzed for, but not detected above, the associated value; however, the reported value is an estimate and demonstrates a decreased knowledge of its accuracy or precision.
- "R" Indicates the analyte value reported is unusable due to significant noncompliant QC results. No sample results were rejected.

F.3.3.4 Data Compliance

A total of 92 environmental groundwater samples were collected with approximately 4,689 discrete data points (i.e., analytes) obtained, reviewed, and integrated into the assessment (these totals do not include field measurements, field QC blanks, and field descriptions). During the project, samples were successfully collected and produced usable results for 100% of the sample analyses performed during the October 2018 sampling event. No data were rejected.

Table F.3-1 summarizes all environmental and QA split samples collected during the October 2018 sampling event. Cross-references for field duplicates and field QC samples and the associated primary samples are presented in Table F.3-2 along with the requested parameters for each sample. Table F.3-3 summarizes the qualified analyses grouped by parameter, and Table F.3-4 details the individual results qualified during review. The majority of the estimated values were based on concentrations between the laboratory method detection levels (MDLs) and the sample level of quantitation (LOQ) (i.e., values determined in this region have an inherently higher variability and are considered to be estimated concentrations); qualifiers also were assigned based on noncompliant MS recoveries, surrogate recoveries, holding times, and LCS recoveries, as well as professional judgment.

During the October 2018 sampling event, 11 field duplicates were collected and analyzed with primary samples. QA split samples were collected and sent to an independent laboratory (CT Laboratories in Baraboo, Wisconsin); these results were provided directly to USACE and are not included in this DQA. Fourteen trip blanks were collected and analyzed. One equipment rinsate blank, one potable water blank, and one deionized source water blank were collected for the entire field cycle; most samples were collected via the use of dedicated sampling equipment. Therefore, the rinsate blank was only required for groundwater collected from several temporary wells. The project goal for blanks is to achieve concentrations less than the reporting levels. Table F.3-5 summarizes analytes that were detected in these blanks. The deionized water field blank and equipment blank were free from contamination. In general, the field blank and rinsate blank results indicate that the equipment decontamination procedure was effective and the potential for sample contamination due to ambient field conditions is very low.

F.3.4 DATA QUALITY EVALUATION

F.3.4.1 Volatile Organic Groundwater Analysis

Analytical holding times were not met for 8 VOC samples, which resulted in 288 data points (36% of the VOC data) qualified as estimated "J" or as non-detect at an estimated concentration "UJ." Initial calibrations and continuing calibration criteria were achieved. Surrogate recoveries and internal area counts were within control limits for all analyses. Method blanks were free from contamination. All LCS and MS/MSD recoveries were within criteria. MS/MSD relative percent difference (RPD) values met control criteria. No samples required dilutions. Two methylene chloride detections were qualified as UJ based on the trip blank results (0.3% of the VOC data). No data were rejected for any reason. Although some analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in the RVAP Environmental Information Management System (REIMS).

F.3.4.2 Semi-volatile Organic Groundwater Analysis

Extraction and analytical holding times were met for all samples. Initial and continuing calibration criteria were met. Surrogate recoveries met criteria. Internal standard area counts and compound retention times met criteria throughout the data analyses. Method blanks were free of contamination. All LCS and MS/MSD recoveries were within criteria. MSD RPD values met control criteria. No semi-volatile organic compound (SVOC) samples required dilutions. No data were estimated or rejected for any reason, and the results are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.3.4.3 Polycyclic Aromatic Hydrocarbon Groundwater Analysis

Extraction and analytical holding times were met for all samples. Initial and continuing calibration criteria were met. Surrogate recoveries were below control limits in 1 sample, resulting in 18 data

points that were qualified as "UJ" (5% of the polycyclic aromatic hydrocarbon [PAH] data). Internal standard area counts and compound retention times met criteria throughout the data analyses. Method blanks had low level concentrations of two compounds, which resulted in five results (0.83% of the PAH data) qualified as undetected "U." LCS recoveries were within control limits. MS/MSD recoveries did not meet criteria for one compound that was qualified as "UJ" in the primary sample (0.28% of the PAH data); RPD values met control criteria. This compound also was qualified in the field duplicate based on professional judgment, since the primary sample was used for the MS/MSD and therefore considered the same matrix. No SVOC samples required dilutions. No data were rejected for any reason. Although several analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.3.4.4 Pesticide Analysis Groundwater Analysis

Analytical holding times were met for all samples; as needed, clean-up protocols (SW3660A and SW3665A) were used to reduce matrix interferences in the sample extracts. Surrogate recoveries met control criteria for all samples. Initial and continuing calibrations met criteria for all pesticide compounds, with the exception of toxaphene with low recovery in an initial calibration verification (ICV) standard associated with eight samples for which results were qualified as "UJ" based on professional judgment. Pesticide method blanks were free of contamination. LCS recoveries associated with 1 sample were outside acceptance criteria for 20 compounds that resulted in 20 data points (5.6% of the data points) qualified as "J" or "UJ." MS/MSD recoveries were outside control limits for two pesticide compounds, resulting in the primary sample results being qualified as "J" or "UJ" (0.56% of the data points); RPD values were within criteria. One groundwater sample required being analyzed at a dilution, causing the method detection limits for this analysis to exceed USEPA action levels for multiple pesticides. Column comparison criteria were met. No pesticide data were rejected for any reason. Although some analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.3.4.5 Polychlorinated Biphenyl Analysis Groundwater Analysis

Analytical holding times were met for all samples; as needed, clean-up protocols (SW3660A and SW3665A) were used to reduce matrix interferences in the sample extracts. Surrogate recoveries met control limits. Initial and continuing calibration criteria were met for all polychlorinated biphenyl (PCB) compounds. PCB method blanks were free from contamination. LCS recoveries were within acceptance criteria. MS/MSD recoveries and RPD values met criteria. No PCB data were estimated or rejected for any reason. One groundwater sample required a dilution; method detection limits for this dilution exceeded USEPA action levels for PCBs. All PCB values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.3.4.6 Explosives and Nitroglycerin Groundwater Analysis

Analytical holding times were met for all samples. Surrogate recoveries were below control limits in groundwater samples, resulting in 160 data points qualified as "J" or "UJ" (18.8% of explosive data). Initial and continuing calibration criteria were met, with the exception of 2-nitrotoluene with low recovery in a continuing calibration verification (CCV) standard associated with seven samples for which results were qualified as "UJ" based on professional judgment. All method blanks were free of contamination. LCS recoveries exceeded criteria for 8 compounds, resulting in 77 results (9% of explosives data points) being qualified as "UJ." MS/MSD recoveries exceeded criteria for three compounds which caused six sample results qualified as "J" or "UJ" (0.7% of the data points). Column comparison criteria were exceeded for 10 results, which caused these data points to be qualified as "J." No explosives samples required dilutions. No data were rejected for any reason. Although some analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.3.4.7 Metals and Phosphorus Groundwater Analysis

Analytical holding times were met for all samples. Initial and continuing calibration criteria were achieved for all elements. Sample results associated with calibration standard exceedances were qualified as follows: if ICV or CCV results were above criteria, detects were qualified as "J"; if ICV/CCV results were below criteria, detects were qualified as "J" and non-detects as "UJ." Method blank contamination resulted in 10 results being qualified as non-detect "U"; initial and continuing calibration blank contamination resulted in several data points being qualified as "U." LCS recoveries met criteria. MS/MSD recoveries exceeded criteria for four metal compounds, which resulted in five sample results (0.43% of metals data) qualified as "J" or "UJ." MS/MSD RPD values were within control limits. Professional judgment was used to qualify results, per above, based on ICV/CCV and calibration blanks, as well as serial dilution and post digestion spike results. Reporting levels are considered consistent with QAPP goals. No data were rejected for any reason. No dilutions were required. Although some analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the reported values were considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.3.4.8 Propellants Groundwater Analysis

Analytical holding times were met for all samples. Initial and continuing calibration criteria were met for all compounds. Method blanks were free from contamination. LCS recoveries were within criteria. MS/MSD recoveries were not met for nitrocellulose, which resulted in one primary sample result (12.5% of propellant data) qualified as non-detect at an estimated concentration "UJ"; the RPD values were within control limits. No dilutions were required. No data were rejected for any reason. Although some analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.3.4.9 Anions

Six nitrate and nitrite results were qualified as estimated "J" or "UJ" due to missed holding times (10.5% of anion data). Initial and continuing calibration criteria were met for all compounds. Method and calibration blank contamination caused three nitrate and nitrite data point (5.3% of anion data) to be qualified as "U" or "UJ." MS/MSD recoveries were outside criteria for nitrate, nitrite, sulfate, and sulfide, which resulted in 10 results qualified as "J" or "UJ" (17.5% of anion data) based on professional judgment. MS/MSD RPD results met criteria. Laboratory duplicate RPD results were outside criteria for nitrate, which resulted in one result qualified as estimated "J" (1.8% anion data). Two nitrate groundwater samples and one sulfate groundwater sample required a dilution. Method detection limits for these dilutions were below USEPA action limits for sulfate and nitrate. No data were rejected for any reason. Although some analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.3.4.10 Cyanide

Analytical holding times were met for all samples. Initial and continuing calibration criteria were met for all compounds. Method blanks were free from contamination. LCS recoveries were within criteria. MS/MSD recoveries and RPD values met criteria for cyanide. No dilutions were required. No data were rejected for any reason. Although some analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.3.4.11 Perchlorate

Analytical holding times were met for all samples. Initial and continuing calibration criteria were met for all compounds. Method blanks were free from contamination. LCS recoveries were within criteria. MS/MSD recoveries and RPD values met criteria for perchlorate. No dilutions were required. No data were rejected for any reason. Although some analyses were qualified as estimated, the

deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.3.4.12 Alkalinity

Analytical holding times were met for all samples. Initial and continuing calibration criteria were met for alkalinity. Method blanks were free from contamination. LCS recoveries were within criteria. MS/MSD recoveries and RPD values met criteria for alkalinity. No dilutions were required. No data were rejected for any reason. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.3.4.13 Hexavalent Chromium

Two hexavalent chromium results were qualified as estimated "UJ" due to missed holding times (11% of hexavalent chromium). Initial and continuing calibration criteria were met for all compounds. Method blanks were free from contamination. LCS recoveries were within criteria. MS/MSD recoveries and RPD values met criteria. No dilutions were required. No data were rejected for any reason. Although some analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.3.4.14 Precision

Field duplicate samples were collected to assess the combined variability (i.e., precision) due to environmental media, sampling reproducibility, and analytical precision. Field duplicate samples were collected from the same spatial and temporal conditions as the primary environmental sample.

Field duplicate comparison information is presented in Table F.3-6. If a given analyte was not detected in both the regular and field duplicate sample, precision was considered within limits and results were not included in the table. The RPD was calculated only when both samples had reported concentrations greater than five times the LOQ. When one or both sample values were between the LOQ and five times the LOQ, the absolute difference was evaluated. Tables 12-1 through 12-17 of the QAPP set the RPD criteria, while the absolute difference is set at one times the reporting limit. All field duplicate comparisons met criteria.

F.3.4.15 Sensitivity

Determining minimum detectable values allows the investigation to assess the confidence that can be placed in a value relative to the magnitude of analyte concentration observed. The closer a measured value comes to the minimum detectable concentration, the less confidence and more variation the measurement will have. Project sensitivity goals were expressed as quantitation level goals in the QAPP. These levels were achieved or exceeded throughout the analytical process, with the exception

of one pesticide, one PCB, and three anion samples, which were analyzed at diluted levels. LOQs are considered adequate for their intended use and have been considered during data interpretation and statistical applications.

Method blank determinations were performed with each analytical sample batch for each analyte under investigation. These blanks were evaluated to determine their potential impact on individual data points. Action levels are set at 5 times the blank concentration for all analytes, except those designated as common laboratory contaminants (i.e., methylene chloride, acetone, toluene, 2-butanone, and phthalate compounds) for which the action level is 10 times the blank concentration. Action limits for inorganics were set as 10 times the blank concentration. Reported sample concentrations are evaluated against blank action levels, and the following qualifications are made when reportable quantities of analytes were observed in the associated method blank:

- When the sample analyte concentration is above the action level (5–10 times the blank concentration), the data are not qualified and it is considered a positive value.
- If the sample concentration is below the action level, the data are considered impacted by the method blank. If the sample result is greater than the LOQ, the result is qualified as a non-detectable concentration at the analyte value reported and these data are qualified as "U." If the sample result is greater than the level of detection (LOD) but less than the LOQ, the result is qualified as a non-detectable concentration at the analyte value reported and these data are qualified as "UJ." If the sample result is less than the LOD (an estimated value), the result is qualified as non-detectable at the concentration of the LOD and qualified as "U."

No data were rejected as a result of method blank contamination; however, various analytes were qualified as a non-detectable concentration "U," as summarized in Table F.3-4.

Table F.3-5 summarizes analytes that were detected in trip blanks, field blanks, and equipment blanks. The deionized water field blank and equipment rinsate blank were free from contamination. The tap water blank, FWGqc-001-181001-SB, contained 11 metals, 1 PAH, 1 VOC, 1 pesticide, and 3 wet chemistry contaminations. Deionized water was used for the final stage of decontamination and source blank results were not used to qualify data. In general, the field blank and rinsate blank results indicate that the equipment decontamination procedure was effective and the potential for sample contamination due to ambient field conditions is very low.

Fourteen trip blanks were collected. Carbon disulfide and methylene chloride were detected in project trip blanks, as listed in Table 3-5. The concentrations observed were less than the reporting levels of 2 µg/L for carbon disulfide and 5 µg/L for methylene chloride. The transportation and sample storage process, and the procedures and precautions employed, were effective in preserving the integrity of the sample analysis.

F.3.4.16 Representativeness and Comparability

Representativeness expresses the degree to which data accurately reflect the analyte or parameter of interest for the environmental media being studied and is the qualitative term most concerned with the

proper design of the sampling program. Factors that affect the representativeness of analytical data include proper preservation, holding times, and use of standard sampling and analytical methods. Samples were picked up on site by the TestAmerica courier, then delivered or shipped to the appropriate laboratory location; samples were received within temperature specifications and in good condition. Holding times were exceeded as discussed above; all samples were analyzed within two times the holding time, and the data are therefore considered usable but estimated ("J," "UJ").

Comparability, like representativeness, is a qualitative term relative to an individual project data set. The RI employed appropriate sampling methodologies, sample containers and preservation, and site surveillance; used standard sampling devices and uniform training; and documented sampling procedures, standard analytical protocols/procedures, QC checks with standard control limits, and universally accepted data reporting units to ensure comparability to other data sets. Through the proper implementation and documentation of these standard practices, the project has established the confidence that the data will be comparable to other project and programmatic information. Table F.3-7 present the standardized parameter groups, sample containers, preservation techniques, and associated holding times for environmental media.

F.3.4.17 Completeness

Usable data are defined as those data that pass individual scrutiny during the verification and validation process. These data, including estimated data, have been determined to be usable for RVAAP restoration program objectives.

The completeness goal for analytical data is 95%, as defined in Tables 12-1 through 12-17 of the FWGWMP Plan. One monitoring well could not be sampled, since the well was dry. All samples specified in the 2018 Addendum (TEC-Weston 2019) were collected as planned, and usable results were generated for 100% of sample analyses performed.

F.3.5 DATA QUALITY ASSESSMENT SUMMARY

The overall quality of the October 2018 sampling event meets established project objectives. Through implementation of the project data verification, validation, and assessment process, project information has been determined to be acceptable for use.

Data, as presented, have been qualified as usable; some data have been qualified estimated, "J" or "UJ." No data were rejected. Data that have been qualified as estimated indicate accuracy, precision, or sensitivity did not meet all requirements, but results are considered adequate for interpretation. All undetected analytes were reported at detection levels that were adequate for use during data interpretation and statistical applications.

Data produced for this project demonstrate they can withstand scientific scrutiny; are appropriate for its intended purpose; are technically defensible; and are of known and acceptable sensitivity, precision, and accuracy. Data integrity has been documented through proper implementation of QA and QC measures. The environmental information presented has an established confidence that allows utilization for the project objectives and provides data for future needs.

F.3.6 REFERENCES

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Table F.3-1. Number of Samples Collected – October 2018 Sampling Event

Media	Environmental Samples	Field Duplicates	USACE Split Samples	Trip Blanks	Equipment Rinsate Blanks[a]	Source Water Blanks[b]
Groundwater	81	11	11	14	1	2

[a] Equipment rinsate blanks were collected at a frequency of one per field cycle for the entire annual sampling event for the RVAAP-66 Facility-Wide Groundwater Area of Concern.

[b] Source water blanks for deionized and potable water used during equipment decontamination were evaluated for the entire RVAAP-66 Facility-Wide Groundwater Area of Concern.

USACE = U.S. Army Corps of Engineers.

Table F.3-2. Identification of Regular and QC Samples Taken – October 2018 Sampling Event

Environmental Samples	Laboratory Sample Delivery Group	Field Duplicates	Trip Blanks[a]	Metals	Hexavalent Chromium	Explosives	Propellants[b]	SVOCs	PAHs	VOCs	Pesticides	PCBs	Cyanide	Perchlorate	Anions	Alkalinity
CBPmw-008-181001-GW	280-116270-1												X			
CBPmw-009-181001-GW	280-116270-1												X			
DA1tw-001-181001-GW	280-116538-1					X										
DA2mw-115-181001-GW	280-116020-1	DA2mw-115-181002-GW		X		X		X					X			
DET-003-181001-GW	280-116020-1	DET-003-181002-GW	FWGTB-181002-TB	X		X		X	X	X	X	X	X			
DET-004-181001-GW	280-116020-1		FWGTB-181002-TB	X		X		X	X	X	X	X	X			
EBGmw-125-181001-GW	280-115877-1												X			
EBGmw-131-181001-GW	280-115877-1												X			
ES3tw-001-181001-GW	280-116407-1								X							
ES3tw-002-181001-GW	280-116469-1								X							
ES3tw-003-181001-GW	280-116407-1								X							
FBQmw-171-181001-GW	280-116336-1				X								X		X	X
FBQmw-172-181001-GW	280-116336-1												X			
FBQmw-175-181001-GW	280-116407-1				X										X	X
FBQmw-176-181001-GW	280-116407-1												X			
FWGMW-004-181001-GW	280-116053-1			X		X		X								
FWGMW-010-181001-GW	280-116053-1												X			
FWGMW-011-181001-GW	280-116053-1			X		X		X								
FWGMW-012-181001-GW	280-116053-1			X		X		X								
FWGmw-007-181001-GW	280-116336-1			X		X		X								
FWGmw-013-181001-GW	280-116020-1												X			
FWGmw-015-181001-GW	280-116186-1			X		X		X								
FWGmw-016-181001-GW	280-116270-1			X		X		X								
FWGmw-017-181001-GW	280-116186-1	FWGmw-017-181002-GW	FWGTB-181006-TB	X		X		X	X	X						
FWGmw-018-181001-GW	280-116270-1		FWGTB-181006b-TB	X		X		X	X	X		X	X			
FWGmw-019-181001-GW	280-116303-1	FWGmw-019-181002-GW	FWGTB-184003-TB							X		X	X			
FWGmw-020-181001-GW	280-116270-1		FWGTB-181006b-TB	X	X	X		X	X	X		X	X			
FWGmw-021-181001-GW	280-116186-1	FWGmw-021-181002-GW	FWGTB-181005-TB	X		X		X	X	X	X	X	X			
FWGmw-022-181001-GW	280-116303-1		FWGTB-181008-TB							X		X	X			
FWGmw-023-181001-GW	280-116336-1												X			
FWGmw-024-181001-GW	280-116186-1		FWGTB-181005-TB	X	X	X		X	X	X						
LL10mw-003-181001-GW	280-116303-1	LL10mw-003-181002-GW	FWGTB-181008-TB	X				X		X						
LL10mw-005-181001-GW	280-116303-1		FWGTB-181008-TB	X				X		X						
LL11mw-005-181001-GW	280-116336-1												X			

Table F.3-2. Identification of Regular and QC Samples Taken – October 2018 Sampling Event (continued)

Environmental Samples	Laboratory Sample Delivery Group	Field Duplicates	Trip Blanks[a]	Metals	Hexavalent Chromium	Explosives	Propellants[b]	SVOCs	PAHs	VOCs	Pesticides	PCBs	Cyanide	Perchlorate	Anions	Alkalinity
LL12mw-183-181001-GW	280-116407-1								X				X			
LL12mw-185-181001-GW	280-116303-1			X									X		X	
LL12mw-187-181001-GW	280-116407-1			X				X							X	
LL12mw-242-181001-GW	280-116336-1			X		X		X							X	
LL12mw-245-181001-GW	280-116407-1			X		X		X							X	
LL12mw-247-181001-GW	280-116303-1	LL12mw-247-181002-GW		X	X	X		X					X		X	
LL1MW-065-181001-GW	280-116053-1			X		X		X								
LL1MW-086-181001-GW	280-116053-1			X		X		X								X
LL1mw-064-181001-GW	280-115950-1			X		X										
LL1mw-080-181001-GW	280-116186-1					X										
LL1mw-081-181001-GW	280-116186-1					X							X			
LL1mw-083-181001-GW	280-116020-1				X	X		X			X				X	X
LL1mw-084-181001-GW	280-116020-1			X	X	X		X			X		X		X	X
LL1mw-087-181001-GW	280-116270-1			X		X		X								
LL1mw-088-181001-GW	280-115950-1	LL1mw-088-181002-GW		X		X		X			X					X
LL1mw-089-181001-GW	280-116270-1												X			
LL2mw-059-181001-GW	280-116186-1			X		X		X								
LL2mw-264-181001-GW	280-116270-1												X			
LL2mw-267-181001-GW	280-116186-1			X		X		X								
LL2mw-272-181001-GW	280-116186-1												X			
LL3mw-234-181001-GW	280-116270-1												X			
LL3mw-237-181001-GW	280-116270-1					X										
LL3mw-244-181001-GW	280-116270-1			X	X	X		X			X					
LL3mw-246-181001-GW	280-116186-1			X		X		X						X		
LL4mw-193-181001-GW	280-116407-1												X			
LL4mw-200-181001-GW	280-116270-1												X			
LL7mw-001-181001-GW	280-116336-1		FWGTB-181010-TB	X		X		X		X			X			
LL7mw-006-181001-GW	240-103914-1					X										
NTAmw-117-181001-GW	280-116336-1												X			
NTAmw-118-181001-GW	280-116336-1												X			
NTAmw-119-181001-GW	280-116336-1	NTAmw-119-181002-GW	FWGTB-181010-TB	X		X		X	X	X						
RQLMW-011-181001-GW	280-115789-1	RQLMW-011-181002-GW			X			X	X						X	X
RQLmw-007-181001-GW	280-115950-1		FWGTB-181001b-TB	X		X		X	X	X	X	X	X			
RQLmw-008-181001-GW	280-115950-1		FWGTB-181001b-TB	X		X		X	X	X	X	X	X			
RQLmw-009-181001-GW	280-115877-1		FWGTB-181001-TB	X		X		X	X	X	X	X	X			

Table F.3-2. Identification of Regular and QC Samples Taken – October 2018 Sampling Event (continued)

Environmental Samples	Laboratory Sample Delivery Group	Field Duplicates	Trip Blanks[a]	Metals	Hexavalent Chromium	Explosives	Propellants[b]	SVOCs	PAHs	VOCs	Pesticides	PCBs	Cyanide	Perchlorate	Anions	Alkalinity
RQLmw-012-181001-GW	280-115877-1				X								X		X	X
RQLmw-013-181001-GW	280-115877-1				X										X	X
RQLmw-014-181001-GW	280-115877-1				X	X									X	X
RQLmw-016-181001-GW	280-115877-1												X			
SCFmw-004-181001-GW	280-116270-1			X		X		X			X					
SCLmw-001-181001-GW	280-116538-1		FWGTB-181014-TB	X	X	X	X	X	X	X	X	X	X	X	X	X
SCLmw-002-181001-GW	280-116469-1	SCLmw-002-181002-GW	FWGTB-181011-TB	X	X	X	X	X	X	X	X	X	X	X	X	X
SCLmw-003-181001-GW	280-116538-1		FWGTB-181014-TB	X	X	X	X	X	X	X	X	X	X	X	X	X
WBGMW-006-181001-GW	280-116053-1			X		X		X								
WBGMW-020-181001-GW	280-116053-1			X		X		X								
WBGMW-021-181001-GW	280-116053-1			X		X		X								
WBGmw-009-181001-GW	280-116020-1			X		X		X								

[a] Trip blanks only accompany samples for VOCs in water.
[b] Propellants include nitrocellulose and nitroguanidine.
PAH = Polycyclic aromatic hydrocarbon.
PCB = Polychlorinated biphenyl.
QC = Quality control.
SVOC = Semi-volatile organic compound.
TB = Trip blank.
VOC = Volatile organic compound.

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1 **Table F.3-3. Summary of Qualified Results for Samples – October 2018 Sampling Event**

Analysis Group	Val. Qual	Validation Code	Number Qualified	Total Number of Analyses	Percent Qualified
All Analyses	J		363	4689	8
All Analyses	UJ		527	4689	11
All Analyses	U		292	4689	6
All Analyses	None		3507	4689	75
Metals	J	MS-J	3	1156	0
Metals	J	MS-J, RepLimit-J	1	1156	0
Metals	J	ProJudge-J	51	1156	4
Metals	J	RepLimit-J	217	1156	19
Metals	UJ	MB-U, RepLimit-J, ProJudge-UJ	1	1156	0
Metals	UJ	MS-UJ	1	1156	0
Metals	UJ	ProJudge-UJ	8	1156	1
Metals	U	MB-U, RepLimit-J	6	1156	1
Metals	U	MB-U, RepLimit-J, ProJudge-U	2	1156	0
Metals	U	ProJudge-U	17	1156	2
Metals	U	RepLimit-J, ProJudge-U	17	1156	2
Metals	None	None	832	1156	72
Explosives	J	MS-J	1	848	0
Explosives	J	ProJudge-J	10	848	2
Explosives	J	RepLimit-J	5	848	1
Explosives	J	Surr-J	4	848	0
Explosives	J	Surr-J, MS-J	1	848	0
Explosives	J	Surr-J, RepLimit-J	2	848	0
Explosives	UJ	LCS-UJ	1	848	0
Explosives	UJ	LCS-UJ, ProJudge-UJ	4	848	0
Explosives	UJ	MS-UJ	4	848	0
Explosives	UJ	ProJudge-UJ	7	848	1
Explosives	UJ	Surr-UJ	81	848	10
Explosives	UJ	Surr-UJ, LCS-UJ	72	848	9
Explosives	None	None	656	848	78
Propellants	UJ	MS-UJ	1	8	13
Propellants	None	None	7	8	88
SVOCs	None	None	919	919	100
PAHs	J	RepLimit-J	22	363	6
PAHs	UJ	MS-UJ	1	363	0
PAHs	UJ	ProJudge-UJ	1	363	0
PAHs	UJ	Surr-UJ	18	363	5
PAHs	U	MB-U, RepLimit-J	3	363	1
PAHs	U	MB-U, RepLimit-J, ProJudge-U	2	363	1
PAHs	None	None	316	363	88
VOCs	J	HT-J, RepLimit-J	1	792	0
VOCs	J	RepLimit-J	20	792	3
VOCs	UJ	HT-J, RepLimit-J, ProJudge-UJ	2	792	0
VOCs	UJ	HT-UJ	281	792	35
VOCs	UJ	HT-UJ, ProJudge-UJ	4	792	1
VOCs	None	None	484	792	62
Pesticides	J	LCS-J, RepLimit-J	1	357	0
Pesticides	J	MS-J, RepLimit-J	1	357	0
Pesticides	J	RepLimit-J	1	357	0
Pesticides	UJ	LCS-UJ	19	357	5

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Table F.3-3. Summary of Qualified Results for Samples – October 2018 Sampling Event (continued)

Analysis Group	Val. Qual	Validation Code	Number Qualified	Total Number of Analyses	Percent Qualified
Pesticides	UJ	MS-UJ	1	357	0
Pesticides	UJ	ProJudge-UJ	8	357	2
Pesticides	None	None	326	357	92
PCBs	None	None	105	105	100
Cyanide	J	RepLimit-J	8	46	17
Cyanide	None	None	38	46	83
Perchlorate	J	RepLimit-J	3	5	60
Perchlorate	None	None	2	5	40
Anions	J	MS-J	2	57	4
Anions	J	HT-J	1	57	2
Anions	J	MS-J, RepLimit-J	2	57	4
Anions	J	MS-J, RepLimit-J, LabDup-J	1	57	2
Anions	J	ProJudge-J	1	57	2
Anions	J	RepLimit-J	2	57	4
Anions	UJ	HT-UJ	3	57	6
Anions	UJ	MB-U, RepLimit-J, ProJudge-UJ	1	57	2
Anions	UJ	HT-UJ, ProJudge-UJ	2	57	4
Anions	UJ	MS-UJ	4	57	7
Anions	U	ProJudge-U	2	57	4
Anions	U	RepLimit-J, ProJudge-U	2	57	4
Anions	None	None	34	57	60
Alkalinity	None	None	15	15	100
Hex Chromium	J	RepLimit-J	2	18	11
Hex Chromium	UJ	HT-UJ	2	18	11
Hex Chromium	None	None	14	18	78

2 [a] Validation Qualifiers: J = estimated, U = not detected, UJ = not detected and reporting limit estimated.
[b] Validation Reason Codes: CalBlk = calibration blank, CCV = continuing calibration verification, FldQC = field quality control, HT = holding time, IntStd = internal standard, LCS = laboratory control sample, MB = method blank, MS = matrix spike, ProJudge = professional judgment, RptLimit = reporting limit, Surr = surrogate recovery.
PAH = Polycyclic aromatic hydrocarbon.
PCB = Polychlorinated biphenyl.
SVOC = Semi-volatile organic compound.
VOC = Volatile organic compound.
-- = No data qualifier.

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	ALUMINUM	280-116020-1	DA2mw-115-181002-GW	19	300	J	J	RepLimit-J
Metals	ALUMINUM	280-116053-1	FWGMW-004-181001-GW	35	300	J	J	RepLimit-J
Metals	ALUMINUM	280-116053-1	FWGMW-011-181001-GW	180	300	J	J	RepLimit-J
Metals	ALUMINUM	280-116336-1	FWGmw-007-181001-GW	100	300	J	J	RepLimit-J
Metals	ALUMINUM	280-116186-1	FWGmw-015-181001-GW	32	300	J	J	RepLimit-J
Metals	ALUMINUM	280-116303-1	LL10mw-003-181001-GW	21	300	J	J	RepLimit-J
Metals	ALUMINUM	280-116303-1	LL10mw-003-181002-GW	22	300	J	J	RepLimit-J
Metals	ALUMINUM	280-116303-1	LL12mw-247-181001-GW	290	300	J	J	RepLimit-J
Metals	ALUMINUM	280-115950-1	LL1mw-064-181001-GW	44	300	J	J	RepLimit-J
Metals	ALUMINUM	280-116020-1	LL1mw-084-181001-GW	500	300		J	ProJudge-J
Metals	ALUMINUM	280-116270-1	LL1mw-087-181001-GW	55	300	J	J	RepLimit-J
Metals	ALUMINUM	280-115950-1	LL1mw-088-181001-GW	39	300	J	J	RepLimit-J
Metals	ALUMINUM	280-115950-1	LL1mw-088-181002-GW	38	300	J	J	RepLimit-J
Metals	ALUMINUM	280-116186-1	LL2mw-267-181001-GW	67	300	J	J	RepLimit-J
Metals	ALUMINUM	280-116336-1	NTAmw-119-181001-GW	120	300	J	J	RepLimit-J
Metals	ALUMINUM	280-116336-1	NTAmw-119-181002-GW	120	300	J	J	RepLimit-J
Metals	ALUMINUM	280-115877-1	RQLmw-009-181001-GW	43	300	J	J	RepLimit-J
Metals	ALUMINUM	280-116270-1	SCFmw-004-181001-GW	31	300	J	J	RepLimit-J
Metals	ALUMINUM	280-116538-1	SCLmw-001-181001-GW	70	300	J	U	RepLimit-J, ProJudge-U
Metals	ANTIMONY	280-116186-1	FWGmw-021-181001-GW	1	6.0	J	U	RepLimit-J, ProJudge-U
Metals	ANTIMONY	280-116407-1	LL12mw-187-181001-GW	1	6.0	J	U	RepLimit-J, ProJudge-U
Metals	ANTIMONY	280-116336-1	LL12mw-242-181001-GW	0.72	6.0	J	J	RepLimit-J
Metals	ANTIMONY	280-116407-1	LL12mw-245-181001-GW	1.0	6.0	U J1	UJ	MS-UJ
Metals	ANTIMONY	280-116053-1	LL1MW-086-181001-GW	1	6.0	J	U	RepLimit-J, ProJudge-U
Metals	ANTIMONY	280-115950-1	LL1mw-088-181002-GW	1	6.0	J	U	RepLimit-J, ProJudge-U
Metals	ANTIMONY	280-116270-1	LL3mw-244-181001-GW	0.54	6.0	J	J	RepLimit-J
Metals	ANTIMONY	280-116186-1	LL3mw-246-181001-GW	1	6.0	J	U	RepLimit-J, ProJudge-U
Metals	ANTIMONY	280-115950-1	RQLmw-008-181001-GW	1	6.0	J	U	RepLimit-J, ProJudge-U
Metals	ANTIMONY	280-116538-1	SCLmw-003-181001-GW	1.4	6.0	J	U	RepLimit-J, ProJudge-U
Metals	ARSENIC	280-116020-1	DA2mw-115-181001-GW	1.6	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116020-1	DA2mw-115-181002-GW	1.5	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116053-1	FWGMW-011-181001-GW	4.3	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116053-1	FWGMW-012-181001-GW	1.4	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116186-1	FWGmw-015-181001-GW	0.79	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116270-1	FWGmw-016-181001-GW	4.0	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116186-1	FWGmw-017-181001-GW	3.3	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116186-1	FWGmw-021-181001-GW	1.5	5.0	J	J	RepLimit-J

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	ARSENIC	280-116186-1	FWGmw-024-181001-GW	3.0	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116303-1	LL12mw-185-181001-GW	0.70	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116407-1	LL12mw-187-181001-GW	0.53	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-115950-1	LL1mw-064-181001-GW	4.9	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116186-1	LL2mw-267-181001-GW	2.3	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116336-1	LL7mw-001-181001-GW	1.8	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116538-1	SCLmw-001-181001-GW	4.8	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116469-1	SCLmw-002-181001-GW	1.9	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116469-1	SCLmw-002-181002-GW	1.9	5.0	J	J	RepLimit-J
Metals	ARSENIC	280-116053-1	WBGMW-020-181001-GW	1.2	5.0	J	J	RepLimit-J
Metals	BARIUM	280-116020-1	DA2mw-115-181001-GW	22	3.0		J	ProJudge-J
Metals	BARIUM	280-116020-1	DA2mw-115-181002-GW	21	3.0		J	ProJudge-J
Metals	BARIUM	280-116020-1	DET-003-181001-GW	49	3.0		J	ProJudge-J
Metals	BARIUM	280-116020-1	DET-004-181001-GW	72	3.0		J	ProJudge-J
Metals	BARIUM	280-116186-1	FWGmw-017-181001-GW	120	3.0	J1	J	ProJudge-J
Metals	BARIUM	280-116303-1	LL10mw-003-181001-GW	2.2	3.0	J	J	RepLimit-J
Metals	BARIUM	280-116303-1	LL10mw-003-181002-GW	1.9	3.0	J	J	RepLimit-J
Metals	BARIUM	280-116020-1	LL1mw-084-181001-GW	16	3.0		J	ProJudge-J
Metals	BARIUM	280-116186-1	LL2mw-059-181001-GW	2.7	3.0	J	J	RepLimit-J
Metals	BARIUM	280-116538-1	SCLmw-001-181001-GW	110	3.0		J	ProJudge-J
Metals	BARIUM	280-116469-1	SCLmw-002-181001-GW	55	3.0	J1	J	MS-J
Metals	BARIUM	280-116469-1	SCLmw-002-181002-GW	54	3.0		J	MS-J
Metals	BARIUM	280-116538-1	SCLmw-003-181001-GW	41	3.0		J	ProJudge-J
Metals	BARIUM	280-116020-1	WBGmw-009-181001-GW	11	3.0		J	ProJudge-J
Metals	BERYLLIUM	280-116186-1	FWGmw-015-181001-GW	0.30	1.0	U Q	U	ProJudge-U
Metals	BERYLLIUM	280-116186-1	FWGmw-021-181001-GW	0.30	1.0	U Q	U	ProJudge-U
Metals	BERYLLIUM	280-116303-1	LL10mw-003-181001-GW	0.081	1.0	J	J	RepLimit-J
Metals	BERYLLIUM	280-116407-1	LL12mw-187-181001-GW	0.30	1.0	J	U	RepLimit-J, ProJudge-U
Metals	BERYLLIUM	280-116336-1	LL12mw-242-181001-GW	0.30	1.0	J	J	RepLimit-J
Metals	BERYLLIUM	280-116336-1	LL12mw-242-181001-GW	0.33	1.0	J	J	RepLimit-J
Metals	BERYLLIUM	280-116407-1	LL12mw-245-181001-GW	0.30	1.0	J	U	RepLimit-J, ProJudge-U
Metals	BERYLLIUM	280-116407-1	LL12mw-245-181001-GW	0.30	1.0	J	U	RepLimit-J, ProJudge-U
Metals	BERYLLIUM	280-116303-1	LL12mw-247-181001-GW	0.16	1.0	J	J	RepLimit-J
Metals	BERYLLIUM	280-116053-1	LL1MW-086-181001-GW	0.28	1.0	J	J	RepLimit-J
Metals	BERYLLIUM	280-116020-1	LL1mw-084-181001-GW	0.13	1.0	J	J	RepLimit-J
Metals	BERYLLIUM	280-115950-1	LL1mw-088-181002-GW	0.21	1.0	J	J	RepLimit-J
Metals	BERYLLIUM	280-116186-1	LL2mw-059-181001-GW	0.30	1.0	U Q	U	ProJudge-U
Metals	BERYLLIUM	280-116186-1	LL2mw-267-181001-GW	0.30	1.0	U Q	U	ProJudge-U

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	BERYLLIUM	280-116186-1	LL3mw-246-181001-GW	0.30	1.0	U Q	U	ProJudge-U
Metals	BERYLLIUM	280-116336-1	LL7mw-001-181001-GW	0.30	1.0	J	U	RepLimit-J, ProJudge-U
Metals	BERYLLIUM	280-116336-1	NTAmw-119-181002-GW	0.30	1.0	J	U	RepLimit-J, ProJudge-U
Metals	BERYLLIUM	280-116538-1	SCLmw-001-181001-GW	0.087	1.0	J	J	RepLimit-J
Metals	BERYLLIUM	280-116469-1	SCLmw-002-181001-GW	0.30	1.0	U	UJ	ProJudge-UJ
Metals	BERYLLIUM	280-116469-1	SCLmw-002-181002-GW	0.30	1.0	U	UJ	ProJudge-UJ
Metals	BERYLLIUM	280-116538-1	SCLmw-003-181001-GW	0.30	1.0	U	UJ	ProJudge-UJ
Metals	CADMIUM	280-116538-1	SCLmw-001-181001-GW	0.34	1.0	J	J	RepLimit-J
Metals	CALCIUM	280-116020-1	DA2mw-115-181001-GW	120000	1000	Q	J	ProJudge-J
Metals	CALCIUM	280-116020-1	DA2mw-115-181002-GW	120000	1000	Q	J	ProJudge-J
Metals	CALCIUM	280-116020-1	DET-003-181001-GW	95000	1000	Q	J	ProJudge-J
Metals	CALCIUM	280-116020-1	DET-004-181001-GW	150000	1000	Q	J	ProJudge-J
Metals	CALCIUM	280-116186-1	FWGmw-024-181001-GW	72000	1000		J	ProJudge-J
Metals	CALCIUM	280-116020-1	LL1mw-084-181001-GW	51000	1000	Q	J	ProJudge-J
Metals	CALCIUM	280-116469-1	SCLmw-002-181001-GW	190000	1000	J1	J	MS-J
Metals	CALCIUM	280-116469-1	SCLmw-002-181002-GW	190000	1000		J	ProJudge-J
Metals	CALCIUM	280-116020-1	WBGmw-009-181001-GW	54000	1000	Q	J	ProJudge-J
Metals	CHROMIUM	280-116303-1	LL10mw-003-181002-GW	0.50	10	J	J	RepLimit-J
Metals	CHROMIUM	280-116407-1	LL12mw-187-181001-GW	0.50	10	J	J	RepLimit-J
Metals	CHROMIUM	280-116336-1	LL12mw-242-181001-GW	0.98	10	J	J	RepLimit-J
Metals	CHROMIUM	280-116336-1	LL12mw-242-181001-GW	1.7	10	J	J	RepLimit-J
Metals	CHROMIUM	280-116407-1	LL12mw-245-181001-GW	2.1	10	J	J	RepLimit-J
Metals	CHROMIUM	280-116407-1	LL12mw-245-181001-GW	3.6	10	J	J	RepLimit-J
Metals	CHROMIUM	280-116303-1	LL12mw-247-181001-GW	0.90	10	J	J	RepLimit-J
Metals	CHROMIUM	280-116053-1	LL1MW-086-181001-GW	6.7	10	J	J	RepLimit-J
Metals	CHROMIUM	280-116270-1	LL1mw-087-181001-GW	0.50	10	J	J	RepLimit-J
Metals	CHROMIUM	280-116186-1	LL2mw-267-181001-GW	0.56	10	J	J	RepLimit-J
Metals	CHROMIUM	280-116538-1	SCLmw-003-181001-GW	0.86	10	J	J	RepLimit-J
Metals	COBALT	280-116020-1	DET-003-181001-GW	0.36	1.0	J	J	RepLimit-J
Metals	COBALT	280-116336-1	FWGmw-007-181001-GW	0.41	1.0	J	J	RepLimit-J
Metals	COBALT	280-116186-1	FWGmw-015-181001-GW	0.73	1.0	J	J	RepLimit-J
Metals	COBALT	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	J	J	RepLimit-J
Metals	COBALT	280-116186-1	FWGmw-024-181001-GW	0.53	1.0	J	J	RepLimit-J
Metals	COBALT	280-116303-1	LL10mw-005-181001-GW	0.065	1.0	J	J	RepLimit-J
Metals	COBALT	280-116303-1	LL12mw-247-181001-GW	0.97	1.0	J	J	RepLimit-J
Metals	COBALT	280-116053-1	LL1MW-065-181001-GW	0.17	1.0	J	J	RepLimit-J
Metals	COBALT	280-115950-1	LL1mw-064-181001-GW	0.28	1.0	J	J	RepLimit-J
Metals	COBALT	280-116270-1	LL1mw-087-181001-GW	0.45	1.0	J	J	RepLimit-J

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	COBALT	280-115950-1	LL1mw-088-181001-GW	0.096	1.0	J	J	RepLimit-J
Metals	COBALT	280-115950-1	LL1mw-088-181002-GW	0.14	1.0	J	J	RepLimit-J
Metals	COBALT	280-116186-1	LL2mw-059-181001-GW	0.33	1.0	J	J	RepLimit-J
Metals	COBALT	280-116336-1	NTAmw-119-181001-GW	0.15	1.0	J	J	RepLimit-J
Metals	COBALT	280-116336-1	NTAmw-119-181002-GW	0.16	1.0	J	J	RepLimit-J
Metals	COBALT	280-116469-1	SCLmw-002-181001-GW	0.060	1.0	J	J	RepLimit-J
Metals	COBALT	280-116469-1	SCLmw-002-181002-GW	0.070	1.0	J	J	RepLimit-J
Metals	COBALT	280-116053-1	WBGMW-006-181001-GW	0.34	1.0	J	J	RepLimit-J
Metals	COBALT	280-116053-1	WBGMW-020-181001-GW	0.48	1.0	J	J	RepLimit-J
Metals	COBALT	280-116053-1	WBGMW-021-181001-GW	0.23	1.0	J	J	RepLimit-J
Metals	COBALT	280-116020-1	WBGmw-009-181001-GW	0.16	1.0	J	J	RepLimit-J
Metals	COPPER	280-116020-1	DET-004-181001-GW	1.3	2.0	J	J	RepLimit-J
Metals	COPPER	280-116407-1	LL12mw-187-181001-GW	1.1	2.0	J	J	RepLimit-J
Metals	COPPER	280-116336-1	LL12mw-242-181001-GW	1.5	2.0	J	J	RepLimit-J
Metals	COPPER	280-116407-1	LL12mw-245-181001-GW	1.1	2.0	J	J	RepLimit-J
Metals	COPPER	280-116270-1	LL1mw-087-181001-GW	0.72	2.0	J	J	RepLimit-J
Metals	COPPER	280-115877-1	RQLmw-009-181001-GW	1.4	2.0	J	J	RepLimit-J
Metals	COPPER	280-116538-1	SCLmw-001-181001-GW	1.7	2.0	J	J	RepLimit-J
Metals	COPPER	280-116538-1	SCLmw-003-181001-GW	1.3	2.0	J	J	RepLimit-J
Metals	IRON	280-116053-1	FWGMW-004-181001-GW	72	100	J	J	RepLimit-J
Metals	IRON	280-116336-1	FWGmw-007-181001-GW	270	100		U	ProJudge-U
Metals	IRON	280-116407-1	LL12mw-187-181001-GW	39	100	J	J	RepLimit-J
Metals	IRON	280-116053-1	LL1MW-065-181001-GW	31	100	J	J	RepLimit-J
Metals	IRON	280-116270-1	SCFmw-004-181001-GW	38	100	J	J	RepLimit-J
Metals	IRON	280-116538-1	SCLmw-001-181001-GW	90	100	J	J	RepLimit-J
Metals	IRON	280-116053-1	WBGMW-006-181001-GW	42	100	J	J	RepLimit-J
Metals	LEAD	280-116053-1	FWGMW-011-181001-GW	0.18	3.0	J	J	RepLimit-J
Metals	LEAD	280-116407-1	LL12mw-187-181001-GW	0.23	3.0	J	J	RepLimit-J
Metals	LEAD	280-116336-1	LL12mw-242-181001-GW	0.93	3.0	J	J	RepLimit-J
Metals	LEAD	280-116336-1	LL12mw-242-181001-GW	1.4	3.0	J	J	RepLimit-J
Metals	LEAD	280-116407-1	LL12mw-245-181001-GW	0.94	3.0	J	J	RepLimit-J
Metals	LEAD	280-116303-1	LL12mw-247-181001-GW	0.44	3.0	J	J	RepLimit-J
Metals	LEAD	280-115950-1	LL1mw-064-181001-GW	0.18	3.0	J	J	RepLimit-J
Metals	LEAD	280-116020-1	LL1mw-084-181001-GW	1.0	3.0	J	J	RepLimit-J
Metals	LEAD	280-116336-1	NTAmw-119-181001-GW	0.26	3.0	J	J	RepLimit-J
Metals	LEAD	280-116336-1	NTAmw-119-181002-GW	0.22	3.0	J	J	RepLimit-J
Metals	LEAD	280-115877-1	RQLmw-009-181001-GW	0.76	3.0	J	J	RepLimit-J
Metals	LEAD	280-116270-1	SCFmw-004-181001-GW	2.1	3.0	J	J	RepLimit-J

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	LEAD	280-116538-1	SCLmw-001-181001-GW	0.31	3.0	J	J	RepLimit-J
Metals	LEAD	280-116538-1	SCLmw-003-181001-GW	0.61	3.0	J	J	RepLimit-J
Metals	MANGANESE	280-116020-1	DA2mw-115-181001-GW	110	3.5	J1	J	ProJudge-J
Metals	MANGANESE	280-116020-1	DA2mw-115-181002-GW	100	3.5		J	ProJudge-J
Metals	MANGANESE	280-116053-1	FWGMW-004-181001-GW	3.1	3.5	J	J	RepLimit-J
Metals	MANGANESE	280-116336-1	FWGmw-007-181001-GW	130	3.5	Q	J	ProJudge-J
Metals	MANGANESE	280-116186-1	FWGmw-017-181001-GW	310	3.5	J1	J	ProJudge-J
Metals	MANGANESE	280-116407-1	LL12mw-187-181001-GW	2500	3.5	Q	J	ProJudge-J
Metals	MANGANESE	280-116336-1	LL12mw-242-181001-GW	120	3.5	Q	J	ProJudge-J
Metals	MANGANESE	280-116407-1	LL12mw-245-181001-GW	230	3.5	Q	J	ProJudge-J
Metals	MANGANESE	280-116270-1	LL3mw-244-181001-GW	0.50	3.5	J	J	RepLimit-J
Metals	MANGANESE	280-116186-1	LL3mw-246-181001-GW	0.67	3.5	J	J	RepLimit-J
Metals	MANGANESE	280-116336-1	LL7mw-001-181001-GW	400	3.5	Q	J	ProJudge-J
Metals	MANGANESE	280-116336-1	NTAmw-119-181001-GW	330	3.5	Q	J	ProJudge-J
Metals	MANGANESE	280-116336-1	NTAmw-119-181002-GW	330	3.5	Q	J	ProJudge-J
Metals	MERCURY	280-116336-1	FWGmw-007-181001-GW	0.050	0.20	J	J	RepLimit-J
Metals	MERCURY	280-116303-1	LL10mw-003-181001-GW	0.045	0.20	J	J	RepLimit-J
Metals	MERCURY	280-116303-1	LL10mw-003-181002-GW	0.048	0.20	J	J	RepLimit-J
Metals	MERCURY	280-116303-1	LL10mw-005-181001-GW	0.050	0.20	J	J	RepLimit-J
Metals	MERCURY	280-116407-1	LL12mw-187-181001-GW	0.047	0.20	J	J	RepLimit-J
Metals	MERCURY	280-116336-1	LL12mw-242-181001-GW	0.08	0.20	J	U	RepLimit-J, ProJudge-U
Metals	MERCURY	280-116407-1	LL12mw-245-181001-GW	0.063	0.20	J	J	RepLimit-J
Metals	MERCURY	280-116303-1	LL12mw-247-181001-GW	0.042	0.20	J	J	RepLimit-J
Metals	MERCURY	280-116336-1	LL7mw-001-181001-GW	0.052	0.20	J	J	RepLimit-J
Metals	MERCURY	280-116336-1	NTAmw-119-181001-GW	0.045	0.20	J	J	RepLimit-J
Metals	MERCURY	280-116336-1	NTAmw-119-181002-GW	0.047	0.20	J	J	RepLimit-J
Metals	MERCURY	280-116538-1	SCLmw-001-181001-GW	0.08	0.20	J	U	MB-U, RepLimit-J
Metals	MERCURY	280-116469-1	SCLmw-002-181001-GW	0.08	0.20	J	U	MB-U, RepLimit-J
Metals	MERCURY	280-116469-1	SCLmw-002-181002-GW	0.08	0.20	J	U	MB-U, RepLimit-J
Metals	MERCURY	280-116538-1	SCLmw-003-181001-GW	0.08	0.20	J	U	MB-U, RepLimit-J
Metals	NICKEL	280-116020-1	DET-004-181001-GW	0.81	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116053-1	FWGMW-004-181001-GW	0.30	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116053-1	FWGMW-011-181001-GW	1.3	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116053-1	FWGMW-012-181001-GW	0.98	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116336-1	FWGmw-007-181001-GW	1.4	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116186-1	FWGmw-015-181001-GW	1.2	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116270-1	FWGmw-016-181001-GW	0.88	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116186-1	FWGmw-017-181001-GW	1.0	3.0	J	J	RepLimit-J

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	NICKEL	280-116270-1	FWGmw-020-181001-GW	2.3	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116186-1	FWGmw-021-181001-GW	10	3.0		J	ProJudge-J
Metals	NICKEL	280-116186-1	FWGmw-024-181001-GW	1.5	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116303-1	LL10mw-005-181001-GW	0.95	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116336-1	LL12mw-242-181001-GW	2.8	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116336-1	LL12mw-242-181001-GW	1.3	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116303-1	LL12mw-247-181001-GW	1.4	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116270-1	LL1mw-087-181001-GW	2.1	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116186-1	LL2mw-059-181001-GW	5.9	3.0		J	ProJudge-J
Metals	NICKEL	280-116186-1	LL2mw-267-181001-GW	3.1	3.0		J	ProJudge-J
Metals	NICKEL	280-116186-1	LL3mw-246-181001-GW	1.5	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116538-1	SCLmw-001-181001-GW	9.8	3.0		J	ProJudge-J
Metals	NICKEL	280-116469-1	SCLmw-002-181001-GW	1.0	3.0	U	UJ	ProJudge-UJ
Metals	NICKEL	280-116469-1	SCLmw-002-181002-GW	1.0	3.0	U	UJ	ProJudge-UJ
Metals	NICKEL	280-116538-1	SCLmw-003-181001-GW	14	3.0		J	ProJudge-J
Metals	NICKEL	280-116053-1	WBGMW-020-181001-GW	2.7	3.0	J	J	RepLimit-J
Metals	NICKEL	280-116020-1	WBGmw-009-181001-GW	0.92	3.0	J	J	RepLimit-J
Metals	POTASSIUM	280-116020-1	DET-003-181001-GW	2300	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116020-1	DET-004-181001-GW	1700	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116053-1	FWGMW-004-181001-GW	1100	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116053-1	FWGMW-011-181001-GW	1800	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116053-1	FWGMW-012-181001-GW	1100	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116336-1	FWGmw-007-181001-GW	2400	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116270-1	FWGmw-016-181001-GW	2200	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116186-1	FWGmw-017-181001-GW	1800	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116270-1	FWGmw-018-181001-GW	2200	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116186-1	FWGmw-021-181001-GW	1500	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116186-1	FWGmw-024-181001-GW	990	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116303-1	LL10mw-003-181001-GW	500	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116303-1	LL10mw-003-181002-GW	650	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116303-1	LL10mw-005-181001-GW	580	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116336-1	LL12mw-242-181001-GW	2100	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116303-1	LL12mw-247-181001-GW	2700	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116053-1	LL1MW-065-181001-GW	1300	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-115950-1	LL1mw-064-181001-GW	1000	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116270-1	LL1mw-087-181001-GW	920	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-115950-1	LL1mw-088-181001-GW	2500	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-115950-1	LL1mw-088-181002-GW	2500	3000	J	J	RepLimit-J

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	POTASSIUM	280-116186-1	LL2mw-059-181001-GW	710	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116186-1	LL2mw-267-181001-GW	630	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116270-1	LL3mw-244-181001-GW	1300	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116186-1	LL3mw-246-181001-GW	1300	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116336-1	LL7mw-001-181001-GW	940	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116336-1	NTAmw-119-181001-GW	1100	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116336-1	NTAmw-119-181002-GW	1200	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116270-1	SCFmw-004-181001-GW	2800	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116053-1	WBGMW-006-181001-GW	1100	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116053-1	WBGMW-020-181001-GW	890	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116053-1	WBGMW-021-181001-GW	1500	3000	J	J	RepLimit-J
Metals	POTASSIUM	280-116020-1	WBGmw-009-181001-GW	620	3000	J	J	RepLimit-J
Metals	Phosphorus	280-115950-1	RQLmw-007-181001-GW	56	3000	J	J	RepLimit-J
Metals	Phosphorus	280-116469-1	SCLmw-002-181001-GW	110	3000	J J1	J	MS-J, RepLimit-J
Metals	Phosphorus	280-116469-1	SCLmw-002-181002-GW	100	3000	J	J	RepLimit-J
Metals	SELENIUM	280-116053-1	FWGMW-004-181001-GW	0.94	5.0	J	J	RepLimit-J
Metals	SELENIUM	280-116186-1	FWGmw-015-181001-GW	2.0	5.0	U Q	U	ProJudge-U
Metals	SELENIUM	280-116186-1	FWGmw-021-181001-GW	2.0	5.0	U Q	U	ProJudge-U
Metals	SELENIUM	280-116020-1	LL1mw-084-181001-GW	1.5	5.0	J	J	RepLimit-J
Metals	SELENIUM	280-116186-1	LL2mw-059-181001-GW	2.0	5.0	U Q	U	ProJudge-U
Metals	SELENIUM	280-116186-1	LL2mw-267-181001-GW	2.0	5.0	U Q	U	ProJudge-U
Metals	SELENIUM	280-116186-1	LL3mw-246-181001-GW	2.0	5.0	U Q	U	ProJudge-U
Metals	SELENIUM	280-116538-1	SCLmw-001-181001-GW	0.85	5.0	J	J	RepLimit-J
Metals	SELENIUM	280-116538-1	SCLmw-003-181001-GW	0.90	5.0	J	J	RepLimit-J
Metals	SILVER	280-116186-1	FWGmw-017-181001-GW	0.10	5.0	U J1	UJ	ProJudge-UJ
Metals	SILVER	280-116538-1	SCLmw-001-181001-GW	0.18	5.0	J	J	RepLimit-J
Metals	SILVER	280-116538-1	SCLmw-003-181001-GW	0.10	5.0	U	UJ	ProJudge-UJ
Metals	SODIUM	280-116020-1	DET-004-181001-GW	2300	5000	J	J	RepLimit-J
Metals	SODIUM	280-116053-1	FWGMW-004-181001-GW	4100	5000	J	J	RepLimit-J
Metals	SODIUM	280-116336-1	FWGmw-007-181001-GW	11000	5000		J	ProJudge-J
Metals	SODIUM	280-116186-1	FWGmw-015-181001-GW	45000	5000		J	ProJudge-J
Metals	SODIUM	280-116270-1	FWGmw-016-181001-GW	11000	5000		J	ProJudge-J
Metals	SODIUM	280-116270-1	FWGmw-018-181001-GW	16000	5000		J	ProJudge-J
Metals	SODIUM	280-116270-1	FWGmw-020-181001-GW	16000	5000		J	ProJudge-J
Metals	SODIUM	280-116186-1	FWGmw-021-181001-GW	3900	5000	J	J	RepLimit-J
Metals	SODIUM	280-116303-1	LL10mw-005-181001-GW	4400	5000	J	J	RepLimit-J
Metals	SODIUM	280-116407-1	LL12mw-187-181001-GW	42000	5000		J	ProJudge-J
Metals	SODIUM	280-116336-1	LL12mw-242-181001-GW	22000	5000		J	ProJudge-J

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	SODIUM	280-116407-1	LL12mw-245-181001-GW	26000	5000		J	ProJudge-J
Metals	SODIUM	280-116407-1	LL12mw-245-181001-GW	27000	5000		J	ProJudge-J
Metals	SODIUM	280-116020-1	LL1mw-084-181001-GW	3700	5000	J	J	RepLimit-J
Metals	SODIUM	280-116270-1	LL1mw-087-181001-GW	14000	5000		J	ProJudge-J
Metals	SODIUM	280-116186-1	LL2mw-059-181001-GW	3100	5000	J	J	RepLimit-J
Metals	SODIUM	280-116186-1	LL2mw-267-181001-GW	7400	5000		J	ProJudge-J
Metals	SODIUM	280-116270-1	LL3mw-244-181001-GW	3200	5000	J	J	RepLimit-J
Metals	SODIUM	280-116186-1	LL3mw-246-181001-GW	3300	5000	J	J	RepLimit-J
Metals	SODIUM	280-116336-1	LL7mw-001-181001-GW	6300	5000		J	ProJudge-J
Metals	SODIUM	280-116336-1	NTAmw-119-181002-GW	7300	5000		J	ProJudge-J
Metals	SODIUM	280-115950-1	RQLmw-008-181001-GW	3600	5000	J	J	RepLimit-J
Metals	SODIUM	280-115877-1	RQLmw-009-181001-GW	1300	5000	J	J	RepLimit-J
Metals	SODIUM	280-116270-1	SCFmw-004-181001-GW	13000	5000		J	ProJudge-J
Metals	SODIUM	280-116538-1	SCLmw-001-181001-GW	24000	5000		J	ProJudge-J
Metals	SODIUM	280-116469-1	SCLmw-002-181001-GW	8200	5000		J	ProJudge-J
Metals	SODIUM	280-116469-1	SCLmw-002-181002-GW	8200	5000		J	ProJudge-J
Metals	SODIUM	280-116538-1	SCLmw-003-181001-GW	26000	5000		J	ProJudge-J
Metals	SODIUM	280-116053-1	WBGMW-020-181001-GW	3900	5000	J	J	RepLimit-J
Metals	SODIUM	280-116053-1	WBGMW-021-181001-GW	4700	5000	J	J	RepLimit-J
Metals	SODIUM	280-116020-1	WBGmw-009-181001-GW	3600	5000	J	J	RepLimit-J
Metals	THALLIUM	280-116407-1	LL12mw-187-181001-GW	0.84	1.0	J	J	RepLimit-J
Metals	THALLIUM	280-116336-1	LL12mw-242-181001-GW	0.056	1.0	J	J	RepLimit-J
Metals	THALLIUM	280-116407-1	LL12mw-245-181001-GW	0.056	1.0	J	J	RepLimit-J
Metals	THALLIUM	280-116053-1	LL1MW-086-181001-GW	0.079	1.0	J	J	RepLimit-J
Metals	THALLIUM	280-116020-1	LL1mw-084-181001-GW	0.46	1.0	J	J	RepLimit-J
Metals	THALLIUM	280-116270-1	LL1mw-087-181001-GW	0.069	1.0	J	J	RepLimit-J
Metals	THALLIUM	280-115950-1	LL1mw-088-181002-GW	0.057	1.0	J	J	RepLimit-J
Metals	THALLIUM	280-116336-1	LL7mw-001-181001-GW	0.15	1.0	J	J	RepLimit-J
Metals	THALLIUM	280-115950-1	RQLmw-008-181001-GW	0.26	1.0	J	J	RepLimit-J
Metals	THALLIUM	280-115877-1	RQLmw-009-181001-GW	0.11	1.0	J	J	RepLimit-J
Metals	THALLIUM	280-116538-1	SCLmw-003-181001-GW	0.096	1.0	J	J	RepLimit-J
Metals	VANADIUM	280-116186-1	FWGmw-015-181001-GW	2.0	6.0	U Q	U	ProJudge-U
Metals	VANADIUM	280-116186-1	FWGmw-017-181001-GW	2.0	6.0	U Q	U	ProJudge-U
Metals	VANADIUM	280-116186-1	FWGmw-021-181001-GW	2	6.0	J Q	UJ	MB-U, RepLimit-J, ProJudge-UJ
Metals	VANADIUM	280-116186-1	FWGmw-024-181001-GW	2.0	6.0	U Q	U	ProJudge-U
Metals	VANADIUM	280-116336-1	LL12mw-242-181001-GW	2	6.0	J	U	RepLimit-J, ProJudge-U
Metals	VANADIUM	280-116407-1	LL12mw-245-181001-GW	2.8	6.0	J	U	RepLimit-J, ProJudge-U

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	VANADIUM	280-116407-1	LL12mw-245-181001-GW	2.0	6.0	J	U	RepLimit-J, ProJudge-U
Metals	VANADIUM	280-116053-1	LL1MW-086-181001-GW	6.2	6.0		UJ	ProJudge-UJ
Metals	VANADIUM	280-116186-1	LL2mw-059-181001-GW	2.0	6.0	U Q	U	ProJudge-U
Metals	VANADIUM	280-116186-1	LL2mw-267-181001-GW	2.0	6.0	U Q	U	ProJudge-U
Metals	VANADIUM	280-116186-1	LL3mw-246-181001-GW	2.0	6.0	U Q	U	ProJudge-U
Metals	ZINC	280-116020-1	DA2mw-115-181001-GW	2.2	20	J	J	RepLimit-J
Metals	ZINC	280-116053-1	FWGMW-011-181001-GW	2.4	20	J	J	RepLimit-J
Metals	ZINC	280-116336-1	FWGmw-007-181001-GW	2.2	20	J	J	RepLimit-J
Metals	ZINC	280-116407-1	LL12mw-187-181001-GW	5.8	20	J	J	RepLimit-J
Metals	ZINC	280-116336-1	LL12mw-242-181001-GW	6.9	20	J	J	RepLimit-J
Metals	ZINC	280-116336-1	LL12mw-242-181001-GW	3.9	20	J	J	RepLimit-J
Metals	ZINC	280-116407-1	LL12mw-245-181001-GW	12	20	J	J	RepLimit-J
Metals	ZINC	280-116407-1	LL12mw-245-181001-GW	8	20	J	U	MB-U, RepLimit-J, ProJudge-U
Metals	ZINC	280-116303-1	LL12mw-247-181001-GW	4.4	20	J	J	RepLimit-J
Metals	ZINC	280-116270-1	LL1mw-087-181001-GW	3.5	20	J	J	RepLimit-J
Metals	ZINC	280-115950-1	LL1mw-088-181002-GW	3.5	20	J	J	RepLimit-J
Metals	ZINC	280-116270-1	LL3mw-244-181001-GW	3.0	20	J	J	RepLimit-J
Metals	ZINC	280-115950-1	RQLmw-007-181001-GW	3.5	20	J	J	RepLimit-J
Metals	ZINC	280-116538-1	SCLmw-001-181001-GW	8	20	J	U	MB-U, RepLimit-J
Metals	ZINC	280-116469-1	SCLmw-002-181002-GW	8	20	J	U	MB-U, RepLimit-J, ProJudge-U
Metals	ZINC	280-116538-1	SCLmw-003-181001-GW	8	20	J	U	MB-U, RepLimit-J
Metals	ZINC	280-116020-1	WBGmw-009-181001-GW	2.4	20	J	J	RepLimit-J
Explosives	1,3,5-TRINITROBENZENE	280-116053-1	FWGMW-004-181001-GW	0.40	0.99	U Q	UJ	Surr-UJ
Explosives	1,3,5-TRINITROBENZENE	280-116053-1	FWGMW-011-181001-GW	0.39	0.98	U Q	UJ	Surr-UJ
Explosives	1,3,5-TRINITROBENZENE	280-116053-1	FWGMW-012-181001-GW	0.40	1.0	U Q	UJ	Surr-UJ
Explosives	1,3,5-TRINITROBENZENE	280-116053-1	LL1MW-065-181001-GW	0.39	0.97	U Q	UJ	Surr-UJ
Explosives	1,3,5-TRINITROBENZENE	280-116053-1	LL1MW-086-181001-GW	0.43	1.1	U Q	UJ	Surr-UJ
Explosives	1,3,5-TRINITROBENZENE	280-115950-1	RQLmw-008-181001-GW	0.42	1.1	U	UJ	Surr-UJ
Explosives	1,3,5-TRINITROBENZENE	280-116053-1	WBGMW-006-181001-GW	0.41	1.0	U Q	UJ	Surr-UJ
Explosives	1,3,5-TRINITROBENZENE	280-116053-1	WBGMW-020-181001-GW	0.40	0.99	U Q	UJ	Surr-UJ
Explosives	1,3,5-TRINITROBENZENE	280-116053-1	WBGMW-021-181001-GW	0.42	1.0	U Q	UJ	Surr-UJ
Explosives	1,3,5-TRINITROBENZENE	280-116020-1	WBGmw-009-181001-GW	0.40	1.0	U Q	UJ	Surr-UJ
Explosives	1,3-DINITROBENZENE	280-116053-1	FWGMW-004-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	1,3-DINITROBENZENE	280-116053-1	FWGMW-011-181001-GW	0.20	0.39	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	1,3-DINITROBENZENE	280-116053-1	FWGMW-012-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	1,3-DINITROBENZENE	280-116053-1	LL1MW-065-181001-GW	0.19	0.39	U Q	UJ	Surr-UJ, LCS-UJ

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Explosives	1,3-DINITROBENZENE	280-116053-1	LL1MW-086-181001-GW	0.21	0.43	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	1,3-DINITROBENZENE	280-116020-1	LL1mw-084-181001-GW	1.2	0.42	M J1	J	ProJudge-J
Explosives	1,3-DINITROBENZENE	280-116186-1	LL2mw-059-181001-GW	0.27	0.38	J J1	J	ProJudge-J
Explosives	1,3-DINITROBENZENE	280-115950-1	RQLmw-008-181001-GW	0.21	0.42	U	UJ	Surr-UJ
Explosives	1,3-DINITROBENZENE	280-116053-1	WBGMW-006-181001-GW	0.21	0.41	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	1,3-DINITROBENZENE	280-116053-1	WBGMW-020-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	1,3-DINITROBENZENE	280-116053-1	WBGMW-021-181001-GW	0.21	0.42	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	1,3-DINITROBENZENE	280-116020-1	WBGmw-009-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,4,6-TRINITROTOLUENE	280-116053-1	FWGMW-004-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ
Explosives	2,4,6-TRINITROTOLUENE	280-116053-1	FWGMW-011-181001-GW	0.20	0.39	U Q	UJ	Surr-UJ
Explosives	2,4,6-TRINITROTOLUENE	280-116053-1	FWGMW-012-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ
Explosives	2,4,6-TRINITROTOLUENE	280-116053-1	LL1MW-065-181001-GW	0.19	0.39	U Q	UJ	Surr-UJ
Explosives	2,4,6-TRINITROTOLUENE	280-116053-1	LL1MW-086-181001-GW	0.21	0.43	U Q	UJ	Surr-UJ
Explosives	2,4,6-TRINITROTOLUENE	280-116186-1	LL2mw-267-181001-GW	0.11	0.39	J	J	RepLimit-J
Explosives	2,4,6-TRINITROTOLUENE	280-115950-1	RQLmw-008-181001-GW	0.21	0.42	U	UJ	Surr-UJ
Explosives	2,4,6-TRINITROTOLUENE	280-116053-1	WBGMW-006-181001-GW	0.21	0.41	U Q	UJ	Surr-UJ
Explosives	2,4,6-TRINITROTOLUENE	280-116053-1	WBGMW-020-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ
Explosives	2,4,6-TRINITROTOLUENE	280-116053-1	WBGMW-021-181001-GW	0.21	0.42	U Q	UJ	Surr-UJ
Explosives	2,4,6-TRINITROTOLUENE	280-116020-1	WBGmw-009-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ
Explosives	2,4-DINITROTOLUENE	280-116053-1	FWGMW-004-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,4-DINITROTOLUENE	280-116053-1	FWGMW-011-181001-GW	0.20	0.39	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,4-DINITROTOLUENE	280-116053-1	FWGMW-012-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,4-DINITROTOLUENE	280-116053-1	LL1MW-065-181001-GW	0.19	0.39	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,4-DINITROTOLUENE	280-116053-1	LL1MW-086-181001-GW	0.21	0.43	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,4-DINITROTOLUENE	280-116186-1	LL2mw-267-181001-GW	0.12	0.39	J	J	RepLimit-J
Explosives	2,4-DINITROTOLUENE	280-115950-1	RQLmw-008-181001-GW	0.21	0.42	U Q	UJ	Surr-UJ
Explosives	2,4-DINITROTOLUENE	280-116053-1	WBGMW-006-181001-GW	0.21	0.41	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,4-DINITROTOLUENE	280-116053-1	WBGMW-020-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,4-DINITROTOLUENE	280-116053-1	WBGMW-021-181001-GW	0.21	0.42	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,4-DINITROTOLUENE	280-116020-1	WBGmw-009-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,6-DINITROTOLUENE	280-116053-1	FWGMW-004-181001-GW	0.20	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,6-DINITROTOLUENE	280-116053-1	FWGMW-011-181001-GW	0.20	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,6-DINITROTOLUENE	280-116053-1	FWGMW-012-181001-GW	0.20	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,6-DINITROTOLUENE	280-116053-1	LL1MW-065-181001-GW	0.19	0.19	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,6-DINITROTOLUENE	280-116053-1	LL1MW-086-181001-GW	0.21	0.21	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,6-DINITROTOLUENE	280-115950-1	RQLmw-008-181001-GW	0.21	0.21	U	UJ	Surr-UJ
Explosives	2,6-DINITROTOLUENE	280-116053-1	WBGMW-006-181001-GW	0.21	0.21	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,6-DINITROTOLUENE	280-116053-1	WBGMW-020-181001-GW	0.20	0.20	U Q	UJ	Surr-UJ, LCS-UJ

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Explosives	2,6-DINITROTOLUENE	280-116053-1	WBGMW-021-181001-GW	0.21	0.21	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2,6-DINITROTOLUENE	280-116020-1	WBGmw-009-181001-GW	0.20	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-AMINO-4,6-DINITROTOLUENE	280-116053-1	FWGMW-004-181001-GW	0.12	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-AMINO-4,6-DINITROTOLUENE	280-116053-1	FWGMW-011-181001-GW	0.12	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-AMINO-4,6-DINITROTOLUENE	280-116053-1	FWGMW-012-181001-GW	0.12	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-AMINO-4,6-DINITROTOLUENE	280-116053-1	LL1MW-065-181001-GW	0.12	0.19	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-AMINO-4,6-DINITROTOLUENE	280-116053-1	LL1MW-086-181001-GW	0.13	0.21	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-AMINO-4,6-DINITROTOLUENE	280-115950-1	RQLmw-008-181001-GW	0.13	0.21	U	UJ	Surr-UJ
Explosives	2-AMINO-4,6-DINITROTOLUENE	280-116053-1	WBGMW-006-181001-GW	0.12	0.21	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-AMINO-4,6-DINITROTOLUENE	280-116053-1	WBGMW-020-181001-GW	0.12	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-AMINO-4,6-DINITROTOLUENE	280-116053-1	WBGMW-021-181001-GW	0.13	0.21	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-AMINO-4,6-DINITROTOLUENE	280-116020-1	WBGmw-009-181001-GW	0.12	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-NITROTOLUENE	280-116053-1	FWGMW-004-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-NITROTOLUENE	280-116053-1	FWGMW-011-181001-GW	0.20	0.39	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-NITROTOLUENE	280-116053-1	FWGMW-012-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-NITROTOLUENE	280-116270-1	FWGmw-016-181001-GW	0.22	0.44	U	UJ	ProJudge-UJ
Explosives	2-NITROTOLUENE	280-116270-1	FWGmw-018-181001-GW	0.21	0.42	U Q	UJ	ProJudge-UJ
Explosives	2-NITROTOLUENE	280-116186-1	FWGmw-021-181001-GW	0.22	0.43	U J1	UJ	MS-UJ
Explosives	2-NITROTOLUENE	280-116053-1	LL1MW-065-181001-GW	0.19	0.39	U Q M	UJ	Surr-UJ, LCS-UJ
Explosives	2-NITROTOLUENE	280-116053-1	LL1MW-086-181001-GW	0.21	0.43	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-NITROTOLUENE	280-116270-1	LL1mw-087-181001-GW	0.23	0.47	U	UJ	ProJudge-UJ
Explosives	2-NITROTOLUENE	280-116270-1	LL3mw-237-181001-GW	0.22	0.43	U	UJ	ProJudge-UJ
Explosives	2-NITROTOLUENE	280-116270-1	LL3mw-244-181001-GW	0.21	0.42	U	UJ	ProJudge-UJ
Explosives	2-NITROTOLUENE	280-115950-1	RQLmw-008-181001-GW	0.21	0.42	U M	UJ	Surr-UJ
Explosives	2-NITROTOLUENE	280-116270-1	SCFmw-004-181001-GW	0.21	0.43	U	UJ	ProJudge-UJ
Explosives	2-NITROTOLUENE	280-116469-1	SCLmw-002-181001-GW	0.21	0.41	U J1	UJ	MS-UJ
Explosives	2-NITROTOLUENE	280-116469-1	SCLmw-002-181002-GW	0.22	0.43	U	UJ	ProJudge-UJ
Explosives	2-NITROTOLUENE	280-116053-1	WBGMW-006-181001-GW	0.21	0.41	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-NITROTOLUENE	280-116053-1	WBGMW-020-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-NITROTOLUENE	280-116053-1	WBGMW-021-181001-GW	0.21	0.42	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	2-NITROTOLUENE	280-116020-1	WBGmw-009-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	3-NITROTOLUENE	280-116053-1	FWGMW-004-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	3-NITROTOLUENE	280-116053-1	FWGMW-011-181001-GW	0.20	0.39	U Q M	UJ	Surr-UJ, LCS-UJ
Explosives	3-NITROTOLUENE	280-116053-1	FWGMW-012-181001-GW	0.20	0.40	U Q M	UJ	Surr-UJ, LCS-UJ
Explosives	3-NITROTOLUENE	280-116270-1	FWGmw-016-181001-GW	0.22	0.44	U Q	UJ	LCS-UJ, ProJudge-UJ
Explosives	3-NITROTOLUENE	280-116053-1	LL1MW-065-181001-GW	0.19	0.39	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	3-NITROTOLUENE	280-116053-1	LL1MW-086-181001-GW	0.21	0.43	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	3-NITROTOLUENE	280-116270-1	LL1mw-087-181001-GW	0.23	0.47	U Q	UJ	LCS-UJ

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Explosives	3-NITROTOLUENE	280-116270-1	LL3mw-237-181001-GW	0.22	0.43	U Q	UJ	LCS-UJ, ProJudge-UJ
Explosives	3-NITROTOLUENE	280-116270-1	LL3mw-244-181001-GW	0.21	0.42	U Q	UJ	LCS-UJ, ProJudge-UJ
Explosives	3-NITROTOLUENE	280-115950-1	RQLmw-008-181001-GW	0.21	0.42	U M	UJ	Surr-UJ
Explosives	3-NITROTOLUENE	280-116270-1	SCFmw-004-181001-GW	0.21	0.43	U Q	UJ	LCS-UJ, ProJudge-UJ
Explosives	3-NITROTOLUENE	280-116053-1	WBGMW-006-181001-GW	0.21	0.41	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	3-NITROTOLUENE	280-116053-1	WBGMW-020-181001-GW	0.20	0.40	U Q M	UJ	Surr-UJ, LCS-UJ
Explosives	3-NITROTOLUENE	280-116053-1	WBGMW-021-181001-GW	0.21	0.42	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	3-NITROTOLUENE	280-116020-1	WBGmw-009-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	4-AMINO-2,6-DINITROTOLUENE	280-116053-1	FWGMW-004-181001-GW	0.12	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	4-AMINO-2,6-DINITROTOLUENE	280-116053-1	FWGMW-011-181001-GW	0.12	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	4-AMINO-2,6-DINITROTOLUENE	280-116053-1	FWGMW-012-181001-GW	0.12	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	4-AMINO-2,6-DINITROTOLUENE	280-116053-1	LL1MW-065-181001-GW	0.12	0.19	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	4-AMINO-2,6-DINITROTOLUENE	280-116053-1	LL1MW-086-181001-GW	0.13	0.21	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	4-AMINO-2,6-DINITROTOLUENE	280-115950-1	RQLmw-008-181001-GW	0.13	0.21	U M	UJ	Surr-UJ
Explosives	4-AMINO-2,6-DINITROTOLUENE	280-116053-1	WBGMW-006-181001-GW	0.12	0.21	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	4-AMINO-2,6-DINITROTOLUENE	280-116053-1	WBGMW-020-181001-GW	0.12	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	4-AMINO-2,6-DINITROTOLUENE	280-116053-1	WBGMW-021-181001-GW	0.13	0.21	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	4-AMINO-2,6-DINITROTOLUENE	280-116020-1	WBGmw-009-181001-GW	0.12	0.20	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	4-NITROTOLUENE	280-116053-1	FWGMW-004-181001-GW	0.40	0.99	U Q M	UJ	Surr-UJ, LCS-UJ
Explosives	4-NITROTOLUENE	280-116053-1	FWGMW-011-181001-GW	0.39	0.98	U Q M	UJ	Surr-UJ, LCS-UJ
Explosives	4-NITROTOLUENE	280-116053-1	FWGMW-012-181001-GW	0.40	1.0	U Q M	UJ	Surr-UJ, LCS-UJ
Explosives	4-NITROTOLUENE	280-116053-1	LL1MW-065-181001-GW	0.39	0.97	U Q M	UJ	Surr-UJ, LCS-UJ
Explosives	4-NITROTOLUENE	280-116053-1	LL1MW-086-181001-GW	0.43	1.1	U Q M	UJ	Surr-UJ, LCS-UJ
Explosives	4-NITROTOLUENE	280-115950-1	RQLmw-008-181001-GW	0.42	1.1	U M	UJ	Surr-UJ
Explosives	4-NITROTOLUENE	280-116053-1	WBGMW-006-181001-GW	0.41	1.0	U Q	UJ	Surr-UJ, LCS-UJ
Explosives	4-NITROTOLUENE	280-116053-1	WBGMW-020-181001-GW	0.40	0.99	U Q M	UJ	Surr-UJ, LCS-UJ
Explosives	4-NITROTOLUENE	280-116053-1	WBGMW-021-181001-GW	0.42	1.0	U Q M	UJ	Surr-UJ, LCS-UJ
Explosives	4-NITROTOLUENE	280-116020-1	WBGmw-009-181001-GW	0.40	1.0	U Q M	UJ	Surr-UJ, LCS-UJ
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116053-1	FWGMW-004-181001-GW	0.12	0.20	U Q	UJ	Surr-UJ
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116053-1	FWGMW-011-181001-GW	0.12	0.20	U Q	UJ	Surr-UJ
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116053-1	FWGMW-012-181001-GW	0.12	0.20	U Q	UJ	Surr-UJ
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116186-1	FWGmw-021-181001-GW	0.72	0.22	J1	J	MS-J
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116186-1	FWGmw-021-181002-GW	0.65	0.22	J1	J	ProJudge-J

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116053-1	LL1MW-065-181001-GW	0.12	0.19	U Q	UJ	Surr-UJ
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116053-1	LL1MW-086-181001-GW	0.13	0.21	U Q	UJ	Surr-UJ
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116020-1	LL1mw-083-181001-GW	2.1	0.24	J1	J	ProJudge-J
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116020-1	LL1mw-084-181001-GW	5.2	0.21	M J1	J	ProJudge-J
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116186-1	LL2mw-267-181001-GW	0.79	0.20	M J1	J	ProJudge-J
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116270-1	LL3mw-244-181001-GW	0.14	0.21	J J1	J	RepLimit-J
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116336-1	LL7mw-001-181001-GW	0.75	0.22		J	ProJudge-J
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-115950-1	RQLmw-008-181001-GW	0.85	0.21	M J1	J	Surr-J,MS-J
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116469-1	SCLmw-002-181001-GW	0.17	0.21	J J1 M	J	RepLimit-J
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116053-1	WBGMW-006-181001-GW	7.4	0.21	Q	J	Surr-J
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116053-1	WBGMW-020-181001-GW	0.10	0.20	J Q	J	Surr-J,RepLimit-J
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116053-1	WBGMW-021-181001-GW	0.13	0.21	U Q	UJ	Surr-UJ
Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-116020-1	WBGmw-009-181001-GW	2.8	0.20	Q M	J	Surr-J
Explosives	NITROBENZENE	280-116020-1	DA2mw-115-181001-GW	0.22	0.44	U J1	UJ	MS-UJ
Explosives	NITROBENZENE	280-116053-1	FWGMW-004-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ
Explosives	NITROBENZENE	280-116053-1	FWGMW-011-181001-GW	0.20	0.39	U Q	UJ	Surr-UJ
Explosives	NITROBENZENE	280-116053-1	FWGMW-012-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ
Explosives	NITROBENZENE	280-116186-1	FWGmw-021-181001-GW	0.22	0.43	U J1	UJ	MS-UJ
Explosives	NITROBENZENE	280-116053-1	LL1MW-065-181001-GW	0.19	0.39	U Q	UJ	Surr-UJ
Explosives	NITROBENZENE	280-116053-1	LL1MW-086-181001-GW	0.21	0.43	U Q	UJ	Surr-UJ
Explosives	NITROBENZENE	280-115950-1	RQLmw-008-181001-GW	0.21	0.42	U	UJ	Surr-UJ
Explosives	NITROBENZENE	280-116053-1	WBGMW-006-181001-GW	0.21	0.41	U Q	UJ	Surr-UJ
Explosives	NITROBENZENE	280-116053-1	WBGMW-020-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ
Explosives	NITROBENZENE	280-116053-1	WBGMW-021-181001-GW	0.21	0.42	U Q	UJ	Surr-UJ
Explosives	NITROBENZENE	280-116020-1	WBGmw-009-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Explosives	NITROGLYCERINE	280-116053-1	FWGMW-004-181001-GW	2.0	3.0	U Q	UJ	Surr-UJ
Explosives	NITROGLYCERINE	280-116053-1	FWGMW-011-181001-GW	2.0	2.9	U Q	UJ	Surr-UJ
Explosives	NITROGLYCERINE	280-116053-1	FWGMW-012-181001-GW	2.0	3.0	U Q	UJ	Surr-UJ
Explosives	NITROGLYCERINE	280-116053-1	LL1MW-065-181001-GW	1.9	2.9	U Q	UJ	Surr-UJ
Explosives	NITROGLYCERINE	280-116053-1	LL1MW-086-181001-GW	2.1	3.2	U Q	UJ	Surr-UJ
Explosives	NITROGLYCERINE	280-115950-1	RQLmw-008-181001-GW	2.1	3.2	U M	UJ	Surr-UJ
Explosives	NITROGLYCERINE	280-116053-1	WBGMW-006-181001-GW	2.1	3.1	U Q	UJ	Surr-UJ
Explosives	NITROGLYCERINE	280-116053-1	WBGMW-020-181001-GW	2.0	3.0	U Q	UJ	Surr-UJ
Explosives	NITROGLYCERINE	280-116053-1	WBGMW-021-181001-GW	2.1	3.1	U Q	UJ	Surr-UJ
Explosives	NITROGLYCERINE	280-116020-1	WBGmw-009-181001-GW	2.0	3.0	U Q	UJ	Surr-UJ
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-116053-1	FWGMW-004-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-116053-1	FWGMW-011-181001-GW	0.20	0.39	U Q	UJ	Surr-UJ
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-116053-1	FWGMW-012-181001-GW	0.20	0.40	U Q M	UJ	Surr-UJ
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-116053-1	LL1MW-065-181001-GW	0.19	0.39	U Q M	UJ	Surr-UJ
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-116053-1	LL1MW-086-181001-GW	0.21	0.43	U Q M	UJ	Surr-UJ
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-116020-1	LL1mw-083-181001-GW	1.3	0.47	M J1	J	ProJudge-J
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-116020-1	LL1mw-084-181001-GW	2.4	0.42	M J1	J	ProJudge-J
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-116186-1	LL2mw-267-181001-GW	0.98	0.39	M J1	J	ProJudge-J
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	240-103914-1	LL7mw-006-181001-GW	0.33	0.42	J M	J	RepLimit-J
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-115950-1	RQLmw-008-181001-GW	0.27	0.42	J M	J	Surr-J, RepLimit-J
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-116053-1	WBGMW-006-181001-GW	2.1	0.41	Q M	J	Surr-J
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-116053-1	WBGMW-020-181001-GW	0.20	0.40	U Q	UJ	Surr-UJ
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-116053-1	WBGMW-021-181001-GW	0.21	0.42	U Q	UJ	Surr-UJ
Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-116020-1	WBGmw-009-181001-GW	0.94	0.40	Q M	J	Surr-J

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Explosives	PETN	280-116053-1	FWGMW-004-181001-GW	1.2	2.0	U Q	UJ	Surr-UJ
Explosives	PETN	280-116053-1	FWGMW-011-181001-GW	1.2	2.0	U Q	UJ	Surr-UJ
Explosives	PETN	280-116053-1	FWGMW-012-181001-GW	1.2	2.0	U Q	UJ	Surr-UJ
Explosives	PETN	280-116053-1	LL1MW-065-181001-GW	1.2	1.9	U Q	UJ	Surr-UJ
Explosives	PETN	280-116053-1	LL1MW-086-181001-GW	1.3	2.1	U Q	UJ	Surr-UJ
Explosives	PETN	280-115950-1	RQLmw-008-181001-GW	1.3	2.1	U	UJ	Surr-UJ
Explosives	PETN	280-116053-1	WBGMW-006-181001-GW	1.2	2.1	U Q	UJ	Surr-UJ
Explosives	PETN	280-116053-1	WBGMW-020-181001-GW	1.2	2.0	U Q	UJ	Surr-UJ
Explosives	PETN	280-116053-1	WBGMW-021-181001-GW	1.3	2.1	U Q	UJ	Surr-UJ
Explosives	PETN	280-116020-1	WBGmw-009-181001-GW	1.2	2.0	U Q	UJ	Surr-UJ
Explosives	Tetryl	280-116053-1	FWGMW-004-181001-GW	0.20	0.24	U Q	UJ	Surr-UJ
Explosives	Tetryl	280-116053-1	FWGMW-011-181001-GW	0.20	0.23	U Q	UJ	Surr-UJ
Explosives	Tetryl	280-116053-1	FWGMW-012-181001-GW	0.20	0.24	U Q	UJ	Surr-UJ
Explosives	Tetryl	280-116053-1	LL1MW-065-181001-GW	0.19	0.23	U Q	UJ	Surr-UJ
Explosives	Tetryl	280-116053-1	LL1MW-086-181001-GW	0.21	0.26	U Q	UJ	Surr-UJ
Explosives	Tetryl	280-115950-1	RQLmw-008-181001-GW	0.21	0.25	U M Q	UJ	Surr-UJ
Explosives	Tetryl	280-116053-1	WBGMW-006-181001-GW	0.21	0.25	U Q	UJ	Surr-UJ
Explosives	Tetryl	280-116053-1	WBGMW-020-181001-GW	0.20	0.24	U Q	UJ	Surr-UJ
Explosives	Tetryl	280-116053-1	WBGMW-021-181001-GW	0.21	0.25	U Q	UJ	Surr-UJ
Explosives	Tetryl	280-116020-1	WBGmw-009-181001-GW	0.20	0.24	U Q	UJ	Surr-UJ
Propellants	Nitrocellulose	280-116469-1	SCLmw-002-181001-GW	1000	2000	U	UJ	MS-UJ
PAHs	1-Methylnaphthalene	280-116020-1	DET-004-181001-GW	0.014	0.11	U Q	UJ	Surr-UJ
PAHs	2-METHYLNAPHTHALENE	280-116020-1	DET-004-181001-GW	0.014	0.11	U Q	UJ	Surr-UJ
PAHs	ACENAPHTHENE	280-116020-1	DET-004-181001-GW	0.045	0.11	U Q	UJ	Surr-UJ
PAHs	ACENAPHTHYLENE	280-116020-1	DET-004-181001-GW	0.045	0.11	U Q	UJ	Surr-UJ
PAHs	ANTHRACENE	280-116020-1	DET-004-181001-GW	0.045	0.11	U Q	UJ	Surr-UJ
PAHs	BENZO(A)ANTHRACENE	280-116020-1	DET-004-181001-GW	0.014	0.11	U	UJ	Surr-UJ
PAHs	BENZO(A)ANTHRACENE	280-116186-1	FWGmw-017-181002-GW	0.057	0.11	J	J	RepLimit-J
PAHs	BENZO(A)ANTHRACENE	280-116538-1	SCLmw-003-181001-GW	0.024	0.11	J	J	RepLimit-J
PAHs	BENZO(A)PYRENE	280-116020-1	DET-004-181001-GW	0.014	0.11	U	UJ	Surr-UJ
PAHs	BENZO(A)PYRENE	280-116186-1	FWGmw-017-181002-GW	0.031	0.11	J	J	RepLimit-J
PAHs	BENZO(A)PYRENE	280-115789-1	RQLMW-011-181002-GW	0.0090	0.10	J	J	RepLimit-J
PAHs	BENZO(A)PYRENE	280-116469-1	SCLmw-002-181001-GW	0.012	0.10	U M J1	UJ	MS-UJ
PAHs	BENZO(A)PYRENE	280-116469-1	SCLmw-002-181002-GW	0.013	0.11	U M	UJ	ProJudge-UJ
PAHs	BENZO(A)PYRENE	280-116538-1	SCLmw-003-181001-GW	0.015	0.11	J	J	RepLimit-J
PAHs	BENZO(B)FLUORANTHENE	280-116020-1	DET-004-181001-GW	0.014	0.11	U	UJ	Surr-UJ
PAHs	BENZO(B)FLUORANTHENE	280-116186-1	FWGmw-017-181002-GW	0.056	0.11	J	J	RepLimit-J
PAHs	BENZO(B)FLUORANTHENE	280-116538-1	SCLmw-003-181001-GW	0.032	0.11	J	J	RepLimit-J

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
PAHs	BENZO(G,H,I)PERYLENE	280-116020-1	DET-004-181001-GW	0.014	0.11	U	UJ	Surr-UJ
PAHs	BENZO(G,H,I)PERYLENE	280-116186-1	FWGmw-017-181002-GW	0.047	0.11	J	J	RepLimit-J
PAHs	BENZO(K)FLUORANTHENE	280-116020-1	DET-004-181001-GW	0.014	0.11	U	UJ	Surr-UJ
PAHs	BENZO(K)FLUORANTHENE	280-116186-1	FWGmw-017-181002-GW	0.054	0.11	J	J	RepLimit-J
PAHs	BENZO(K)FLUORANTHENE	280-116538-1	SCLmw-003-181001-GW	0.030	0.11	J	J	RepLimit-J
PAHs	CHRYSENE	280-116020-1	DET-004-181001-GW	0.014	0.11	U	UJ	Surr-UJ
PAHs	CHRYSENE	280-116186-1	FWGmw-017-181002-GW	0.074	0.11	J	J	RepLimit-J
PAHs	CHRYSENE	280-116469-1	SCLmw-002-181002-GW	0.017	0.11	J	J	RepLimit-J
PAHs	CHRYSENE	280-116538-1	SCLmw-003-181001-GW	0.053	0.11	J	J	RepLimit-J
PAHs	DIBENZO(A,H)ANTHRACENE	280-116020-1	DET-004-181001-GW	0.014	0.11	U	UJ	Surr-UJ
PAHs	DIBENZO(A,H)ANTHRACENE	280-116186-1	FWGmw-017-181002-GW	0.021	0.11	J	J	RepLimit-J
PAHs	FLUORANTHENE	280-116020-1	DET-004-181001-GW	0.014	0.11	U Q	UJ	Surr-UJ
PAHs	FLUORANTHENE	280-115950-1	RQLmw-007-181001-GW	0.018	0.11	J	J	RepLimit-J
PAHs	FLUORANTHENE	280-115877-1	RQLmw-009-181001-GW	0.025	0.11	J	J	RepLimit-J
PAHs	FLUORANTHENE	280-116538-1	SCLmw-001-181001-GW	0.014	0.12	J	U	MB-U, RepLimit-J
PAHs	FLUORANTHENE	280-116469-1	SCLmw-002-181002-GW	0.013	0.11	J	U	MB-U, RepLimit-J, ProJudge-U
PAHs	FLUORENE	280-116020-1	DET-004-181001-GW	0.045	0.11	U Q	UJ	Surr-UJ
PAHs	INDENO(1,2,3-CD)PYRENE	280-116020-1	DET-004-181001-GW	0.045	0.11	U	UJ	Surr-UJ
PAHs	INDENO(1,2,3-CD)PYRENE	280-116186-1	FWGmw-017-181002-GW	0.039	0.11	J	J	RepLimit-J
PAHs	INDENO(1,2,3-CD)PYRENE	280-116538-1	SCLmw-003-181001-GW	0.022	0.11	J	J	RepLimit-J
PAHs	NAPHTHALENE	280-116020-1	DET-004-181001-GW	0.014	0.11	U Q	UJ	Surr-UJ
PAHs	NAPHTHALENE	280-116186-1	FWGmw-024-181001-GW	0.036	0.10	J	J	RepLimit-J
PAHs	NAPHTHALENE	280-116407-1	LL12mw-183-181001-GW	0.060	0.11	J	J	RepLimit-J
PAHs	PHENANTHRENE	280-116020-1	DET-004-181001-GW	0.023	0.11	U Q	UJ	Surr-UJ
PAHs	PHENANTHRENE	280-116407-1	LL12mw-183-181001-GW	0.022	0.11	J	U	MB-U, RepLimit-J, ProJudge-U
PAHs	PHENANTHRENE	280-115950-1	RQLmw-007-181001-GW	0.025	0.11	J	J	RepLimit-J
PAHs	PHENANTHRENE	280-115877-1	RQLmw-009-181001-GW	0.020	0.11	J	J	RepLimit-J
PAHs	PHENANTHRENE	280-116538-1	SCLmw-001-181001-GW	0.023	0.12	J	U	MB-U, RepLimit-J
PAHs	PHENANTHRENE	280-116538-1	SCLmw-003-181001-GW	0.022	0.11	J	U	MB-U, RepLimit-J
PAHs	PYRENE	280-116020-1	DET-004-181001-GW	0.023	0.11	U Q	UJ	Surr-UJ
VOCs	1,1,1-TRICHLOROETHANE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,1,1-TRICHLOROETHANE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,1,1-TRICHLOROETHANE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,1,1-TRICHLOROETHANE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,1,1-TRICHLOROETHANE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,1,1-TRICHLOROETHANE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
VOCs	1,1,1-TRICHLOROETHANE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,1,1-TRICHLOROETHANE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,1,2,2-TETRACHLOROETHANE	280-116020-1	DET-003-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2,2-TETRACHLOROETHANE	280-116020-1	DET-003-181002-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2,2-TETRACHLOROETHANE	280-116020-1	DET-004-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2,2-TETRACHLOROETHANE	280-116186-1	FWGmw-017-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2,2-TETRACHLOROETHANE	280-116186-1	FWGmw-021-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2,2-TETRACHLOROETHANE	280-116186-1	FWGmw-024-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2,2-TETRACHLOROETHANE	280-115950-1	RQLmw-007-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2,2-TETRACHLOROETHANE	280-115950-1	RQLmw-008-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2-TRICHLOROETHANE	280-116020-1	DET-003-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2-TRICHLOROETHANE	280-116020-1	DET-003-181002-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2-TRICHLOROETHANE	280-116020-1	DET-004-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2-TRICHLOROETHANE	280-116186-1	FWGmw-017-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2-TRICHLOROETHANE	280-116186-1	FWGmw-021-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2-TRICHLOROETHANE	280-116186-1	FWGmw-024-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2-TRICHLOROETHANE	280-115950-1	RQLmw-007-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1,2-TRICHLOROETHANE	280-115950-1	RQLmw-008-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHANE	280-116020-1	DET-003-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHANE	280-116020-1	DET-003-181002-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHANE	280-116020-1	DET-004-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHANE	280-116186-1	FWGmw-017-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHANE	280-116186-1	FWGmw-021-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHANE	280-116186-1	FWGmw-024-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHANE	280-115950-1	RQLmw-007-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHANE	280-115950-1	RQLmw-008-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHENE	280-116020-1	DET-003-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHENE	280-116020-1	DET-003-181002-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHENE	280-116020-1	DET-004-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHENE	280-116186-1	FWGmw-017-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHENE	280-116186-1	FWGmw-021-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHENE	280-116186-1	FWGmw-024-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHENE	280-115950-1	RQLmw-007-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,1-DICHLOROETHENE	280-115950-1	RQLmw-008-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	1,2-DIBROMOETHANE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DIBROMOETHANE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DIBROMOETHANE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DIBROMOETHANE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
VOCs	1,2-DIBROMOETHANE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DIBROMOETHANE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DIBROMOETHANE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DIBROMOETHANE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHANE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHANE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHANE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHANE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHANE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHANE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHANE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHANE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHENE (TOTAL)	280-116020-1	DET-003-181001-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHENE (TOTAL)	280-116020-1	DET-003-181002-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHENE (TOTAL)	280-116020-1	DET-004-181001-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHENE (TOTAL)	280-116186-1	FWGmw-017-181001-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHENE (TOTAL)	280-116186-1	FWGmw-021-181001-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHENE (TOTAL)	280-116186-1	FWGmw-024-181001-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHENE (TOTAL)	280-115950-1	RQLmw-007-181001-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROETHENE (TOTAL)	280-115950-1	RQLmw-008-181001-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROPROPANE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROPROPANE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROPROPANE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROPROPANE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROPROPANE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROPROPANE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROPROPANE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	1,2-DICHLOROPROPANE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	2-BUTANONE	280-116020-1	DET-003-181001-GW	4.0	6.0	U H	UJ	HT-UJ
VOCs	2-BUTANONE	280-116020-1	DET-003-181002-GW	4.0	6.0	U H	UJ	HT-UJ
VOCs	2-BUTANONE	280-116020-1	DET-004-181001-GW	4.0	6.0	U H	UJ	HT-UJ
VOCs	2-BUTANONE	280-116186-1	FWGmw-017-181001-GW	4.0	6.0	U H	UJ	HT-UJ
VOCs	2-BUTANONE	280-116186-1	FWGmw-021-181001-GW	4.0	6.0	U H	UJ	HT-UJ
VOCs	2-BUTANONE	280-116186-1	FWGmw-024-181001-GW	4.0	6.0	U H	UJ	HT-UJ
VOCs	2-BUTANONE	280-115950-1	RQLmw-007-181001-GW	4.0	6.0	U H	UJ	HT-UJ
VOCs	2-BUTANONE	280-115950-1	RQLmw-008-181001-GW	4.0	6.0	U H	UJ	HT-UJ
VOCs	2-HEXANONE	280-116020-1	DET-003-181001-GW	4.0	5.0	U H	UJ	HT-UJ
VOCs	2-HEXANONE	280-116020-1	DET-003-181002-GW	4.0	5.0	U H	UJ	HT-UJ

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
VOCs	2-HEXANONE	280-116020-1	DET-004-181001-GW	4.0	5.0	U H	UJ	HT-UJ
VOCs	2-HEXANONE	280-116186-1	FWGmw-017-181001-GW	4.0	5.0	U H	UJ	HT-UJ
VOCs	2-HEXANONE	280-116186-1	FWGmw-021-181001-GW	4.0	5.0	U H	UJ	HT-UJ
VOCs	2-HEXANONE	280-116186-1	FWGmw-024-181001-GW	4.0	5.0	U H	UJ	HT-UJ
VOCs	2-HEXANONE	280-115950-1	RQLmw-007-181001-GW	4.0	5.0	U H	UJ	HT-UJ
VOCs	2-HEXANONE	280-115950-1	RQLmw-008-181001-GW	4.0	5.0	U H	UJ	HT-UJ
VOCs	4-METHYL-2-PENTANONE	280-116020-1	DET-003-181001-GW	3.2	5.0	U H	UJ	HT-UJ
VOCs	4-METHYL-2-PENTANONE	280-116020-1	DET-003-181002-GW	3.2	5.0	U H	UJ	HT-UJ
VOCs	4-METHYL-2-PENTANONE	280-116020-1	DET-004-181001-GW	3.2	5.0	U H	UJ	HT-UJ
VOCs	4-METHYL-2-PENTANONE	280-116186-1	FWGmw-017-181001-GW	3.2	5.0	U H	UJ	HT-UJ
VOCs	4-METHYL-2-PENTANONE	280-116186-1	FWGmw-021-181001-GW	3.2	5.0	U H	UJ	HT-UJ
VOCs	4-METHYL-2-PENTANONE	280-116186-1	FWGmw-024-181001-GW	3.2	5.0	U H	UJ	HT-UJ
VOCs	4-METHYL-2-PENTANONE	280-115950-1	RQLmw-007-181001-GW	3.2	5.0	U H	UJ	HT-UJ
VOCs	4-METHYL-2-PENTANONE	280-115950-1	RQLmw-008-181001-GW	3.2	5.0	U H	UJ	HT-UJ
VOCs	ACETONE	280-116020-1	DET-003-181001-GW	6.4	10	U H	UJ	HT-UJ
VOCs	ACETONE	280-116020-1	DET-003-181002-GW	6.4	10	U H	UJ	HT-UJ
VOCs	ACETONE	280-116020-1	DET-004-181001-GW	6.4	10	U M H	UJ	HT-UJ
VOCs	ACETONE	280-116186-1	FWGmw-017-181001-GW	6.6	10	J H	J	HT-J, RepLimit-J
VOCs	ACETONE	280-116303-1	FWGmw-019-181001-GW	6.9	10	J	J	RepLimit-J
VOCs	ACETONE	280-116186-1	FWGmw-021-181001-GW	6.4	10	U M H	UJ	HT-UJ
VOCs	ACETONE	280-116303-1	FWGmw-022-181001-GW	2.3	10	J	J	RepLimit-J
VOCs	ACETONE	280-116186-1	FWGmw-024-181001-GW	6.4	10	U M H	UJ	HT-UJ
VOCs	ACETONE	280-116303-1	LL10mw-003-181002-GW	8.1	10	J	J	RepLimit-J
VOCs	ACETONE	280-116303-1	LL10mw-005-181001-GW	7.0	10	J	J	RepLimit-J
VOCs	ACETONE	280-116336-1	LL7mw-001-181001-GW	4.9	10	J	J	RepLimit-J
VOCs	ACETONE	280-116336-1	NTAmw-119-181001-GW	4.1	10	J	J	RepLimit-J
VOCs	ACETONE	280-115950-1	RQLmw-007-181001-GW	6.4	10	U M H	UJ	HT-UJ
VOCs	ACETONE	280-115950-1	RQLmw-008-181001-GW	6.4	10	U M H	UJ	HT-UJ
VOCs	ACETONE	280-115877-1	RQLmw-009-181001-GW	4.5	10	J	J	RepLimit-J
VOCs	BENZENE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BENZENE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BENZENE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BENZENE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BENZENE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BENZENE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BENZENE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BENZENE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMOCHLOROMETHANE	280-116020-1	DET-003-181001-GW	0.20	1.0	U H	UJ	HT-UJ

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
VOCs	BROMOCHLOROMETHANE	280-116020-1	DET-003-181002-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	BROMOCHLOROMETHANE	280-116020-1	DET-004-181001-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	BROMOCHLOROMETHANE	280-116186-1	FWGmw-017-181001-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	BROMOCHLOROMETHANE	280-116186-1	FWGmw-021-181001-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	BROMOCHLOROMETHANE	280-116186-1	FWGmw-024-181001-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	BROMOCHLOROMETHANE	280-115950-1	RQLmw-007-181001-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	BROMOCHLOROMETHANE	280-115950-1	RQLmw-008-181001-GW	0.20	1.0	U H	UJ	HT-UJ
VOCs	BROMODICHLOROMETHANE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMODICHLOROMETHANE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMODICHLOROMETHANE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMODICHLOROMETHANE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMODICHLOROMETHANE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMODICHLOROMETHANE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMODICHLOROMETHANE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMODICHLOROMETHANE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMOFORM	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMOFORM	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMOFORM	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMOFORM	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMOFORM	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMOFORM	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMOFORM	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMOFORM	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	BROMOMETHANE	280-116020-1	DET-003-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	BROMOMETHANE	280-116020-1	DET-003-181002-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	BROMOMETHANE	280-116020-1	DET-004-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	BROMOMETHANE	280-116186-1	FWGmw-017-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	BROMOMETHANE	280-116186-1	FWGmw-021-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	BROMOMETHANE	280-116186-1	FWGmw-024-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	BROMOMETHANE	280-115950-1	RQLmw-007-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	BROMOMETHANE	280-115950-1	RQLmw-008-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	Bromobenzene	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	Bromobenzene	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	Bromobenzene	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	Bromobenzene	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	Bromobenzene	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	Bromobenzene	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	Bromobenzene	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
VOCs	Bromobenzene	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CARBON DISULFIDE	280-116020-1	DET-003-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CARBON DISULFIDE	280-116020-1	DET-003-181002-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CARBON DISULFIDE	280-116020-1	DET-004-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CARBON DISULFIDE	280-116186-1	FWGmw-017-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CARBON DISULFIDE	280-116186-1	FWGmw-021-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CARBON DISULFIDE	280-116186-1	FWGmw-024-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CARBON DISULFIDE	280-115950-1	RQLmw-007-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CARBON DISULFIDE	280-115950-1	RQLmw-008-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CARBON TETRACHLORIDE	280-116020-1	DET-003-181001-GW	0.40	2.0	U H	UJ	HT-UJ
VOCs	CARBON TETRACHLORIDE	280-116020-1	DET-003-181002-GW	0.40	2.0	U H	UJ	HT-UJ
VOCs	CARBON TETRACHLORIDE	280-116020-1	DET-004-181001-GW	0.40	2.0	U H	UJ	HT-UJ
VOCs	CARBON TETRACHLORIDE	280-116186-1	FWGmw-017-181001-GW	0.40	2.0	U H	UJ	HT-UJ
VOCs	CARBON TETRACHLORIDE	280-116186-1	FWGmw-021-181001-GW	0.40	2.0	U H	UJ	HT-UJ
VOCs	CARBON TETRACHLORIDE	280-116186-1	FWGmw-024-181001-GW	0.40	2.0	U H	UJ	HT-UJ
VOCs	CARBON TETRACHLORIDE	280-115950-1	RQLmw-007-181001-GW	0.40	2.0	U H	UJ	HT-UJ
VOCs	CARBON TETRACHLORIDE	280-115950-1	RQLmw-008-181001-GW	0.40	2.0	U H	UJ	HT-UJ
VOCs	CHLOROBENZENE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROBENZENE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROBENZENE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROBENZENE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROBENZENE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROBENZENE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROBENZENE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROBENZENE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROETHANE	280-116020-1	DET-003-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CHLOROETHANE	280-116020-1	DET-003-181002-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CHLOROETHANE	280-116020-1	DET-004-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CHLOROETHANE	280-116186-1	FWGmw-017-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CHLOROETHANE	280-116186-1	FWGmw-021-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CHLOROETHANE	280-116186-1	FWGmw-024-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CHLOROETHANE	280-115950-1	RQLmw-007-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CHLOROETHANE	280-115950-1	RQLmw-008-181001-GW	1.6	2.0	U H	UJ	HT-UJ
VOCs	CHLOROFORM	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROFORM	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROFORM	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROFORM	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROFORM	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
VOCs	CHLOROFORM	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROFORM	280-116303-1	LL10mw-003-181001-GW	0.77	1.0	J	J	RepLimit-J
VOCs	CHLOROFORM	280-116303-1	LL10mw-003-181002-GW	0.72	1.0	J	J	RepLimit-J
VOCs	CHLOROFORM	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROFORM	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CHLOROMETHANE	280-116020-1	DET-003-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	CHLOROMETHANE	280-116020-1	DET-003-181002-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	CHLOROMETHANE	280-116020-1	DET-004-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	CHLOROMETHANE	280-116186-1	FWGmw-017-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	CHLOROMETHANE	280-116186-1	FWGmw-021-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	CHLOROMETHANE	280-116186-1	FWGmw-024-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	CHLOROMETHANE	280-115950-1	RQLmw-007-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	CHLOROMETHANE	280-115950-1	RQLmw-008-181001-GW	0.80	2.0	U H	UJ	HT-UJ
VOCs	CIS-1,3-DICHLOROPROPENE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CIS-1,3-DICHLOROPROPENE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ, ProJudge-UJ
VOCs	CIS-1,3-DICHLOROPROPENE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ, ProJudge-UJ
VOCs	CIS-1,3-DICHLOROPROPENE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CIS-1,3-DICHLOROPROPENE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CIS-1,3-DICHLOROPROPENE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CIS-1,3-DICHLOROPROPENE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	CIS-1,3-DICHLOROPROPENE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	DIBROMOCHLOROMETHANE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	DIBROMOCHLOROMETHANE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	DIBROMOCHLOROMETHANE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	DIBROMOCHLOROMETHANE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	DIBROMOCHLOROMETHANE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	DIBROMOCHLOROMETHANE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	DIBROMOCHLOROMETHANE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	DIBROMOCHLOROMETHANE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	ETHYLBENZENE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	ETHYLBENZENE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	ETHYLBENZENE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	ETHYLBENZENE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	ETHYLBENZENE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	ETHYLBENZENE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	ETHYLBENZENE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	ETHYLBENZENE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	METHYLENE CHLORIDE	280-116020-1	DET-003-181001-GW	0.80	5.0	U H	UJ	HT-UJ

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
VOCs	METHYLENE CHLORIDE	280-116020-1	DET-003-181002-GW	0.80	5.0	U H	UJ	HT-UJ
VOCs	METHYLENE CHLORIDE	280-116020-1	DET-004-181001-GW	0.80	5.0	U H	UJ	HT-UJ
VOCs	METHYLENE CHLORIDE	280-116186-1	FWGmw-017-181001-GW	0.80	5.0	J H	UJ	HT-J, RepLimit-J, ProJudge-UJ
VOCs	METHYLENE CHLORIDE	280-116303-1	FWGmw-019-181001-GW	0.48	5.0	J	J	RepLimit-J
VOCs	METHYLENE CHLORIDE	280-116186-1	FWGmw-021-181001-GW	0.80	5.0	J H	UJ	HT-J, RepLimit-J, ProJudge-UJ
VOCs	METHYLENE CHLORIDE	280-116303-1	FWGmw-022-181001-GW	1.2	5.0	J	J	RepLimit-J
VOCs	METHYLENE CHLORIDE	280-116186-1	FWGmw-024-181001-GW	0.80	5.0	U H	UJ	HT-UJ
VOCs	METHYLENE CHLORIDE	280-116303-1	LL10mw-003-181002-GW	0.44	5.0	J	J	RepLimit-J
VOCs	METHYLENE CHLORIDE	280-116303-1	LL10mw-005-181001-GW	0.70	5.0	J	J	RepLimit-J
VOCs	METHYLENE CHLORIDE	280-116336-1	NTAmw-119-181001-GW	0.86	5.0	J	J	RepLimit-J
VOCs	METHYLENE CHLORIDE	280-115950-1	RQLmw-007-181001-GW	0.80	5.0	U H	UJ	HT-UJ
VOCs	METHYLENE CHLORIDE	280-115950-1	RQLmw-008-181001-GW	0.80	5.0	U H	UJ	HT-UJ
VOCs	METHYLENE CHLORIDE	280-115877-1	RQLmw-009-181001-GW	0.86	5.0	J	J	RepLimit-J
VOCs	METHYLENE CHLORIDE	280-116538-1	SCLmw-001-181001-GW	0.33	5.0	J	J	RepLimit-J
VOCs	METHYLENE CHLORIDE	280-116469-1	SCLmw-002-181002-GW	0.41	5.0	J	J	RepLimit-J
VOCs	METHYLENE CHLORIDE	280-116538-1	SCLmw-003-181001-GW	0.85	5.0	J	J	RepLimit-J
VOCs	STYRENE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	STYRENE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ, ProJudge-UJ
VOCs	STYRENE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ, ProJudge-UJ
VOCs	STYRENE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	STYRENE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	STYRENE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	STYRENE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	STYRENE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TETRACHLOROETHENE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TETRACHLOROETHENE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TETRACHLOROETHENE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TETRACHLOROETHENE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TETRACHLOROETHENE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TETRACHLOROETHENE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TETRACHLOROETHENE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TETRACHLOROETHENE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TOLUENE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TOLUENE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TOLUENE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TOLUENE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
VOCs	TOLUENE	280-116270-1	FWGmw-018-181001-GW	0.68	1.0	J	J	RepLimit-J
VOCs	TOLUENE	280-116270-1	FWGmw-020-181001-GW	0.45	1.0	J	J	RepLimit-J
VOCs	TOLUENE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TOLUENE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TOLUENE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TOLUENE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRANS-1,3-DICHLOROPROPENE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRANS-1,3-DICHLOROPROPENE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRANS-1,3-DICHLOROPROPENE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRANS-1,3-DICHLOROPROPENE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRANS-1,3-DICHLOROPROPENE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRANS-1,3-DICHLOROPROPENE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRANS-1,3-DICHLOROPROPENE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRANS-1,3-DICHLOROPROPENE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRICHLOROETHENE	280-116020-1	DET-003-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRICHLOROETHENE	280-116020-1	DET-003-181002-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRICHLOROETHENE	280-116020-1	DET-004-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRICHLOROETHENE	280-116186-1	FWGmw-017-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRICHLOROETHENE	280-116186-1	FWGmw-021-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRICHLOROETHENE	280-116186-1	FWGmw-024-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRICHLOROETHENE	280-115950-1	RQLmw-007-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	TRICHLOROETHENE	280-115950-1	RQLmw-008-181001-GW	0.40	1.0	U H	UJ	HT-UJ
VOCs	VINYL CHLORIDE	280-116020-1	DET-003-181001-GW	0.20	1.5	U H	UJ	HT-UJ
VOCs	VINYL CHLORIDE	280-116020-1	DET-003-181002-GW	0.20	1.5	U H	UJ	HT-UJ
VOCs	VINYL CHLORIDE	280-116020-1	DET-004-181001-GW	0.20	1.5	U H	UJ	HT-UJ
VOCs	VINYL CHLORIDE	280-116186-1	FWGmw-017-181001-GW	0.20	1.5	U H	UJ	HT-UJ
VOCs	VINYL CHLORIDE	280-116186-1	FWGmw-021-181001-GW	0.20	1.5	U H	UJ	HT-UJ
VOCs	VINYL CHLORIDE	280-116186-1	FWGmw-024-181001-GW	0.20	1.5	U H	UJ	HT-UJ
VOCs	VINYL CHLORIDE	280-115950-1	RQLmw-007-181001-GW	0.20	1.5	U H	UJ	HT-UJ
VOCs	VINYL CHLORIDE	280-115950-1	RQLmw-008-181001-GW	0.20	1.5	U H	UJ	HT-UJ
VOCs	XYLENES (TOTAL)	280-116020-1	DET-003-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	XYLENES (TOTAL)	280-116020-1	DET-003-181002-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	XYLENES (TOTAL)	280-116020-1	DET-004-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	XYLENES (TOTAL)	280-116186-1	FWGmw-017-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	XYLENES (TOTAL)	280-116186-1	FWGmw-021-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	XYLENES (TOTAL)	280-116186-1	FWGmw-024-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	XYLENES (TOTAL)	280-115950-1	RQLmw-007-181001-GW	0.80	1.0	U H	UJ	HT-UJ
VOCs	XYLENES (TOTAL)	280-115950-1	RQLmw-008-181001-GW	0.80	1.0	U H	UJ	HT-UJ

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Pesticides	4,4'-DDD	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	4,4'-DDE	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	4,4'-DDT	280-115877-1	RQLmw-009-181001-GW	0.51	0.51	U Q	UJ	LCS-UJ
Pesticides	ALDRIN	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	ALPHA-BHC	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	ALPHA-CHLORDANE	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	BETA-BHC	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	DELTA-BHC	280-116020-1	LL1mw-083-181001-GW	0.0094	0.052	J	J	RepLimit-J
Pesticides	DELTA-BHC	280-115877-1	RQLmw-009-181001-GW	0.20	0.51	J Q D	J	LCS-J, RepLimit-J
Pesticides	DIELDRIN	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	ENDOSULFAN I	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	ENDOSULFAN II	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	ENDOSULFAN SULFATE	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	ENDRIN	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	ENDRIN ALDEHYDE	280-116186-1	FWGmw-021-181001-GW	0.021	0.052	U	UJ	MS-UJ
Pesticides	ENDRIN ALDEHYDE	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	ENDRIN KETONE	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	GAMMA-CHLORDANE	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	HEPTACHLOR	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	HEPTACHLOR EPOXIDE	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Pesticides	METHOXYCHLOR	280-115877-1	RQLmw-009-181001-GW	0.51	0.51	U Q	UJ	LCS-UJ
Pesticides	TOXAPHENE	280-116186-1	FWGmw-021-181001-GW	1.3	2.1	J	J	MS-J, RepLimit-J
Pesticides	TOXAPHENE	280-115950-1	LL1mw-088-181001-GW	0.85	2.1	U Q	UJ	ProJudge-UJ
Pesticides	TOXAPHENE	280-115950-1	LL1mw-088-181002-GW	0.84	2.1	U Q	UJ	ProJudge-UJ
Pesticides	TOXAPHENE	280-116270-1	LL3mw-244-181001-GW	0.81	2.0	U	UJ	ProJudge-UJ
Pesticides	TOXAPHENE	280-115950-1	RQLmw-007-181001-GW	0.77	1.9	U Q	UJ	ProJudge-UJ
Pesticides	TOXAPHENE	280-115950-1	RQLmw-008-181001-GW	0.82	2.1	U Q	UJ	ProJudge-UJ
Pesticides	TOXAPHENE	280-116270-1	SCFmw-004-181001-GW	0.79	2.0	U	UJ	ProJudge-UJ
Pesticides	TOXAPHENE	280-116469-1	SCLmw-002-181001-GW	0.82	2.0	U Q	UJ	ProJudge-UJ
Pesticides	TOXAPHENE	280-116469-1	SCLmw-002-181002-GW	0.79	2.0	U Q	UJ	ProJudge-UJ
Pesticides	gamma-BHC [Lindane]	280-115877-1	RQLmw-009-181001-GW	0.21	0.51	U Q	UJ	LCS-UJ
Cyanide	Cyanide, Total	280-116270-1	CBPmw-009-181001-GW	0.0022	0.010	J	J	RepLimit-J
Cyanide	Cyanide, Total	280-116186-1	LL1mw-081-181001-GW	0.0027	0.010	J	J	RepLimit-J
Cyanide	Cyanide, Total	280-116270-1	LL3mw-234-181001-GW	0.0023	0.010	J	J	RepLimit-J
Cyanide	Cyanide, Total	280-115950-1	RQLmw-007-181001-GW	0.0046	0.010	J	J	RepLimit-J
Cyanide	Cyanide, Total	280-115877-1	RQLmw-012-181001-GW	0.0054	0.010	J	J	RepLimit-J
Cyanide	Cyanide, Total	280-115877-1	RQLmw-016-181001-GW	0.0030	0.010	J	J	RepLimit-J
Cyanide	Cyanide, Total	280-116538-1	SCLmw-001-181001-GW	0.0093	0.010	J	J	RepLimit-J

Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event (continued)

Analysis Type	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Cyanide	Cyanide, Total	280-116538-1	SCLmw-003-181001-GW	0.0060	0.010	J	J	RepLimit-J
Perchlorate	Perchlorate	280-116186-1	LL3mw-246-181001-GW	0.032	0.050	J	J	RepLimit-J
Perchlorate	Perchlorate	280-116538-1	SCLmw-001-181001-GW	0.023	0.050	J	J	RepLimit-J
Perchlorate	Perchlorate	280-116469-1	SCLmw-002-181001-GW	0.0058	0.050	J	J	RepLimit-J
Anions	Nitrate as N	280-116336-1	FBQmw-171-181001-GW	0.38	0.50	J	J	RepLimit-J
Anions	Nitrate as N	280-116336-1	LL12mw-242-181001-GW	0.10	0.50	J H	UJ	HT-UJ, MB-U, RepLimit-J
Anions	Nitrate as N	280-116020-1	LL1mw-083-181001-GW	0.29	0.50	J J1	J	MS-J, RepLimit-J, LabDup-J
Anions	Nitrate as N	280-116020-1	LL1mw-084-181001-GW	0.31	0.50	J	J	MS-J, RepLimit-J
Anions	Nitrate as N	280-115789-1	RQLMW-011-181001-GW	0.10	0.50	U J1	U	ProJudge-U
Anions	Nitrate as N	280-115789-1	RQLMW-011-181002-GW	0.049	0.50	J	J	MS-J, RepLimit-J
Anions	Nitrate as N	280-115877-1	RQLmw-012-181001-GW	0.90	0.50		J	HT-J
Anions	Nitrate as N	280-115877-1	RQLmw-013-181001-GW	0.10	0.50	J	UJ	HT-UJ, ProJudge-UJ
Anions	Nitrate as N	280-115877-1	RQLmw-014-181001-GW	0.10	0.50	J	UJ	HT-UJ, ProJudge-UJ
Anions	Nitrate as N	280-116538-1	SCLmw-001-181001-GW	0.13	0.50	J	J	RepLimit-J
Anions	Nitrate as N	280-116469-1	SCLmw-002-181001-GW	0.10	0.50	J	U	RepLimit-J, ProJudge-U
Anions	Nitrate as N	280-116469-1	SCLmw-002-181002-GW	0.10	0.50	J	U	RepLimit-J, ProJudge-U
Anions	Nitrite as N	280-115789-1	RQLMW-011-181001-GW	0.10	0.50	U J1	UJ	MS-UJ
Anions	Nitrite as N	280-115789-1	RQLMW-011-181002-GW	0.10	0.50	U	UJ	MS-UJ
Anions	Nitrite as N	280-115877-1	RQLmw-012-181001-GW	0.10	0.50	U	UJ	HT-UJ
Anions	Nitrite as N	280-115877-1	RQLmw-013-181001-GW	0.10	0.50	U	UJ	HT-UJ
Anions	Nitrite as N	280-115877-1	RQLmw-014-181001-GW	0.10	0.50	U	UJ	HT-UJ
Anions	Sulfate	280-116020-1	LL1mw-083-181001-GW	160	5.0	J1	J	MS-J
Anions	Sulfate	280-115789-1	RQLMW-011-181001-GW	100	5.0	J1	J	MS-J
Anions	Sulfate	280-115789-1	RQLMW-011-181002-GW	96	5.0		J	ProJudge-J
Anions	Sulfide	280-115789-1	RQLMW-011-181001-GW	1.9	4.0	U J1	UJ	MS-UJ
Anions	Sulfide	280-115789-1	RQLMW-011-181002-GW	1.9	4.0	U	UJ	MS-UJ
Anions	Sulfide	280-116538-1	SCLmw-003-181001-GW	1.9	4.0	U J1	U	ProJudge-U
Hex Chromium	Hexavalent chromium	280-116407-2	FBQmw-175-181001-GW	0.0044	0.020	J	J	RepLimit-J
Hex Chromium	Hexavalent chromium	280-115789-1	RQLMW-011-181001-GW	0.010	0.020	U H J1	UJ	HT-UJ
Hex Chromium	Hexavalent chromium	280-115789-1	RQLMW-011-181002-GW	0.010	0.020	U H	UJ	HT-UJ
Hex Chromium	Hexavalent chromium	280-116469-2	SCLmw-002-181001-GW	0.0044	0.020	J	J	RepLimit-J

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Table F.3-4. Detailed Listing of Qualified Results – October 2018 Sampling Event

[a] Laboratory Qualifiers: J = estimated because result is between the method detection limit and the reporting limit, J1= Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria, U = not detected, H = Holding Time, M = Manually integrated compound, Q = One or more quality control failed.
[b] Validation Qualifiers: J = estimated, R = rejected, U = not detected, and UJ = not detected and reporting limit estimated.
[c] Validation Reason Codes: HT = holding time, LCS = laboratory control sample, MB = method blank, MS = matrix spike, ProJudge = professional judgment, RptLimit = reporting limit, and Surr = surrogate recovery.
BHC = Hexachlorocyclohexane.
DDD = Dichlorodiphenyldichloroethane.
DDE = Dichlorodiphenyldichloroethylene.
DDT = Dichlorodiphenyltrichloroethane.
ID = Identification.
µg/kg = Micrograms per kilogram.
µg/L = Micrograms per liter.
mg/kg = Milligrams per kilogram.
PAH = Polycyclic aromatic hydrocarbon.
PETN = Pentaerythritol tetranitrate.
SVOC = Semi-volatile organic compound.
VOC = Volatile organic compound.

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Table F.3-5. Results for Analytes Detected in Field Blanks or Trip Blanks – October 2018 Sampling Event

Sample ID	Analysis Type	Analyte Name	Result
FWGTB-181005-TB	VOCs	Methylene Chloride	0.00034J
FWGTB-181006-TB	VOCs	Methylene Chloride	0.00039J
FWGTB-181006b-TB	VOCs	Methylene Chloride	0.00033J
FWGTB-181010-TB	VOCs	Carbon Disulfide	0.00093J
FWGqc-001-181001-SB	Metals	Arsenic	0.00059J
FWGqc-001-181001-SB	Metals	Barium	0.048
FWGqc-001-181001-SB	Metals	Calcium	73
FWGqc-001-181001-SB	Metals	Copper	0.0023
FWGqc-001-181001-SB	Metals	Iron	0.59
FWGqc-001-181001-SB	Metals	Lead	0.0002J
FWGqc-001-181001-SB	Metals	Magnesium	29
FWGqc-001-181001-SB	Metals	Manganese	0.11
FWGqc-001-181001-SB	Metals	Nickel	0.011
FWGqc-001-181001-SB	Metals	Sodium	46J
FWGqc-001-181001-SB	Metals	Zinc	0.019J
FWGqc-001-181001-SB	PAHs	Indeno(1,2,3-cd)pyrene	0.0000067J
FWGqc-001-181001-SB	VOCs	Methylene Chloride	0.00068J
FWGqc-001-181001-SB	Pesticides	DELTA-BHC	0.000012J
FWGqc-001-181001-SB	Cyanide	Cyanide, Total	0.018
FWGqc-001-181001-SB	Anions	Sulfate	43
FWGqc-001-181001-SB	Alkalinity	Alkalinity	220

Explosives, propellants, pesticides, and polychlorinated biphenyls were analyzed for and not detected.
Sample Type: TB = Trip blank.
Data Qualifiers: J = estimated
CAS = Chemical Abstract Service.
ID = Identification.
mg/L = Milligrams per liter.
NA = Not applicable.

1 **Table F.3-6. Field Duplicate Pair Comparisons for Analytes Detected in Samples – October 2018 Sampling Event**

Sample ID	Chemical	Regular Result	Duplicate Result	RPD % or (Absolute Difference)[a]	Test[b]
DA2mw-115-181001-GW/ DA2mw-115-181002-GW	ALUMINUM	0.07 U	0.019 J	(0.17)	D
DA2mw-115-181001-GW/ DA2mw-115-181002-GW	ARSENIC	0.0016 J	0.0015 J	(0.02)	D
DA2mw-115-181001-GW/ DA2mw-115-181002-GW	BARIUM	0.022 J	0.021 J	5%	RPD
DA2mw-115-181001-GW/ DA2mw-115-181002-GW	CALCIUM	120 J	120 J	0%	RPD
DA2mw-115-181001-GW/ DA2mw-115-181002-GW	IRON	1	0.96	4%	RPD
DA2mw-115-181001-GW/ DA2mw-115-181002-GW	MAGNESIUM	32	32	0%	RPD
DA2mw-115-181001-GW/ DA2mw-115-181002-GW	MANGANESE	0.11 J	0.1 J	10%	RPD
DA2mw-115-181001-GW/ DA2mw-115-181002-GW	POTASSIUM	3.8	3.9	(0.03)	D
DA2mw-115-181001-GW/ DA2mw-115-181002-GW	SODIUM	12	14	(0.40)	D
DA2mw-115-181001-GW/ DA2mw-115-181002-GW	ZINC	0.0022 J	0.008 U	(0.29)	D
FWGmw-017-181001-GW/ FWGmw-017-181002-GW	BENZO(A)ANTHRACENE	0.000013 U	0.000057 J	(0.40)	D
FWGmw-017-181001-GW/ FWGmw-017-181002-GW	BENZO(A)PYRENE	0.000013 U	0.000031 J	(0.16)	D
FWGmw-017-181001-GW/ FWGmw-017-181002-GW	BENZO(B)FLUORANTHENE	0.000013 U	0.000056 J	(0.39)	D
FWGmw-017-181001-GW/ FWGmw-017-181002-GW	BENZO(G,H,I)PERYLENE	0.000013 U	0.000047 J	(0.31)	D
FWGmw-017-181001-GW/ FWGmw-017-181002-GW	BENZO(K)FLUORANTHENE	0.000013 U	0.000054 J	(0.37)	D
FWGmw-017-181001-GW/ FWGmw-017-181002-GW	CHRYSENE	0.000013 U	0.000074 J	(0.55)	D
FWGmw-017-181001-GW/ FWGmw-017-181002-GW	DIBENZO(A,H)ANTHRACENE	0.000013 U	0.000021 J	(0.07)	D
FWGmw-017-181001-GW/ FWGmw-017-181002-GW	INDENO(1,2,3-CD)PYRENE	0.000045 U	0.000039 J	(0.06)	D
FWGmw-021-181001-GW/ FWGmw-021-181002-GW	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.00072 J	0.00065 J	(0.32)	D
LL10mw-003-181001-GW/ LL10mw-003-181002-GW	ALUMINUM	0.021 J	0.022 J	(0.00)	D
LL10mw-003-181001-GW/ LL10mw-003-181002-GW	BARIUM	0.0022 J	0.0019 J	(0.10)	D
LL10mw-003-181001-GW/ LL10mw-003-181002-GW	BERYLLIUM	0.000081 J	0.0003 U	(0.22)	D
LL10mw-003-181001-GW/ LL10mw-003-181002-GW	CALCIUM	61	62	2%	RPD
LL10mw-003-181001-GW/ LL10mw-003-181002-GW	CHROMIUM	0.0018 U	0.0005 J	(0.13)	D
LL10mw-003-181001-GW/ LL10mw-003-181002-GW	MAGNESIUM	17	17	0%	RPD
LL10mw-003-181001-GW/ LL10mw-003-181002-GW	MERCURY	0.000045 J	0.000048 J	(0.02)	D
LL10mw-003-181001-GW/ LL10mw-003-181002-GW	POTASSIUM	0.5 J	0.65 J	(0.05)	D
LL10mw-003-181001-GW/ LL10mw-003-181002-GW	ACETONE	0.0064 U	0.0081 J	(0.17)	D
LL10mw-003-181001-GW/ LL10mw-003-181002-GW	CARBON TETRACHLORIDE	0.0067	0.0063	(0.20)	D
LL10mw-003-181001-GW/ LL10mw-003-181002-GW	SODIUM	8.2	8.4	(0.04)	D
LL10mw-003-181001-GW/ LL10mw-003-181002-GW	CHLOROFORM	0.00077 J	0.00072 J	(0.05)	D
LL10mw-003-181001-GW/ LL10mw-003-181002-GW	METHYLENE CHLORIDE	0.0008 U	0.00044 J	(0.07)	D

Table F.3-6. Field Duplicate Pair Comparisons for Analytes Detected in Samples – October 2018 Sampling Event (continued)

Sample ID	Chemical	Regular Result	Duplicate Result	RPD % or (Absolute Difference)[a]	Test[b]
LL1mw-088-181001-GW/ LL1mw-088-181002-GW	ALUMINUM	0.039 J	0.038 J	(0.00)	D
LL1mw-088-181001-GW/ LL1mw-088-181002-GW	ARSENIC	0.029	0.03	3%	RPD
LL1mw-088-181001-GW/ LL1mw-088-181002-GW	BARIUM	0.037	0.035	6%	RPD
LL1mw-088-181001-GW/ LL1mw-088-181002-GW	BERYLLIUM	0.0003 U	0.00021 J	(0.09)	D
LL1mw-088-181001-GW/ LL1mw-088-181002-GW	CALCIUM	88	87	1%	RPD
LL1mw-088-181001-GW/ LL1mw-088-181002-GW	COBALT	0.000096 J	0.00014 J	(0.04)	D
LL1mw-088-181001-GW/ LL1mw-088-181002-GW	IRON	1.6	1.6	0%	RPD
LL1mw-088-181001-GW/ LL1mw-088-181002-GW	MAGNESIUM	35	35	0%	RPD
LL1mw-088-181001-GW/ LL1mw-088-181002-GW	MANGANESE	0.045	0.047	4%	RPD
LL1mw-088-181001-GW/ LL1mw-088-181002-GW	POTASSIUM	2.5 J	2.5 J	(0.00)	D
LL1mw-088-181001-GW/ LL1mw-088-181002-GW	SODIUM	25	25	0%	RPD
LL1mw-088-181001-GW/ LL1mw-088-181002-GW	THALLIUM	0.0002 U	0.000057 J	(0.14)	D
LL1mw-088-181001-GW/ LL1mw-088-181002-GW	ZINC	0.008 U	0.0035 J	(0.23)	D
NTAmw-119-181001-GW/ NTAmw-119-181002-GW	ALUMINUM	0.12 J	0.12 J	(0.00)	D
NTAmw-119-181001-GW/ NTAmw-119-181002-GW	ARSENIC	0.0068	0.0066	(0.04)	D
NTAmw-119-181001-GW/ NTAmw-119-181002-GW	BARIUM	0.084	0.081	4%	RPD
NTAmw-119-181001-GW/ NTAmw-119-181002-GW	CALCIUM	85	86	1%	RPD
NTAmw-119-181001-GW/ NTAmw-119-181002-GW	COBALT	0.00015 J	0.00016 J	(0.01)	D
NTAmw-119-181001-GW/ NTAmw-119-181002-GW	IRON	1.2	1.2	0%	RPD
NTAmw-119-181001-GW/ NTAmw-119-181002-GW	LEAD	0.00026 J	0.00022 J	(0.01)	D
NTAmw-119-181001-GW/ NTAmw-119-181002-GW	MAGNESIUM	22	22	0%	RPD
NTAmw-119-181001-GW/ NTAmw-119-181002-GW	MANGANESE	0.33 J	0.33 J	0%	RPD
NTAmw-119-181001-GW/ NTAmw-119-181002-GW	MERCURY	0.000045 J	0.000047 J	(0.01)	D
NTAmw-119-181001-GW/ NTAmw-119-181002-GW	POTASSIUM	1.1 J	1.2 J	(0.03)	D
NTAmw-119-181001-GW/ NTAmw-119-181002-GW	SODIUM	7.1	7.3 J	(0.04)	D
RQLMW-011-181001-GW/ RQLMW-011-181002-GW	BENZO(A)PYRENE	0.000014 U	9E-6 J	(0.05)	D
RQLMW-011-181001-GW/ RQLMW-011-181002-GW	Nitrate as N	0.1 U	0.049 J	(0.10)	D
RQLMW-011-181001-GW/ RQLMW-011-181002-GW	Sulfate	100 J	96 J	4%	RPD
RQLMW-011-181001-GW/ RQLMW-011-181002-GW	Alkalinity	120	120	0%	RPD
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	ARSENIC	0.0019 J	0.0019 J	(0.00)	D
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	BARIUM	0.055 J	0.054 J	2%	RPD
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	CALCIUM	190 J	190 J	0%	RPD
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	COBALT	0.00006 J	0.00007 J	(0.01)	D
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	IRON	7.7	8	4%	RPD
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	MAGNESIUM	24	23	4%	RPD

Table F.3-6. Field Duplicate Pair Comparisons for Analytes Detected in Samples – October 2018 Sampling Event (continued)

Sample ID	Chemical	Regular Result	Duplicate Result	RPD % or (Absolute Difference)[a]	Test[b]
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	MANGANESE	0.76	0.75	1%	RPD
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	POTASSIUM	4.5	4.3	(0.07)	D
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	Phosphorus	0.11 J	0.1 J	(0.00)	D
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	SODIUM	8.2 J	8.2 J	(0.00)	D
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.00017 J	0.00013 U	(0.19)	D
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	CHRYSENE	0.000012 U	0.000017 J	(0.05)	D
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	METHYLENE CHLORIDE	0.0008 U	0.00041 J	(0.08)	D
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	Perchlorate	5.8E-6 J	0.00001 U	(0.08)	D
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	Sulfate	150	150	0%	RPD
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	Alkalinity	390	410	5%	RPD
SCLmw-002-181001-GW/ SCLmw-002-181002-GW	Hex Chromium	0.0044 J	0.02 U	(0.78)	D

[a] RPD is calculated as 100x |R-D|/(R-D)/2, where R is the concentration of the regular sample and D is the concentration of the duplicate. The absolute difference is calculated as |R-D|/L, where L is the average reporting limit of the two samples. Values followed by a "%" are RPD values. Values in parentheses are absolute difference values.

[b] The test used to evaluate the duplicate comparison is the RPD if both sample results were more than five times the reporting limit or D if any result was less than five times the reporting limit.

*RPD or D outside criteria

Data Qualifiers: J = estimated, U = not detected, and UJ = not detected and reporting limit estimated.

BHC = Hexachlorocyclohexane.

D = Absolute difference.

ID = Identification.

mg/kg = Milligrams per kilogram.

PAH = Polycyclic aromatic hydrocarbon.

SVOC = Semi-volatile organic compound.

RDX = Hexahydro-1,3,5-Trinitro-1,3,5-Triazine.

RPD = Relative percent difference.

SVOC = Semi-volatile organic compound.

1

Table F.3-7. Container Requirements for Ground Water Samples

Analyte Group	Container	Minimum Sample Size	Preservative	Holding Time
Volatile Organic Compounds	Three 40-mL glass vial	40 mL	HCl to pH <2 Cool ≤ 6°C	14 days
Semi-volatile Organic Compounds	Two 1-L amber glass	1 L	Cool ≤6°C	7 days (extraction) 40 days (analysis)
Polycyclic Aromatic Hydrocarbon Compounds	Two 1-L amber glass	1 L	Cool ≤6°C	7 days (extraction) 40 days (analysis)
Pesticide Compounds	Two 1-L amber glass	1 L	Cool ≤6°C	7 days (extraction) 40 days (analysis)
Polychlorinated Biphenyls	Two 1-L amber glass	1 L	Cool ≤6°C	1 year (extraction) 40 days (analysis)
Explosive Compounds	Two 500-mL amber glass	500 mL	Cool ≤6°C	7 days (extraction) 40 days (analysis)
Nitroguanidine	Two 1-L amber glass	1 L	Cool ≤6°C	7 days (extraction) 40 days (analysis)
Nitrocellulose	500-mL amber glass	250 mL	H_2SO_4, pH<2 Cool ≤ 6°C	28 days
Perchlorate	125-mL HDPE	10 mL	Cool ≤ 6°C	28 days
Metals (TAL)+Phosphorus+Mercury	500-mL HDPE poly	100 mL	HNO_3 to pH <2 Cool ≤ 6°C	180 days; Hg at 28 days
Sulfide	500-mL HDPE	250 mL	NaOH/Zn Acetate, pH >9; Cool ≤ 6°C	7 days
Anions	50-mL HDPE	15 mL	Cool ≤ 6°C	48 hours (nitrate, nitrite) 28 days (sulfate)
Alkalinity	250-mL HDPE	250 mL	Cool ≤ 6°C	14 days
Total Cyanide	250-mL HDPE	100 mL	NaOH, Cool ≤ 6°C	14 days
Hexavalent Chromium	125-mL HDPE	50 mL	Cool ≤ 6°C	24 hours

HCl = Hydrochloric acid.
HDPE = High density polyethylene.
Hg = Mercury.
HNO_3 = Nitric acid.
hr = Hour.
L = Liter.
mL = Milliliter.
NaOH = Sodium hydroxide.
TAL = Target analyte list.
Zn = Zinc.

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ATTACHMENT A

Laboratory Data Verification Checklist

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LEIDOS
Laboratory Data Verification Checklist

Project: Ravenna

SDG No: J102733

Analyte Group: VOC, SVOC, Pest, PCB, Nitroguandine, Metals, Wet Chem

Sample Matrix: Water

EDD (Y/N):

Disposition of Data Package:

NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)		Y
Check for LCS results (e.g., org. form III, inorg. form XII)		Y
Check for method blank results (e.g., org. form IV, inorg. form III)		Y
Check for MS/MSD results (e.g., inorg. form V)		Y
Check for laboratory duplicate results (e.g., inorg. form VI)		NA
Check for Method Calibration and Run Documentation		
organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	method linear range	Y
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	Y
other:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	sample run sequence	Y

Brooke Francis

12/21/18

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: J102733

Analyte Group: VOC, SVOC, Pest, PCB, Nitroguandine, Metals, Wet Chem

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:
FWGqc-001-181001-SB	102733-1	W	VOC, SVOC, Pest, PCB, Nitroguandine, Metals, Wet Chem	
FWGqc-001-TB	102733-2	W	VOC	

Comments:

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J102733

Analysis: VOC

Method: 8260B

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/21/18

QA Reviewed by: Date:

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: All surrogates met control limits

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: All IS results met control limits

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MB and TB were free from contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: 10/22/2018
VOC - Date(s) of continuing calibration: 10/24/2018
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration:
SVOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: All calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-434827

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R results met control limits

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J102733

Analysis: SVOCs/SIM

Method: 8270D/SIM

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

One sample result was rejected due to low LCS %R

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/21/18

QA Reviewed by: Date:

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
MB - SIM				48	42						
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: Surrogates met control limits

Per CLP guidance, MB outliers considered isolated occurrence; Narrative notes "The recoveries for surrogates 2-Fluorobiphenyl and Nitrobenzene-d5 failed the surrogate recovery criteria low in method blank MB 280-433508/1-A. The associated LCS/LCSD and sample surrogates were all in control. Date was reported and flagged."

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: All IS results met control limits

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes / No)
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MBs were free from contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration:
VOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: 9/18 9/19 10/16/18
SVOC - Date(s) of continuing calibration: 10/23 10/16/18
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks:

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-434197 LCS/D 280-433508

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied
Hexachlorocyclopentadiene		9	All sample results rejected, See ADR File

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks:

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J102733

Analysis: Pesticides/PCB

Method: 8081/8082

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

One result was qualified as estimated due to calibration discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/21/18

QA Reviewed by: Date:

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: Toxaphene CCV discrepancies were not noted in the narrative

Narrative noted "The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: FWGqc-001-181001-SB (240-102733-1), (LCS 280-433386/2-A), (LCSD 280-433386/3-A) and (MB 280-433386/1-A)."

The following samples required a sulfuric acid clean-up, via EPA Method 3665A, to reduce matrix interferences: FWGqc-001-181001-SB (240-102733-1), (LCS 280-433386/4-A), (LCSD 280-433386/5-A) and (MB 280-433386/1-A).

The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: FWGqc-001-181001-SB (240-102733-1), (LCS 280-433386/4-A), (LCSD 280-433386/5-A) and (MB 280-433386/1-A).

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: Surrogates met control limits

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: IS results met control limits

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MBs were free from contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: _____
VOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: _____
SVOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: NA

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Sample confirmation columns were within control limits

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	|%D| %RSD	RPD	Samples Affected
Toxaphene (Average)	32.6%		All samples (primary column)
Toxaphene (Average)	26.36		All samples (secondary column, not reported)

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: Average Toxaphene and PCB results were used to review Toxaphene and PCB validations duet to multiple peaks the average of the absolute value of the %D for each peak was used to calculate the %D

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria: percent recovery (%R)	VOC	SVOC	Pest	PCB
	80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS/D 280-433386

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS/D %R and RPD results met control limits

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J102733 **Analysis:** Explosives, Nitroguandine

Method: 8330B

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/21/18

QA Reviewed by: Date:

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes:
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: Need to confirm with the laboratory that Nitroguandine is 47 days

NOTE: hold time for nitroguanidine specified in QAPP as 7 days; the lab provided documentation in their ELAP approved SOP of extended hold time:

"17.2. There are no regulatory holding times for nitroguanidine. The holding time used for direct aqueous injection is 47 days for aqueous samples, and 14 days for soils."

No DVQ

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be $\leq$ 20%
Continuing calibration %D must be within $\pm$ 15%

Deviations:

Compound	Correlation Coefficient	% RSD	%D	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks: All calibration results met control limits

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks: Surrogates met control limits

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MBs were free from contamination

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS/D 280-433566 LCS 320-257557

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS/D %R and RPD results met control limits

Leidos - Project Specific
Perchlorate by Mass Spectrometry Methods Data Verification/Validation

Project: RVAAP

SDG No: J102733 **Analysis:** Perchlorate

Method: 6860

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Isotope Ratios
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution
Mas Tuning	

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

* **If this SDG requires full validation; recalculations from the raw data are required where noted in the verification/validation checklist. Attach all calculations at the end of the validation checklist. Data verification and data validation are essentially identical, with the exception that validation requires results to be recalculated from the raw data.**

Remarks: DoD QSM and QAPP Guidance

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded

Verification/Validation by: Brooke Francis Date: 12/21/18

QA Reviewed by: _____ Date: _____

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Waters - Cool 4°C with headspace to reduce anaerobic biodegradation; analysis within 28 days of sample collection

Soils - Cool 4°C ; extraction within 28 days of sample collection; analysis within 18 days of sample extraction

Deviations:

Sample #	Date Collected	Date Analyzed	Comments

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. $^{35}CL/^{37}CL$ Isotope Ratios

List any field samples, field QC samples, or laboratory QC samples where the $^{35}CL/^{37}CL$ Isotope ratio does not fall within 2.3 to 2.8:

Deviations:

Sample #	Provide the ratio below:

Sample #	Provide the ratio below:

Actions:

1. If the $^{35}CL/^{37}CL$ isotope ratio does not meet acceptance criteria the sample must be reanalyzed.
2. If any sample is reported with an unacceptable $^{35}CL/^{37}CL$ isotope ratio, the results must be rejected (R)

Remarks: No qualification

V. Internal Standards Performance

Internal standard areas must be between ± 50% of the average areas from the initial calibrations (Y/N)
Relative retention times must be within 0.98-1.02 (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time is outside acceptance criteria use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: IS met control limits

VI. Blanks

A method blank was reported for each aqueous analytical batch and one method blank was reported for each soil extraction batch? (Y/N)
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Sample ID #	Compound	Conc.

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Sample ID #	Compound	Conc.

Remarks: MB was free from contamination

VI. Blanks (continued)

Calculate the action level based on 5X the highest blank concentration

Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If contamination exists in method blanks < 1/2 LOQ, samples must be re-extracted and reanalyzed. Use professional judgement to qualify the data if this occurs.
5. If method blanks were not analyzed use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

Mass Calibration Acceptable? (Y/N)

Date of initial calibration: 10/25
r>0.995? (Y/N)
ICV ≤ 15% drift? (Y/N)

Date(s) of continuing calibration: 10/25
CCV analyzed at beginning of analytical sequence and after every 10 field sample? (Y/N)
CCV ≤ 15% drift? (Y/N)

LOQ Standard ≤ 30% drift? (Y/N)
LOQ Standard analyzed daily? (Y/N)

Deviations: Calibration results met control limits

Compound	Date	r value	%Drift	Samples Affected

Actions:

* **If this SDG requires full validation; recalculate the r value, a CCV% Drift, and a LOQ % Drift from the raw data. Attach all calculations at the end of the validation checklist.**

1. If initial calibration curve criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. Only evaluate the ICV if it brackets field samples. If the ICV does bracket field samples, then CCV actions apply
3. If a CCV is above the upper control limit, qualify detects as estimated (J). Nondects require no action.
4. If a CCV is below the lower control limit but > 30% recovery, qualify results as estimated (J/UJ).
5. If a CCV is ≤ 30% recovery, qualify detects as estimated (J) and nondetects as rejected (R)
6. If CCVs were not analyzed at the proper frequency, use professional judgement.
7. If an acceptable mass calibration was not performed, then all data should be rejected (R)
8. If a LOQ standard is above the upper control limit, qualify detects as estimated (J). Nondects require no action.
9. If a LOQ standard is below the lower control limit but > 10% recovery, qualify results as estimated (J/UJ).
10. If a LOQ standard is ≤ 10% recovery, qualify detects as estimated (J) and nondetects as rejected (R)
11. If LOQ standards were not analyzed at the proper frequency, use professional judgement.

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:
percent recovery (%R) 80-120% recovery
relative percent difference (RPD) 20% RPD

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ).
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

* **If this SDG requires full validation; recalculate at least one % recovery and one % RPD from the raw data. Attach all calculations at the end of the validation checklist.**

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
Percent recovery (%R) = 80-120% recovery
RPD if LCSD performed = 20% RPD

Laboratory LCS Identifications: LCS 280-434921

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

*** If this SDG requires full validation; recalculate at least one % recovery and one % RPD (if LCSD was performed) from the raw data. Attach all calculations at the end of the validation checklist.**

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R met control limits

LEIDOS
Metals Data Review Checklist

Project: RVAAP

SDG No: J102733

Analysis: Metals/Mercury

Method: 6010/6020/7470

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on an examination of the following:

Case Narrative	MS/MSD Recoveries and Differences
Analytical Holding Times	Duplicate Relative Percent Differences
Sample Preservation	ICP Serial Dilution
Method Calibration	Furnace Atomic Absorption QC
Method and Project Blanks	Re-analysis and Secondary Dilution
LCS Recoveries	Internal Standard Performance (if applicable)

Project specific QA/QC or contract requirements may take priority over validation criteria in this proceudre.

Overall remarks: DoD QSM

One sample was qualified as non-detect due to blank contamination

Some samples were qualified as estimated due to calibration discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/21/18

QA Reviewed by: _____ Date: _____

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Metals - Waters - preserved to pH<2, 180 days from sample collection
Metals - Soils - 180 days from sample collection
Mercury - Waters - preserved to pH<2, 28 days from sample collection
Mercury - Soils - 28 days from sample collection

Deviations:

Sample #	Metals				Mercury			
	Date Collected	Date Analyzed	Days >HT	pH Check	Date Collected	Date Analyzed	Days >HT	pH Check

Actions:

1. If preserved samples exceed holding time, qualify all associated results as estimated (J/UJ).
2. If unpreserved samples exceed holding time, qualify all associated results as unusable (R).
3. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
4. If water samples are not acidified, use professional judgement. Minimally, qualify data as estimated (J) and non-detects unusable (R).
5. If soil samples exceed holding time, use professional judgement to qualify data.

Remarks: All holding times were met

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.)

Initial calibration linearity criteria is r ≥ 0.995
ICV and CCV criteria are ± 10% recovery, low level check standard allowed ± 30%
ICP inter-element check standard criteria ± 20%

Deviations:

Element	Date	Intial Calib.	ICV/ CCV	%R	Samples Affected	
Potassium	10/18 5:13		CCVL	122%	102733-1	
Sodium	10/18 18:11		CCVL	132	102733-1	
Sodium	10/18 19:00		CCVL	136	102733-1	
Barium	10/16 10:54		ICVL	79%	None	
Antimony	10/17 6:17		CCVL	125	102733-1	ND, no qual
Antimony	10/17 10:55		ICVL	129	None	
Zinc	10/17 12:22		CCVL	121	None	
Manganese	10/17 13:59		CCVL	126	none	
Antimony	10/17 13:59		CCVL	122	None	

Actions:

1. If any elements initial claibration linearity is <0.995, qualify the data as estimated (J/UJ)
2. If any elements initial claibration linearity is <0.95, qualify the data as unusable (R)

3a. If any elements ICV or CCV recovery is <90%, qualify the data as estimated (J/UJ)

3b. If any elements ICV or CCV recovery is > 110%, qualify results ≥ MDL as estimated (J).
Do not qualify non-detects.

4a. If any elements ICV or CCV recovery is <75%, qualify the data as unusable (R)

4b. If any elements ICV or CCV recovery is > 125% qualify positive results as estimated (J) or non-detects as unusable (R).

4c. If any element ICV or CCV recovery is ≥ 160%, qualify positive results ≥ MDL as unusable (R).
Do not qualify non-detects.

5a. If any elements CRI recovery is 50 - 69% (30 - 49% for Sb, Pb, Tb), qualify results ≥ MDL (but < 2 times CRQL) as estimated (J/UJ) and results > 2 times CRQL are not qualified.

5b. If any elements CRI recovery is < 50% (<30% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) and non-detects as unusable (R). Results > 2 times CRQL are estimated (J).

5c. If any elements CRI recovery is > 130% but < 180% (>150% but ≤ 200% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) as esimated (J). And non-detects and results ≥ 2x CRQL are not qualified.

5d. If CRI or (R) > 180% (> 200% for Sb, Pb, Ti), qualify results that are ≥ MDL as unusable (R).

Remarks: _____

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.) (continued)

Analytical Sequence and MS Tune	(Y/N)
1. Were the appropriate number of ICP standards used?	Y
2. Were the appropriate number of AA standards used?	Y
3. Was calibration performed and documented at the beginning of each run?	Y
4. Were calibration check standards run at 10% frequency or every two hours?	Y
5. Were low level standard checks analyzed at approximately 2X the PQL?	Y
6. Was ICP-MS mass calibration within 0.1 AMU?	Y
7. Was ICP-MS % RSD of the aboslute signals for all analytes < 5%?	Y

Deviations:

Element	Deviation	Samples Affected

Actions:

1. If instrument calibration is questionable, use professional judgement, qualify the data as estimated (J/UJ)
2. If instrument calibration documentation can not be obtained or is inadequate, qualify the data as unusable (R)
3. If mass calibration for ICP-MS was not within 0.1 AMU qualify analyte results as estimated (J/UJ)
4. If % RSD for ICP-MS was > 5% for any analyte in the tuning solution, qualify associated results as estimated (J/UJ).

Results:

V. Blanks (ICB, CCB, Method Blank, Equipment Rinsate Blank)

A. Blank Results

If the blank level is > CRQL for any analyte, check that the analyte's concentration in the samples is > 10 times the blank value. The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account when applying the action level.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected	
CCB 10/18 2:42	Sodium	288 ug/L		None	
CCB 10/18 3:31	Sodium	400		None	
CCB 10/18 4:20	Sodium	707	7070	102733-1	>AL, no qual
CCB 10/18 5:10	Potassium	785	7850	102733-1	(U)
	Sodium	1830			
CCB 10/18 17:20	Potassium	369		None	
CCB 10/18 18:08	Sodium	293		None	
CCB 10/18 18:57	Sodium	321		None	
CCB 10/17 00:46	Antimony	0.631		None	
CCB 10/17 4:36	Antimony	0.505		None	
CCB 10/17 5:23	Antimony	0.461	4.61	102733-1	ND, no qual
CCB 10/17 6:13	Antimony	0.449	4.49	102733-1	ND, no qual

If additional space is required, use next page

Actions:

1. For blank results ≥ MDL but ≤ CRQL, qualify samples ≥ MDL but < CRQL as CRQL U.
   Use proffessional judgement to qualify sample results exceeding the CRQL.

2a. If blank results are > CRQL: For sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < 10 times the blank qualify results as unusable (R) or estimated (J). No action is taken for sample results ≥ 10 times the blank levels.

2b. If ICB/ CCB results are > CRQL; for sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < blank results, qualify results as not detected (U) at the level of the blank or unusable (R). Use professional judgement for sample results > blank results.

Remarks: _____

V. Blanks (continued)

The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
CCB 10/17 10:51	Antimony	0.495		None
	Vanadium	0.552		
CCB 10/17 12:18	Vanadium	0.562		None
MB 280-433423	Manganese	0.418 ug/L	4.18 ug/L	All samples >AL, no qual

V. Blanks (continued)

B. Frequency Requirements (Y/N)

1. Was a method (preparation) blank analyzed for each matrix? Y
2. Was a method blank processed for every analytical batch (20 samples)? Y
3. Was a calibration blank analyzed at 10% frequency or every two hours? Y

Deviations:

Element	Deviation	Samples Affected

Remarks:

C. Baseline Shift Evaluation

List the highest negative blank concentration for each analyte observed in laboratory or project blanks.

Deviations:

Blank ID	Element	Max. Neg Conc.	Action Level	Samples Affected

Actions:

1. If the absolute value of the maximum negative blank result is > the CRQL, qualify positive results as estimated (J) and non-detects as estimated (UJ).

Remarks:

VI. Laboratory Control Sample Evaluation

All LCS recovery criteria are set at 80-120%
An LCS must be analyzed for each matrix and for each digestion batch or set of twenty samples

Deviations:

Element	Date	%R	Matrix	Samples Affected

Actions:

1. If any element's LCS recovery is >120%, qualify positive results as (J).
2. If any element's LCS recovery is 50-79%, qualify positive results as (J) and non-detect results as (UJ)

3a. If any element's LCS recovery is <50%, qualify positive results as (J) and non-detect results as (R)
3b. If the LCS recovery is > 150%, qualify all results as unusable (R).

4. For soil LCS recovery > upper limit, qualify samples results ≥ MDL as estimated (J).
5. For soil LCS recovery < lower limit, qualify results ≥ MDL as esimated (J) and non-detected estimated (UJ).
6. Use professional judgement to qualify data if the LCS frequency criteria are not met.

Remarks: All LCS %R results met control limits

VII. Matrix Spike Evaluation

All MS recovery criteria are set at 75-125%
An MS must be analyzed for each matrix and for each digestion batch or set of twenty samples
Verify that a field blank or PE sample was not used for spiked sample analysis
Verify that a post-digestion spike was analyzed for those anlytes where the pre-digestion spike recovery is outside control limits and the sample result is < 4 times the spike added.
Project Sample(s) Spiked: _____

Deviations:

Element	Spiked Sample Result	Sample Result	Spike Amount	%R	Samples Affected

Actions:

1. If the sample concentration exceeds the spiking level by a factor of 4X or more, do not qualify the data
2. If the spike recovery is >125%, qualify all positive values as (J).
3. If the spike recovery is between 30-74%, qualify positive values as (J) and non-detect values as estimated (UJ)
4. If the spike recovery is <30%, qualify positive values as (J) and non-detects are qualified unusable (R)
if the post-digestion spike recovery is < 75% (or none was performed); non-detects are qualified as estimated (UJ)
If the post-digestion spike reocvery is ≥ 75%. There is no post-digestion spike performed for mercury.
5. Qualify all samples of similar matrix to the spiked sample in the same manner
6. Use professional judgement to qualify data if the MS frequency criteria are not met.
7. Use professional judgement for qualification of data for unspiked elements

Remarks: NA

VIII. Laboratory Duplicate Evaluation

Duplicate relative percent difference (RPD) for water is 20% (both results > 5 times CDRL) or < CRDL difference (if either result is < 5 times CRDL) and RPD for soil is 35% (if both results are > 5 times CRDL or < 2 times CRDL if either result is < 5 times CRDL).
When duplicate sample values are both less than the reporting level they are considered acceptable
When dupicate sample values are within 5X the reporting level they are acceptable if their absolute difference is within 3X the reporting level
Verify that a field blank on PE sample was not used for duplicate analysis.

Deviations: ____

Element	Sample #	Duplicate #	RPD	Samples Affected

Actions:

1. If an element's RPD is >20% (water) / >35% (soil), qualify positive results as (J) and non-detect results as (UJ)
2. For low concentrations, if an element's duplicate absolute difference is > 3X the reporting level, qualify positive results as (J) and non-detect results as (UJ)
3. Use professional judgement to qualify data if the duplicate frequency criteria are not met.

Remarks: NA

IX. Inductively Coupled Plasma (ICP) Serial Dilution Analysis

Verify that a field blank or PE sample was not used for serial dilution.
Serial dilution of positive results are performed when values exceed 50X the IDL
Results from serial dilutions should agree within 10% of the original undiluted analysis

Deviations:

Element	Sample #	Sample Result	Serial Dilution	%D	Action

Actions:

1. If the serial dilution %D is >10 and the analyte results are >50X the IDL, qualify all positive results as estimated (J) and non-detects as estimated (UJ).

Remarks: NA

X. Furnace Atomic Absorption QC

A. Duplicate Precision (Y/N)

1. Were duplicate injections performed for all samples? _____
2. Were one point analytical spikes performed for all samples? _____
3. Did duplicate injections agree within ± 20%? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If duplicate injection results are outside ± 20%, qualify positive results as (J) and non-detect results as (UJ)

Remarks: NA

B. Post Digestion Spike Recoveries (Y/N)

1. Did post digestion spike recoveries meet an 85-115% recovery criteria? _____
2. If spike recoveries did not meet recovery criteria were samples analyzed by MSA? _____
3. If MSA was used to analyze samples, was its' correlation coefficient ≥ 0.995? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If post digestion spike recoveries are >115%, qualify positive results as (J) and non-detect results as (U)
2. If post digestion spike recoveries are 11-84%, qualify positive results as (J) and non-detect results as (UJ)
3. If post digestion spike recoveries are <10%, qualify positive results as (R) and non-detect results as (R)
4. If MSA was used to quantitate values and the correlation coefficient was <0.995, qualify data as (J or UJ)
5. If MSA was used to quantitate values and the correlation coefficient was <0.95, qualify data as (R)

Remarks: NA

XI. Inductively Coupled Plasma (ICP) Interference Check Sample Evaluation

Interference check samples should be analyzed at the beginning and end of each analysis run, or at a minimum of twice per 8 hour working shift.
Results for the ICS solution AB must fall within control limits of 20% for analytes included in the solution.
Evaluate the ICS A solution raw data for results with an absolute value ≥ MDL for analytes that are not present in the ICS A solution.

Deviations:

Element	Sample #	Sample Result	Interferent Result	Action

Actions:

1. If the ICS AB %R for an analyte is > 120%, qualify sample results ≥ MDL as estimated (J) and non-detects should not be qualified.
2. If the ICS AB %R for an analyte is 50-79%, qualify sample results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ).
3. If the ICS AB %R for an analyte is <50%, qualify all sample results that are ≥ MDL and all non-detects as as unusable (R).
4. If results ≥ MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents and with analyte concentration that approximate those levels in the ICS A, sample results ≥ MDL should be qualified as estimated (J) and non-detects should not be qualified.
5. If negative results with absolute values > MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents, affected sample results > MDL should be qualified as estimated (J) and non-detects (UJ).

Remarks: All ICS results met control limits

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J102733

Analysis: Wet Chemistry

Method: 9012, 9034, 9056, 2320

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: DoD QSM

Some results were qualified as estimated due to holding time discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/21/18

QA Reviewed by: Date:

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:
FWGqc-001-191001-SB	Nitrate	10/11 13:00		10/13 17:50	Qualified UJ
↓	Nitrite	↓		↓	

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: See ADR Output

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected
Alkalinity	1.13 mg/L	5.65 mg/L	All samples >AL, no qual
Sulfate	0.517 mg/L	2.585 mg/L	All samples > AL

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks:

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS %R Results met control limits

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: NA

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J102733

Analysis: Hexa Chrom

Method: 7196A

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: Laboratory Limits due to FCR and switching labs to accommodate holding time

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/21/18

QA Reviewed by: Date:

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: MB was free from contamination

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks:

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS %R results met control limits

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: All MS/MSD %R and RPD results met control limits

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

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

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		10/25/18 01:40	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		10/25/18 01:40	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		10/25/18 01:40	1
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		10/25/18 01:40	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		10/25/18 01:40	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		10/25/18 01:40	1
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		10/25/18 01:40	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		10/25/18 01:40	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		10/25/18 01:40	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		10/25/18 01:40	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		10/25/18 01:40	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		10/25/18 01:40	1
Acetone	6.4	U M U	10	6.4	1.9	ug/L		10/25/18 01:40	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		10/25/18 01:40	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		10/25/18 01:40	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		10/25/18 01:40	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		10/25/18 01:40	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		10/25/18 01:40	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		10/25/18 01:40	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		10/25/18 01:40	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		10/25/18 01:40	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		10/25/18 01:40	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		10/25/18 01:40	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		10/25/18 01:40	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		10/25/18 01:40	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		10/25/18 01:40	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		10/25/18 01:40	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		10/25/18 01:40	1
Methylene Chloride	**0.68**	**J**	5.0	0.80	0.32	ug/L		10/25/18 01:40	1
Styrene	0.40	U	1.0	0.40	0.17	ug/L		10/25/18 01:40	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		10/25/18 01:40	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		10/25/18 01:40	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		10/25/18 01:40	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		10/25/18 01:40	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		10/25/18 01:40	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		10/25/18 01:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*81 - 118*		*10/25/18 01:40*	*1*
4-Bromofluorobenzene (Surr)	*103*		*85 - 114*		*10/25/18 01:40*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*10/25/18 01:40*	*1*
Toluene-d8 (Surr)	*103*		*89 - 112*		*10/25/18 01:40*	*1*

Client Sample ID: FWGqc-001-TB **Lab Sample ID: 240-102733-2**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		10/25/18 01:59	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		10/25/18 01:59	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		10/25/18 01:59	1

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

Client Sample ID: FWGqc-001-TB **Lab Sample ID: 240-102733-2**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		10/25/18 01:59	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		10/25/18 01:59	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		10/25/18 01:59	1
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		10/25/18 01:59	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		10/25/18 01:59	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		10/25/18 01:59	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		10/25/18 01:59	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		10/25/18 01:59	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		10/25/18 01:59	1
Acetone	6.4	U	10	6.4	1.9	ug/L		10/25/18 01:59	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		10/25/18 01:59	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		10/25/18 01:59	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		10/25/18 01:59	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		10/25/18 01:59	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		10/25/18 01:59	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		10/25/18 01:59	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		10/25/18 01:59	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		10/25/18 01:59	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		10/25/18 01:59	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		10/25/18 01:59	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		10/25/18 01:59	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		10/25/18 01:59	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		10/25/18 01:59	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		10/25/18 01:59	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		10/25/18 01:59	1
Methylene Chloride	0.80	U	5.0	0.80	0.32	ug/L		10/25/18 01:59	1
Styrene	0.40	U	1.0	0.40	0.17	ug/L		10/25/18 01:59	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		10/25/18 01:59	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		10/25/18 01:59	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		10/25/18 01:59	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		10/25/18 01:59	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		10/25/18 01:59	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		10/25/18 01:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*81 - 118*		*10/25/18 01:59*	*1*
4-Bromofluorobenzene (Surr)	*102*		*85 - 114*		*10/25/18 01:59*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*10/25/18 01:59*	*1*
Toluene-d8 (Surr)	*102*		*89 - 112*		*10/25/18 01:59*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.015	U	0.12	0.015	0.0073	ug/L		10/16/18 23:59	1
2-Methylnaphthalene	0.015	U	0.12	0.015	0.0074	ug/L		10/16/18 23:59	1
Acenaphthene	0.049	U	0.12	0.049	0.0052	ug/L		10/16/18 23:59	1
Acenaphthylene	0.049	U	0.12	0.049	0.0063	ug/L		10/16/18 23:59	1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Anthracene	0.049	U	0.12	0.049	0.0069	ug/L		10/16/18 23:59	1
Benzo[a]anthracene	0.015	U	0.12	0.015	0.0052	ug/L		10/16/18 23:59	1
Benzo[a]pyrene	0.015	U M U	0.12	0.015	0.0085	ug/L		10/16/18 23:59	1
Benzo[b]fluoranthene	0.015	U	0.12	0.015	0.0038	ug/L		10/16/18 23:59	1
Benzo[g,h,i]perylene	0.015	U	0.12	0.015	0.0076	ug/L		10/16/18 23:59	1
Benzo[k]fluoranthene	0.015	U	0.12	0.015	0.0077	ug/L		10/16/18 23:59	1
Chrysene	0.015	U	0.12	0.015	0.0041	ug/L		10/16/18 23:59	1
Dibenz(a,h)anthracene	0.015	U	0.12	0.015	0.0050	ug/L		10/16/18 23:59	1
Fluoranthene	0.015	U	0.12	0.015	0.0059	ug/L		10/16/18 23:59	1
Fluorene	0.049	U M U	0.12	0.049	0.0068	ug/L		10/16/18 23:59	1
Indeno[1,2,3-cd]pyrene	**0.0067**	**J**	0.12	0.049	0.0055	ug/L		10/16/18 23:59	1
Naphthalene	0.015	U	0.12	0.015	0.0098	ug/L		10/16/18 23:59	1
Phenanthrene	0.025	U	0.12	0.025	0.011	ug/L		10/16/18 23:59	1
Pyrene	0.025	U	0.12	0.025	0.0075	ug/L		10/16/18 23:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*56*		*53 - 106*	*10/15/18 21:07*	*10/16/18 23:59*	*1*
Nitrobenzene-d5	*64*		*55 - 111*	*10/15/18 21:07*	*10/16/18 23:59*	*1*
Terphenyl-d14	*90*		*58 - 132*	*10/15/18 21:07*	*10/16/18 23:59*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	1.1	U	11	1.1	0.31	ug/L		10/23/18 16:11	1
1,2-Dichlorobenzene	0.56	U	11	0.56	0.26	ug/L		10/23/18 16:11	1
1,3-Dichlorobenzene	1.1	U	11	1.1	0.33	ug/L		10/23/18 16:11	1
1,4-Dichlorobenzene	1.1	U	11	1.1	0.36	ug/L		10/23/18 16:11	1
1,4-Dioxane	4.9	U	20	4.9	1.9	ug/L		10/23/18 16:11	1
2,4,5-Trichlorophenol	1.1	U	22	1.1	0.50	ug/L		10/23/18 16:11	1
2,4,6-Trichlorophenol	1.1	U	22	1.1	0.32	ug/L		10/23/18 16:11	1
2,4-Dichlorophenol	2.2	U	11	2.2	0.71	ug/L		10/23/18 16:11	1
2,4-Dimethylphenol	2.2	U	11	2.2	0.64	ug/L		10/23/18 16:11	1
2,4-Dinitrophenol	33	U	89	33	11	ug/L		10/23/18 16:11	1
2,4-Dinitrotoluene	4.9	U	22	4.9	1.8	ug/L		10/23/18 16:11	1
2,6-Dinitrotoluene	4.9	U	22	4.9	2.1	ug/L		10/23/18 16:11	1
2-Chloronaphthalene	1.1	U	11	1.1	0.29	ug/L		10/23/18 16:11	1
2-Chlorophenol	4.9	U	11	4.9	2.2	ug/L		10/23/18 16:11	1
2-Methylphenol	2.2	U	11	2.2	1.1	ug/L		10/23/18 16:11	1
2-Nitroaniline	4.9	U	56	4.9	1.9	ug/L		10/23/18 16:11	1
2-Nitrophenol	1.1	U	22	1.1	0.43	ug/L		10/23/18 16:11	1
3 & 4 Methylphenol	0.56	U	22	0.56	0.28	ug/L		10/23/18 16:11	1
3,3'-Dichlorobenzidine	4.9	U	56	4.9	2.2	ug/L		10/23/18 16:11	1
3-Nitroaniline	4.9	U	56	4.9	2.2	ug/L		10/23/18 16:11	1
4,6-Dinitro-2-methylphenol	9.8	U	89	9.8	4.4	ug/L		10/23/18 16:11	1
4-Bromophenyl phenyl ether	1.1	U	11	1.1	0.48	ug/L		10/23/18 16:11	1
4-Chloro-3-methylphenol	5.6	U	22	5.6	2.7	ug/L		10/23/18 16:11	1
4-Chloroaniline	4.9	U	28	4.9	2.4	ug/L		10/23/18 16:11	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4-Chlorophenyl phenyl ether	4.9	U	11	4.9	1.8	ug/L		10/23/18 16:11	1
4-Nitroaniline	4.9	U	56	4.9	2.2	ug/L		10/23/18 16:11	1
4-Nitrophenol	4.4	U	56	4.4	1.4	ug/L		10/23/18 16:11	1
Benzoic acid	33	U	89	33	11	ug/L		10/23/18 16:11	1
Benzyl alcohol	0.56	U	28	0.56	0.26	ug/L		10/23/18 16:11	1
bis (2-chloroisopropyl) ether	1.1	U	11	1.1	0.31	ug/L		10/23/18 16:11	1
Bis(2-chloroethoxy)methane	2.2	U	11	2.2	1.1	ug/L		10/23/18 16:11	1
Bis(2-chloroethyl)ether	1.1	U	22	1.1	0.46	ug/L		10/23/18 16:11	1
Bis(2-ethylhexyl) phthalate	2.2	U	11	2.2	0.62	ug/L		10/23/18 16:11	1
Butyl benzyl phthalate	2.2	U	22	2.2	1.1	ug/L		10/23/18 16:11	1
Carbazole	1.1	U	11	1.1	0.48	ug/L		10/23/18 16:11	1
Dibenzofuran	1.1	U	11	1.1	0.32	ug/L		10/23/18 16:11	1
Diethyl phthalate	1.1	U	22	1.1	0.42	ug/L		10/23/18 16:11	1
Dimethyl phthalate	0.56	U	22	0.56	0.23	ug/L		10/23/18 16:11	1
Di-n-butyl phthalate	4.9	U	22	4.9	1.3	ug/L		10/23/18 16:11	1
Di-n-octyl phthalate	1.1	U	22	1.1	0.39	ug/L		10/23/18 16:11	1
Hexachlorobenzene	2.2	U	11	2.2	0.73	ug/L		10/23/18 16:11	1
Hexachlorobutadiene	11	U	33	11	3.7	ug/L		10/23/18 16:11	1
Hexachlorocyclopentadiene see note below	33	U Q R H03 U	56	33	11	ug/L		10/23/18 16:11	1
Hexachloroethane	4.9	U M	11	4.9	2.3	ug/L		10/23/18 16:11	1
Isophorone	0.56	U	11	0.56	0.23	ug/L		10/23/18 16:11	1
Nitrobenzene	2.2	U	22	2.2	0.90	ug/L		10/23/18 16:11	1
N-Nitrosodi-n-propylamine	1.1	U	22	1.1	0.39	ug/L		10/23/18 16:11	1
N-Nitrosodiphenylamine	1.1	U	11	1.1	0.49	ug/L		10/23/18 16:11	1
Pentachlorophenol	67	U	89	67	22	ug/L		10/23/18 16:11	1
Phenol	4.9	U	11	4.9	2.2	ug/L		10/23/18 16:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*84*		*43 - 140*	*10/17/18 12:01*	*10/23/18 16:11*	*1*
2-Fluorobiphenyl	*79*		*44 - 119*	*10/17/18 12:01*	*10/23/18 16:11*	*1*
2-Fluorophenol (Surr)	*79*		*19 - 119*	*10/17/18 12:01*	*10/23/18 16:11*	*1*
Nitrobenzene-d5 (Surr)	*75*		*44 - 120*	*10/17/18 12:01*	*10/23/18 16:11*	*1*
Phenol-d5 (Surr)	*81*		*10 - 115*	*10/17/18 12:01*	*10/23/18 16:11*	*1*
Terphenyl-d14 (Surr)	*79*		*50 - 134*	*10/17/18 12:01*	*10/23/18 16:11*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.022	U	0.054	0.022	0.0083	ug/L		10/31/18 04:50	1
4,4'-DDE	0.022	U	0.054	0.022	0.0081	ug/L		10/31/18 04:50	1
4,4'-DDT	0.054	U	0.054	0.054	0.016	ug/L		10/31/18 04:50	1
Aldrin	0.022	U	0.054	0.022	0.0064	ug/L		10/31/18 04:50	1
alpha-BHC	0.022	U	0.054	0.022	0.0057	ug/L		10/31/18 04:50	1
beta-BHC	0.022	U	0.054	0.022	0.0094	ug/L		10/31/18 04:50	1
delta-BHC	**0.012**	**J**	0.054	0.022	0.0063	ug/L		10/31/18 04:50	1
Dieldrin	0.022	U	0.054	0.022	0.0068	ug/L		10/31/18 04:50	1
Endosulfan I	0.022	U	0.054	0.022	0.0063	ug/L		10/31/18 04:50	1

NOTE: ADR qualified analyte as UJ but since LCS recovery was < 10% manual validation rejected result

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Endosulfan II	0.022	U	0.054	0.022	0.0076	ug/L		10/31/18 04:50	1
Endosulfan sulfate	0.022	U	0.054	0.022	0.0062	ug/L		10/31/18 04:50	1
Endrin	0.022	U	0.054	0.022	0.0085	ug/L		10/31/18 04:50	1
Endrin aldehyde	0.022	U	0.054	0.022	0.0095	ug/L		10/31/18 04:50	1
gamma-BHC (Lindane)	0.022	U	0.054	0.022	0.0074	ug/L		10/31/18 04:50	1
gamma-Chlordane	0.022	U	0.054	0.022	0.0098	ug/L		10/31/18 04:50	1
Heptachlor	0.022	U	0.054	0.022	0.0083	ug/L		10/31/18 04:50	1
Heptachlor epoxide	0.022	U	0.054	0.022	0.0081	ug/L		10/31/18 04:50	1
Methoxychlor	0.054	U	0.054	0.054	0.014	ug/L		10/31/18 04:50	1
Toxaphene	0.86	U UJ C05	2.2	0.86	0.40	ug/L		10/31/18 04:50	1
Endrin ketone	0.022	U	0.054	0.022	0.0076	ug/L		10/31/18 04:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*74*		*44 - 124*	*10/15/18 08:51*	*10/31/18 04:50*	*1*
DCB Decachlorobiphenyl	*79*		*34 - 122*	*10/15/18 08:51*	*10/31/18 04:50*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.43	U M U	1.1	0.43	0.13	ug/L		11/02/18 02:05	1
PCB-1221	0.27	U M	1.1	0.27	0.23	ug/L		11/02/18 02:05	1
PCB-1232	0.65	U M	1.1	0.65	0.18	ug/L		11/02/18 02:05	1
PCB-1242	0.32	U M	1.1	0.32	0.11	ug/L		11/02/18 02:05	1
PCB-1248	0.32	U M	1.1	0.32	0.099	ug/L		11/02/18 02:05	1
PCB-1254	0.27	U M	1.1	0.27	0.12	ug/L		11/02/18 02:05	1
PCB-1260	0.43	U M	1.1	0.43	0.17	ug/L		11/02/18 02:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*94*		*25 - 120*	*10/15/18 08:51*	*11/02/18 02:05*	*1*
DCB Decachlorobiphenyl	*100*		*30 - 136*	*10/15/18 08:51*	*11/02/18 02:05*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U M U	20	6.0	2.4	ug/L		11/09/18 22:18	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.43	U	1.1	0.43	0.21	ug/L		10/23/18 13:14	1
1,3-Dinitrobenzene	0.21	U	0.43	0.21	0.095	ug/L		10/23/18 13:14	1
2,4,6-Trinitrotoluene	0.21	U	0.43	0.21	0.078	ug/L		10/23/18 13:14	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4-Dinitrotoluene	0.21	U	0.43	0.21	0.090	ug/L		10/23/18 13:14	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.069	ug/L		10/23/18 13:14	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.21	0.13	0.054	ug/L		10/23/18 13:14	1
2-Nitrotoluene	0.21	U	0.43	0.21	0.092	ug/L		10/23/18 13:14	1
3-Nitrotoluene	0.21	U	0.43	0.21	0.090	ug/L		10/23/18 13:14	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.21	0.13	0.062	ug/L		10/23/18 13:14	1
4-Nitrotoluol	0.43	U	1.1	0.43	0.21	ug/L		10/23/18 13:14	1
Nitrobenzene	0.21	U	0.43	0.21	0.098	ug/L		10/23/18 13:14	1
Nitroglycerin	2.1	U M U	3.2	2.1	0.99	ug/L		10/23/18 13:14	1
HMX	0.21	U M U	0.43	0.21	0.094	ug/L		10/23/18 13:14	1
PETN	1.3	U	2.1	1.3	0.45	ug/L		10/23/18 13:14	1
RDX	0.13	U	0.21	0.13	0.056	ug/L		10/23/18 13:14	1
Tetryl	0.21	U	0.26	0.21	0.085	ug/L		10/23/18 13:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*93*		*83 - 119*	*10/16/18 08:44*	*10/23/18 13:14*	*1*

Method: 6860 - Perchlorate by IC/MS or IC/MS/MS

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perchlorate	0.010	U M U	0.050	0.010	0.0040	ug/L		10/25/18 17:57	1

Method: 6010C - Metals (ICP)

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		10/18/18 04:30	1
Phosphorus	50	U	3000	50	14	ug/L		10/18/18 04:30	1
Calcium	**73000**		1000	140	35	ug/L		10/18/18 04:30	1
Iron	**590**		100	85	22	ug/L		10/18/18 04:30	1
Magnesium	**29000**		500	40	11	ug/L		10/18/18 04:30	1
Potassium	**3000**	UJ D05 F07	3000	940	240	ug/L		10/18/18 04:30	1
Sodium	**46000**	Q J D05	5000	350	120	ug/L		10/18/18 18:46	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		10/17/18 06:05	1
Arsenic	**0.59**	**J**	5.0	1.0	0.33	ug/L		10/17/18 06:05	1
Barium	**48**		3.0	0.95	0.29	ug/L		10/17/18 13:48	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		10/17/18 13:48	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		10/17/18 06:05	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chromium	1.8	U	10	1.8	0.50	ug/L		10/17/18 06:05	1
Cobalt	0.20	U	1.0	0.20	0.054	ug/L		10/17/18 06:05	1
Copper	**2.3**		2.0	1.8	0.56	ug/L		10/17/18 06:05	1
Lead	**0.20**	**J**	3.0	0.70	0.18	ug/L		10/17/18 06:05	1
Manganese	**110**		3.5	0.95	0.31	ug/L		10/17/18 13:48	1
Nickel	**11**		3.0	1.0	0.30	ug/L		10/17/18 06:05	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		10/17/18 06:05	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		10/17/18 06:05	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		10/17/18 06:05	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		10/17/18 06:05	1
Zinc	**19**	**J**	20	8.0	2.0	ug/L		10/17/18 06:05	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		10/16/18 17:31	1

General Chemistry

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1000	U	2000	1000	480	ug/L		11/02/18 14:17	1
Cyanide, Total	**0.018**		0.010	0.0050	0.0020	mg/L		10/25/18 16:22	1
Sulfide	1.9	U	4.0	1.9	0.79	mg/L		10/17/18 21:44	1
Nitrate as N	0.10	U H UJ A03	0.50	0.10	0.042	mg/L		10/13/18 17:50	1
Nitrite as N	0.10	U H UJ A03	0.50	0.10	0.049	mg/L		10/13/18 17:50	1
Sulfate	**43**		5.0	0.50	0.23	mg/L		10/13/18 17:50	1
Alkalinity	**220**		5.0	5.0	1.1	mg/L		10/15/18 17:49	1

Client Sample ID: FWGqc-001-181001-SB **Lab Sample ID: 240-102733-1**
Date Collected: 10/11/18 13:00 **Matrix: Water**
Date Received: 10/11/18 17:07

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexavalent chromium	0.010	U	0.020	0.0030	mg/L			10/11/18 17:30	1

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 240-102733-1						
Method: 2320B						
FWGqc-001-181001-SB	240-102733-1	AQ	N	METHOD	10/11/2018 1:00:00 PM	S2AVE
Method: 353.2						
FWGqc-001-181001-SB	240-102733-1	AQ	N	METHOD	10/11/2018 1:00:00 PM	S2AVE
FWGqc-001-181001-SBMS	240-102733-1MS	AQ	MS	METHOD	10/11/2018 1:00:00 PM	S2AVE
FWGqc-001-181001-SBMSD	240-102733-1MSD	AQ	MSD	METHOD	10/11/2018 1:00:00 PM	S2AVE
Method: 6010C						
FWGqc-001-181001-SB	240-102733-1	AQ	N	3010A	10/11/2018 1:00:00 PM	S2AVE
Method: 6010C-KNA						
FWGqc-001-181001-SB	240-102733-1	AQ	N	3010A	10/11/2018 1:00:00 PM	S2AVE
Method: 6020A						
FWGqc-001-181001-SB	240-102733-1	AQ	N	3020A	10/11/2018 1:00:00 PM	S2AVE
Method: 6860						
FWGqc-001-181001-SB	240-102733-1	AQ	N	METHOD	10/11/2018 1:00:00 PM	S2AVE
Method: 7470A						
FWGqc-001-181001-SB	240-102733-1	AQ	N	7470A	10/11/2018 1:00:00 PM	S2AVE
Method: 8081B						
FWGqc-001-181001-SB	240-102733-1	AQ	N	3510C	10/11/2018 1:00:00 PM	S2AVE
Method: 8082A						
FWGqc-001-181001-SB	240-102733-1	AQ	N	3510C	10/11/2018 1:00:00 PM	S2AVE
Method: 8260B						
FWGqc-001-181001-SB	240-102733-1	AQ	N	METHOD	10/11/2018 1:00:00 PM	S2AVE
FWGqc-001-TB	240-102733-2	AQ	TB	METHOD	10/11/2018 1:00:00 PM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 8270D						
FWGqc-001-181001-SB	240-102733-1	AQ	N	3520C	10/11/2018 1:00:00 PM	S2AVE
Method: 8270D-SIM						
FWGqc-001-181001-SB	240-102733-1	AQ	N	3510C	10/11/2018 1:00:00 PM	S2AVE
Method: 8330						
FWGqc-001-181001-SB	240-102733-1	AQ	N	METHOD	10/11/2018 1:00:00 PM	S2AVE
Method: 8330B						
FWGqc-001-181001-SB	240-102733-1	AQ	N	3535	10/11/2018 1:00:00 PM	S2AVE
Method: 9012B						
FWGqc-001-181001-SB	240-102733-1	AQ	N	Gen Prep	10/11/2018 1:00:00 PM	S2AVE
Method: 9034						
FWGqc-001-181001-SB	240-102733-1	AQ	N	Gen Prep	10/11/2018 1:00:00 PM	S2AVE
Method: 9056A						
FWGqc-001-181001-SB	240-102733-1	AQ	N	METHOD	10/11/2018 1:00:00 PM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 240-102733-1
EDD Filename: 240-102733-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	SR
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	SR
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	SR
Compound Quantitation	SR
Field Duplicates	N
Field Triplicates	N
Field Blanks	A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 240-102733-1 **Laboratory: TA DEN**

EDD Filename: 240-102733-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 9056A **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
FWGqc-001-181001-SB (RE2/TOT)	Sampling To Analysis	52.75	48.00	HOURS	J (all detects)
FWGqc-001-181001-SB (RES/TOT)		52.75	48.00	HOURS	UJ (all non-detects)

Confirmed (Nitrate/Nitrite)

Method Blank Outlier Report

Lab Reporting Batch ID: 240-102733-1 **Laboratory: TA DEN**

EDD Filename: 240-102733-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6020A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-433423/1-A	10/17/2018 12:26:00 PM	MANGANESE	0.418 ug/L	FWGqc-001-181001-SB

No qual since result is >Action Level

Method: 9056A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-433249/6	10/13/2018 3:26:00 PM	SULFATE	0.517 mg/L	FWGqc-001-181001-SB

No qual since result is >Action Level

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 240-102733-1 **Laboratory: TA DEN**

EDD Filename: 240-102733-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8270D
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCS 280-434197/2-A (FWGqc-001-181001-SB)	HEXACHLOROCYCLOPENTADIEN	9	-	35.00-106.00	-	HEXACHLOROCYCLOPENTADIE	J (all detects) ~~UJ (all non-detects)~~

*Non-Detect, Qualified R

Reporting Limit Outliers

Lab Reporting Batch ID: 240-102733-1 **Laboratory: TA DEN**

EDD Filename: 240-102733-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6020A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGqc-001-181001-SB	ARSENIC	J	0.59	5.0	LOQ	ug/L	
	LEAD	J	0.20	3.0	LOQ	ug/L	J (all detects)
	ZINC	J	19	20	LOQ	ug/L	

Method: 8081B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGqc-001-181001-SB	DELTA-BHC	J	0.012	0.054	LOQ	ug/L	J (all detects)

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGqc-001-181001-SB	METHYLENE CHLORIDE	J	0.68	5.0	LOQ	ug/L	J (all detects)

Method: 8270D-SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGqc-001-181001-SB	INDENO(1,2,3-CD)PYRENE	J	0.0067	0.12	LOQ	ug/L	J (all detects)

Data Qualifier Summary

Lab Reporting Batch ID: 240-102733-1 **Laboratory:** TA DEN

EDD Filename: 240-102733-1 **eQAPP Name:** Leidos-RVAAP NACA_20181218 - Combined

Method Category: GENCHEM **Method:** 9056A **Matrix:** AQ

Sample ID: FWGqc-001-181001-SB **Collected:** 10/11/2018 1:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrite as N	0.10	U H	0.10	LOD	0.50	LOQ	mg/L	UJ	StoA

Nitrate and Nitrate were both outside holding time, UJ

Method Category: METALS **Method:** 6020A **Matrix:** AQ

Sample ID: FWGqc-001-181001-SB **Collected:** 10/11/2018 1:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	0.59	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
LEAD	0.20	J	0.70	LOD	3.0	LOQ	ug/L	J	RI
ZINC	19	J	8.0	LOD	20	LOQ	ug/L	J	RI

Method Category: SVOA **Method:** 8081B **Matrix:** AQ

Sample ID: FWGqc-001-181001-SB **Collected:** 10/11/2018 1:00:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DELTA-BHC	0.012	J	0.022	LOD	0.054	LOQ	ug/L	J	RI

Method Category: SVOA **Method:** 8270D **Matrix:** AQ

Sample ID: FWGqc-001-181001-SB **Collected:** 10/11/2018 1:00:00 PM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEXACHLOROCYCLOPENTADIENE	33	U Q	33	LOD	56	LOQ	ug/L	~~UJ~~ R	Lcs

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 240-102733-1 **Laboratory: TA DEN**

EDD Filename: 240-102733-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: SVOA
Method: 8270D-SIM **Matrix:** AQ

Sample ID: FWGqc-001-181001-SB **Collected:** 10/11/2018 1:00:00 PM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
INDENO(1,2,3-CD)PYRENE	0.0067	J	0.049	LOD	0.12	LOQ	ug/L	J	RI

Method Category: VOA
Method: 8260B **Matrix:** AQ

Sample ID: FWGqc-001-181001-SB **Collected:** 10/11/2018 1:00:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.68	J	0.80	LOD	5.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 240-102733-1 **Laboratory: TA DEN**

EDD Filename: 240-102733-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
Lcs	Laboratory Control Spike Lower Estimation
Mb	Method Blank Contamination
RI	Reporting Limit Trace Value
StoA	Sampling to Analysis Estimation
Surr	Surrogate/Tracer Recovery Lower Estimation

* denotes a non-reportable result

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA CAN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 240-102733-2						
Method: 7196A						
FWGqc-001-181001-SB	240-102733-1	AQ	N	METHOD	10/11/2018 1:00:00 PM	S2AVE
FWGqc-001-181001-SBMS	240-102733-1MS	AQ	MS	METHOD	10/11/2018 1:00:00 PM	S2AVE
FWGqc-001-181001-SBMSD	240-102733-1MSD	AQ	MSD	METHOD	10/11/2018 1:00:00 PM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 240-102733-2
EDD Filename: 240-102733-2

Laboratory: TA CAN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	A
Surrogate/Tracer Spikes	N
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	A
Field Duplicates	N
Field Triplicates	N
Field Blanks	N

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers

LEIDOS
Laboratory Data Verification Checklist

Project: RVAAP

SDG No: J103914

Analyte Group: Explosives
Sample Matrix: Water
EDD (Y/N):

Disposition of Data Package:
NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)		Y
Check for LCS results (e.g., org. form III, inorg. form XII)		Y
Check for method blank results (e.g., org. form IV, inorg. form III)		Y
Check for MS/MSD results (e.g., inorg. form V)		Y
Check for laboratory duplicate results (e.g., inorg. form VI)		NA
Check for Method Calibration and Run Documentation		
organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	NA
	internal standard retention times	NA
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	
	continuing calibration data	
	method detection limits	
	method linear range	
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	
other:	initial calibration data	
	continuing calibration data	
	method detection limits	
	sample run sequence	

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Joseph C Peters Date: 1/3/19

QA Review By: Richmond Stark Date: 01/05/2019

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: J103914

Analyte Group: Explosives

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:
LL7MW-006-181001-GW	103914-1	W	Explosives	

Comments:

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J103914 **Analysis:** Explosives

Method: SW 8330B

Laboratory: TestAmerica **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DOD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Joseph C Peters Date: 1/3/2019

QA Reviewed by: Richman Stark Date: 01/05/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No dilutions or re-analysis required

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be ≥ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be ≤ 20%
Continuing calibration %D must be within ± 15%

Deviations:

Compound	Correlation Coefficient	% RSD	%D	Samples Affected
Tetryl @10:53 on 11/13/18			+20.7	None*

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks: Tetryl recovered high, sample non-detect; no qualification of the data necessary

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks:

No discrepancies, confirmed with ADR

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: No contamination; confirmed with ADR

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: None; LCS/LCSD analyzed

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks:

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-436978/2-A LCSD 280-436978/3-A

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks:

No discrepancies, confirmed with ADR

Client Sample ID: LL7mw-006-181001-GW **Lab Sample ID: 240-103914-1**
Date Collected: 11/06/18 09:20 **Matrix: Water**
Date Received: 11/06/18 11:15

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.42	U	1.0	0.21	ug/L		11/09/18 12:02	11/13/18 13:34	1
1,3-Dinitrobenzene	0.21	U	0.42	0.092	ug/L		11/09/18 12:02	11/13/18 13:34	1
2,4,6-Trinitrotoluene	0.21	U	0.42	0.075	ug/L		11/09/18 12:02	11/13/18 13:34	1
2,4-Dinitrotoluene	0.21	U	0.42	0.087	ug/L		11/09/18 12:02	11/13/18 13:34	1
2,6-Dinitrotoluene	0.21	U M U	0.21	0.067	ug/L		11/09/18 12:02	11/13/18 13:34	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.21	0.053	ug/L		11/09/18 12:02	11/13/18 13:34	1
2-Nitrotoluene	0.21	U	0.42	0.089	ug/L		11/09/18 12:02	11/13/18 13:34	1
3-Nitrotoluene	0.21	U	0.42	0.087	ug/L		11/09/18 12:02	11/13/18 13:34	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.21	0.060	ug/L		11/09/18 12:02	11/13/18 13:34	1
4-Nitrotoluene	0.42	U M U	1.0	0.21	ug/L		11/09/18 12:02	11/13/18 13:34	1
HMX	**0.33**	**J M** J	0.42	0.091	ug/L		11/09/18 12:02	11/13/18 13:34	1
Nitrobenzene	0.21	U	0.42	0.095	ug/L		11/09/18 12:02	11/13/18 13:34	1
Nitroglycerin	2.1	U	3.1	0.96	ug/L		11/09/18 12:02	11/13/18 13:34	1
PETN	1.3	U	2.1	0.43	ug/L		11/09/18 12:02	11/13/18 13:34	1
RDX	**0.72**	**M** =	0.21	0.055	ug/L		11/09/18 12:02	11/13/18 13:34	1
Tetryl	0.21	U Q U	0.25	0.083	ug/L		11/09/18 12:02	11/13/18 13:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*108*		*83 - 119*	*11/09/18 12:02*	*11/13/18 13:34*	*1*

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 240-103914-1						
Method: 8330B						
LL7mw-006-181001-GW	240-103914-1	AQ	N	3535	11/6/2018 9:20:00 AM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 240-103914-1
EDD Filename: 240-103914-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	A
Surrogate/Tracer Spikes	A
Matrix Spike/Matrix Spike Duplicates	N
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	N
Field Triplicates	N
Field Blanks	N

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers

Reporting Limit Outliers

Lab Reporting Batch ID: 240-103914-1 **Laboratory: TA DEN**

EDD Filename: 240-103914-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 8330B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL7mw-006-181001-GW	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	J M	0.33	0.42	LOQ	ug/L	J (all detects)

Data Qualifier Summary

Lab Reporting Batch ID: 240-103914-1 **Laboratory: TA DEN**

EDD Filename: 240-103914-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: SVOA

Method: 8330B *Matrix:* AQ

Sample ID: LL7mw-006-181001-GW *Collected:* 11/6/2018 9:20:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.33	J M	0.21	LOD	0.42	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 240-103914-1 **Laboratory: TA DEN**

EDD Filename: 240-103914-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
RI	Reporting Limit Trace Value

* denotes a non-reportable result

LEIDOS
Laboratory Data Verification Checklist

Project: RVAAP

SDG No: J115789

Analyte Group: SVOC, PAH, Explosives, Hex Chrom, Wet Chem
Sample Matrix: Aqueous
EDD (Y/N):

Disposition of Data Package:
NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)		Y
Check for LCS results (e.g., org. form III, inorg. form XII)		Y
Check for method blank results (e.g., org. form IV, inorg. form III)		Y
Check for MS/MSD results (e.g., inorg. form V)		Y
Check for laboratory duplicate results (e.g., inorg. form VI)		Y
Check for Method Calibration and Run Documentation		
organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	method linear range	NA
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	Y
other:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	sample run sequence	Y

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Joseph C Peters Date: 1/6/19

QA Review By: Richman Stach Date: 01/07/2019

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: J115789

Analyte Group: SVOC, PAH, ALK, Sulfate/nitrate/nitrite, sulfide, hex chrom & explosives

See attached

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:

Comments:

Sample Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-115789-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-115789-1	RQLMW-011-181001-GW	Water	10/18/18 11:10	10/19/18 09:20
280-115789-2	RQLMW-011-181002-GW	Water	10/18/18 11:10	10/19/18 09:20
280-115789-3	FWGER-181001-ER	Water	10/18/18 07:30	10/19/18 09:20
280-115789-4	FWGFB-181001-FB	Water	10/18/18 07:20	10/19/18 09:20
280-115789-5	FWGFB-181001-FB	Water	11/14/18 00:00	11/15/18 13:50

10/18 + ms/msd volume

SVOC, PAH, ALK, Sulfate/nitrate/nitrite

sulfide, hex Chrom

SVOC, PAH, ALK, sulfate/nitrate/nitrite

sulfide, hex Chrom

PAH, Explosives

collected 10/18

collected 11/14

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J115789

Analysis: SVOCS, PAHS

Method: SW 8270D, 8270D-SIM

Laboratory: TestAmerica

Matrix: Aqueous

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DOD QSM

No data validation qualifiers

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Joseph C Peters Date: 1/4/19

QA Reviewed by: Richman Stark Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No discrepancies

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No re-analysis and/or dilutions performed

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks:

Holding times met; confirmed by ADR

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No discrepancies, confirmed by ADR

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks:

No discrepancies, ~~confirmed by ADR~~ ADR DOES NOT EVALUATE ISTD; RESULTS MANUALLY VALIDATED AND FOUND TO BE COMPLIANT

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: No contamination; confirmed by ADR

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration:
VOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: 10/23/18, 10/29/18
SVOC - Date(s) of continuing calibration: 10/29/18, 10/31/18 11/1/18 10/30/18
Was the 12 hour critieria met? Y or N Y

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks:

All initial and continuing calibration criteria met

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? NA Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: _____

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: RQLMW-011-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks:

All criteria met, confirmed by ADR

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-4434728/2-A LCSD 280-434728/3-A

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All criteria met; confirmed by ADR

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J115789

Analysis: Explosives

Method: SW 8330B

Laboratory: TestAmerica

Matrix: Aqueous

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DOD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Joseph C Peters Date: 1/6/19

QA Reviewed by: Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No discrepancies noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No dilutions or re-analysis

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks:

All holding times were met; ADR confirmed

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be $\leq$ 20%
Continuing calibration %D must be within $\pm$ 15%

Deviations:

Compound	Correlation Coefficient	% RSD	%D	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks:

All initial and continuing calibration criteria met

MNX not a target

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks:

All surrogates were within control limits; ADR confirmed

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks: Free from contamination; ADR confirmed

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks:

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: None; LCS/LCSD analyzed

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks:

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-438225/2-A, LCSD 280-438225/3-A

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks:

All LCS/LCSD recovery and RPD values within limits; ADR confirmed

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J115789

Analysis: Alkalinity, sulfide, nitrate/ nitrite

Method: 2320B, 9034, 9056A

Laboratory: TestAmerica

Matrix: Aqueous

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks:

Some results qualified as estimated due to holding time and MS/MSD recovery outliers.

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Joseph C Peters Date: 1/6/19

QA Reviewed by: Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks:

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks:

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: See ADR output

NOTE: ADR INDICATED UNDER HOLD TIME MISLEADING INFORMATION; BASED ON REANALYSIS FOR SULFATE INDICATED THAT THE 48 HOUR HOLD TIME FOR NO3 BY THE SAME METHOD WAS EXCEEDED; HOWEVER ADR WAS CORRECT IN NOT QUALIFYING THE ACTUAL NO3 RESULTS

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:
1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: All calibration criteria were met

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected
CCB 10/19 @9:42 sulfate	0.37 mg/L	1.85	None; results > action level
CCB 10/22 @15:29 sulfate	0.464 mg/L	2.32	
CCB 10/24 @18:58 ALK	1.38 mg/L	6.9	

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks:

See ADR output for method blank contamination no qualifiers due to MB contamination, results > action level

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks:

All LCS and/or LCSD values within recovery and/or RPD limits. ADR confirmed.

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks:

See ADR output

ADR QUALIFIERS FOR NITRATE DUE TO MS/MSD RPD VALUES REVISED

QUAL BOTH 18001 AND 18002 SINCE SAME MATRIX

ADR DID NOT QUAL SULFATE FOR 18002

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks:

Duplicate RPD limits within limits. ADR confirmed.

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J115789 **Analysis:** Hexavalent Chromium

Method: 7196A

Laboratory: TestAmerica **Matrix:** Aqueous

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: Laboratory limits; lab is not hold DOD ELAP accreditation for this method; client approved

Results qualified as estimated due to holding time and MS/MSD outliers

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Joseph E Peters Date: 1/6/19

QA Reviewed by: Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No discrepancies noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks:

No dilutions or reanalysis

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks:

See ADR output; results qualified as estimated; A03

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks:

All initial and continuing calibration criteria met

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks:

See ADR output for MB (no contamination), data package confirmed no contamination in CCBs

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks:

All LCS/LCSD recovery and RPD values within limits; ADR confirmed

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected
Hex Chrom	47/43	90-111	Native Sample UJ, H02
			ALSO QUAL FIELD DUPLICATE

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks:

ADR output did not document MS/MSD outliers

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks:

LCS/LCSD recovery and RPD values within limits; ADR confirmed

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: RQLMW-011-181001-GW **Lab Sample ID: 280-115789-1**
Date Collected: 10/18/18 11:10 **Matrix: Water**
Date Received: 10/19/18 09:20

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.014	U	0.11	0.014	0.0067	ug/L		10/30/18 02:05	1
2-Methylnaphthalene	0.014	U	0.11	0.014	0.0068	ug/L		10/30/18 02:05	1
Acenaphthene	0.045	U M U	0.11	0.045	0.0047	ug/L		10/30/18 02:05	1
Acenaphthylene	0.045	U	0.11	0.045	0.0058	ug/L		10/30/18 02:05	1
Anthracene	0.045	U	0.11	0.045	0.0063	ug/L		10/30/18 02:05	1
Benzo[a]anthracene	0.014	U	0.11	0.014	0.0047	ug/L		10/30/18 02:05	1
Benzo[a]pyrene	0.014	U M U	0.11	0.014	0.0078	ug/L		10/30/18 02:05	1
Benzo[b]fluoranthene	0.014	U	0.11	0.014	0.0035	ug/L		10/30/18 02:05	1
Benzo[g,h,i]perylene	0.014	U	0.11	0.014	0.0070	ug/L		10/30/18 02:05	1
Benzo[k]fluoranthene	0.014	U	0.11	0.014	0.0071	ug/L		10/30/18 02:05	1
Chrysene	0.014	U	0.11	0.014	0.0037	ug/L		10/30/18 02:05	1
Dibenz(a,h)anthracene	0.014	U	0.11	0.014	0.0046	ug/L		10/30/18 02:05	1
Fluoranthene	0.014	U	0.11	0.014	0.0054	ug/L		10/30/18 02:05	1
Fluorene	0.045	U M U	0.11	0.045	0.0062	ug/L		10/30/18 02:05	1
Indeno[1,2,3-cd]pyrene	0.045	U	0.11	0.045	0.0051	ug/L		10/30/18 02:05	1
Naphthalene	0.014	U	0.11	0.014	0.0090	ug/L		10/30/18 02:05	1
Phenanthrene	0.023	U	0.11	0.023	0.011	ug/L		10/30/18 02:05	1
Pyrene	0.023	U	0.11	0.023	0.0069	ug/L		10/30/18 02:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*64*		*53 - 106*	*10/23/18 16:35*	*10/30/18 02:05*	*1*
Nitrobenzene-d5	*65*		*55 - 111*	*10/23/18 16:35*	*10/30/18 02:05*	*1*
Terphenyl-d14	*81*		*58 - 132*	*10/23/18 16:35*	*10/30/18 02:05*	*1*

Client Sample ID: RQLMW-011-181002-GW **Lab Sample ID: 280-115789-2**
Date Collected: 10/18/18 11:10 **Matrix: Water**
Date Received: 10/19/18 09:20

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.013	U	0.10	0.013	0.0062	ug/L		10/30/18 03:33	1
2-Methylnaphthalene	0.013	U	0.10	0.013	0.0063	ug/L		10/30/18 03:33	1
Acenaphthene	0.042	U	0.10	0.042	0.0044	ug/L		10/30/18 03:33	1
Acenaphthylene	0.042	U	0.10	0.042	0.0053	ug/L		10/30/18 03:33	1
Anthracene	0.042	U	0.10	0.042	0.0059	ug/L		10/30/18 03:33	1
Benzo[a]anthracene	0.013	U	0.10	0.013	0.0044	ug/L		10/30/18 03:33	1
Benzo[a]pyrene	**0.0090**	**J**	0.10	0.013	0.0072	ug/L		10/30/18 03:33	1
Benzo[b]fluoranthene	0.013	U	0.10	0.013	0.0032	ug/L		10/30/18 03:33	1
Benzo[g,h,i]perylene	0.013	U	0.10	0.013	0.0065	ug/L		10/30/18 03:33	1
Benzo[k]fluoranthene	0.013	U	0.10	0.013	0.0066	ug/L		10/30/18 03:33	1
Chrysene	0.013	U	0.10	0.013	0.0035	ug/L		10/30/18 03:33	1
Dibenz(a,h)anthracene	0.013	U	0.10	0.013	0.0043	ug/L		10/30/18 03:33	1
Fluoranthene	0.013	U	0.10	0.013	0.0050	ug/L		10/30/18 03:33	1
Fluorene	0.042	U	0.10	0.042	0.0058	ug/L		10/30/18 03:33	1
Indeno[1,2,3-cd]pyrene	0.042	U	0.10	0.042	0.0047	ug/L		10/30/18 03:33	1
Naphthalene	0.013	U	0.10	0.013	0.0084	ug/L		10/30/18 03:33	1
Phenanthrene	0.021	U	0.10	0.021	0.0097	ug/L		10/30/18 03:33	1
Pyrene	0.021	U	0.10	0.021	0.0064	ug/L		10/30/18 03:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*61*		*53 - 106*	*10/23/18 16:35*	*10/30/18 03:33*	*1*
Nitrobenzene-d5	*59*		*55 - 111*	*10/23/18 16:35*	*10/30/18 03:33*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: RQLMW-011-181002-GW **Lab Sample ID: 280-115789-2**
Date Collected: 10/18/18 11:10 **Matrix: Water**
Date Received: 10/19/18 09:20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*78*		*58 - 132*	*10/23/18 16:35*	*10/30/18 03:33*	*1*

Client Sample ID: FWGER-181001-ER **Lab Sample ID: 280-115789-3**
Date Collected: 10/18/18 07:30 **Matrix: Water**
Date Received: 10/19/18 09:20

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Naphthalene	0.013	U	0.11	0.013	0.0085	ug/L		10/30/18 04:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*63*		*53 - 106*	*10/23/18 16:35*	*10/30/18 04:02*	*1*
Nitrobenzene-d5	*63*		*55 - 111*	*10/23/18 16:35*	*10/30/18 04:02*	*1*
Terphenyl-d14	*80*		*58 - 132*	*10/23/18 16:35*	*10/30/18 04:02*	*1*

Client Sample ID: FWGFB-181001-FB **Lab Sample ID: 280-115789-4**
Date Collected: 10/18/18 07:20 **Matrix: Water**
Date Received: 10/19/18 09:20

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Naphthalene	0.012	U	0.097	0.012	0.0078	ug/L		10/30/18 04:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*59*		*53 - 106*	*10/23/18 16:35*	*10/30/18 04:32*	*1*
Nitrobenzene-d5	*58*		*55 - 111*	*10/23/18 16:35*	*10/30/18 04:32*	*1*
Terphenyl-d14	*84*		*58 - 132*	*10/23/18 16:35*	*10/30/18 04:32*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: RQLMW-011-181001-GW **Lab Sample ID: 280-115789-1**
Date Collected: 10/18/18 11:10 **Matrix: Water**
Date Received: 10/19/18 09:20

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	1.1	U	11	1.1	0.29	ug/L		10/31/18 21:10	1
1,2-Dichlorobenzene	0.53	U	11	0.53	0.24	ug/L		10/31/18 21:10	1
1,3-Dichlorobenzene	1.1	U	11	1.1	0.32	ug/L		10/31/18 21:10	1
1,4-Dichlorobenzene	1.1	U	11	1.1	0.34	ug/L		10/31/18 21:10	1
1,4-Dioxane	4.6	U	19	4.6	1.8	ug/L		10/31/18 21:10	1
2,4,5-Trichlorophenol	1.1	U	21	1.1	0.47	ug/L		10/31/18 21:10	1
2,4,6-Trichlorophenol	1.1	U	21	1.1	0.31	ug/L		10/31/18 21:10	1
2,4-Dichlorophenol	2.1	U	11	2.1	0.67	ug/L		10/31/18 21:10	1
2,4-Dimethylphenol	2.1	U	11	2.1	0.61	ug/L		10/31/18 21:10	1
2,4-Dinitrophenol	32	U	84	32	11	ug/L		10/31/18 21:10	1
2,4-Dinitrotoluene	4.6	U	21	4.6	1.7	ug/L		10/31/18 21:10	1
2,6-Dinitrotoluene	4.6	U	21	4.6	2.0	ug/L		10/31/18 21:10	1
2-Chloronaphthalene	1.1	U	11	1.1	0.27	ug/L		10/31/18 21:10	1
2-Chlorophenol	4.6	U	11	4.6	2.1	ug/L		10/31/18 21:10	1
2-Methylphenol	2.1	U	11	2.1	1.0	ug/L		10/31/18 21:10	1
2-Nitroaniline	4.6	U	53	4.6	1.8	ug/L		10/31/18 21:10	1
2-Nitrophenol	1.1	U	21	1.1	0.41	ug/L		10/31/18 21:10	1
3 & 4 Methylphenol	0.53	U	21	0.53	0.26	ug/L		10/31/18 21:10	1
3,3'-Dichlorobenzidine	4.6	U	53	4.6	2.1	ug/L		10/31/18 21:10	1
3-Nitroaniline	4.6	U	53	4.6	2.1	ug/L		10/31/18 21:10	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: RQLMW-011-181001-GW **Lab Sample ID: 280-115789-1**
Date Collected: 10/18/18 11:10 **Matrix: Water**
Date Received: 10/19/18 09:20

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,6-Dinitro-2-methylphenol	9.3	U	84	9.3	4.2	ug/L		10/31/18 21:10	1
4-Bromophenyl phenyl ether	1.1	U	11	1.1	0.45	ug/L		10/31/18 21:10	1
4-Chloro-3-methylphenol	5.3	U	21	5.3	2.5	ug/L		10/31/18 21:10	1
4-Chloroaniline	4.6	U	26	4.6	2.3	ug/L		10/31/18 21:10	1
4-Chlorophenyl phenyl ether	4.6	U	11	4.6	1.7	ug/L		10/31/18 21:10	1
4-Nitroaniline	4.6	U	53	4.6	2.1	ug/L		10/31/18 21:10	1
4-Nitrophenol	4.2	U	53	4.2	1.3	ug/L		10/31/18 21:10	1
Benzoic acid	32	U	84	32	11	ug/L		10/31/18 21:10	1
Benzyl alcohol	0.53	U	26	0.53	0.24	ug/L		10/31/18 21:10	1
bis (2-chloroisopropyl) ether	1.1	U	11	1.1	0.29	ug/L		10/31/18 21:10	1
Bis(2-chloroethoxy)methane	2.1	U	11	2.1	1.0	ug/L		10/31/18 21:10	1
Bis(2-chloroethyl)ether	1.1	U	21	1.1	0.43	ug/L		10/31/18 21:10	1
Bis(2-ethylhexyl) phthalate	2.1	U	11	2.1	0.59	ug/L		10/31/18 21:10	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.1	ug/L		10/31/18 21:10	1
Carbazole	1.1	U	11	1.1	0.45	ug/L		10/31/18 21:10	1
Dibenzofuran	1.1	U	11	1.1	0.31	ug/L		10/31/18 21:10	1
Diethyl phthalate	1.1	U	21	1.1	0.40	ug/L		10/31/18 21:10	1
Dimethyl phthalate	0.53	U	21	0.53	0.22	ug/L		10/31/18 21:10	1
Di-n-butyl phthalate	4.6	U	21	4.6	1.2	ug/L		10/31/18 21:10	1
Di-n-octyl phthalate	1.1	U	21	1.1	0.37	ug/L		10/31/18 21:10	1
Hexachlorobenzene	2.1	U	11	2.1	0.69	ug/L		10/31/18 21:10	1
Hexachlorobutadiene	11	U	32	11	3.5	ug/L		10/31/18 21:10	1
Hexachlorocyclopentadiene	32	U	53	32	11	ug/L		10/31/18 21:10	1
Hexachloroethane	4.6	U	11	4.6	2.2	ug/L		10/31/18 21:10	1
Isophorone	0.53	U	11	0.53	0.22	ug/L		10/31/18 21:10	1
Nitrobenzene	2.1	U	21	2.1	0.85	ug/L		10/31/18 21:10	1
N-Nitrosodi-n-propylamine	1.1	U	21	1.1	0.37	ug/L		10/31/18 21:10	1
N-Nitrosodiphenylamine	1.1	U	11	1.1	0.46	ug/L		10/31/18 21:10	1
Pentachlorophenol	63	U	84	63	21	ug/L		10/31/18 21:10	1
Phenol	4.6	U	11	4.6	2.1	ug/L		10/31/18 21:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*89*		*43 - 140*	*10/24/18 13:18*	*10/31/18 21:10*	*1*
2-Fluorobiphenyl	*88*		*44 - 119*	*10/24/18 13:18*	*10/31/18 21:10*	*1*
2-Fluorophenol (Surr)	*90*		*19 - 119*	*10/24/18 13:18*	*10/31/18 21:10*	*1*
Nitrobenzene-d5 (Surr)	*88*		*44 - 120*	*10/24/18 13:18*	*10/31/18 21:10*	*1*
Phenol-d5 (Surr)	*93*		*10 - 115*	*10/24/18 13:18*	*10/31/18 21:10*	*1*
Terphenyl-d14 (Surr)	*101*		*50 - 134*	*10/24/18 13:18*	*10/31/18 21:10*	*1*

Client Sample ID: RQLMW-011-181002-GW **Lab Sample ID: 280-115789-2**
Date Collected: 10/18/18 11:10 **Matrix: Water**
Date Received: 10/19/18 09:20

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	1.1	U	11	1.1	0.30	ug/L		10/31/18 22:36	1
1,2-Dichlorobenzene	0.53	U	11	0.53	0.24	ug/L		10/31/18 22:36	1
1,3-Dichlorobenzene	1.1	U	11	1.1	0.32	ug/L		10/31/18 22:36	1
1,4-Dichlorobenzene	1.1	U	11	1.1	0.34	ug/L		10/31/18 22:36	1
1,4-Dioxane	4.7	U	19	4.7	1.8	ug/L		10/31/18 22:36	1
2,4,5-Trichlorophenol	1.1	U	21	1.1	0.48	ug/L		10/31/18 22:36	1
2,4,6-Trichlorophenol	1.1	U	21	1.1	0.31	ug/L		10/31/18 22:36	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: RQLMW-011-181002-GW **Lab Sample ID: 280-115789-2**
Date Collected: 10/18/18 11:10 **Matrix: Water**
Date Received: 10/19/18 09:20

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4-Dichlorophenol	2.1	U	11	2.1	0.68	ug/L		10/31/18 22:36	1
2,4-Dimethylphenol	2.1	U	11	2.1	0.62	ug/L		10/31/18 22:36	1
2,4-Dinitrophenol	32	U	85	32	11	ug/L		10/31/18 22:36	1
2,4-Dinitrotoluene	4.7	U	21	4.7	1.8	ug/L		10/31/18 22:36	1
2,6-Dinitrotoluene	4.7	U	21	4.7	2.0	ug/L		10/31/18 22:36	1
2-Chloronaphthalene	1.1	U	11	1.1	0.28	ug/L		10/31/18 22:36	1
2-Chlorophenol	4.7	U	11	4.7	2.1	ug/L		10/31/18 22:36	1
2-Methylphenol	2.1	U	11	2.1	1.0	ug/L		10/31/18 22:36	1
2-Nitroaniline	4.7	U	53	4.7	1.8	ug/L		10/31/18 22:36	1
2-Nitrophenol	1.1	U	21	1.1	0.41	ug/L		10/31/18 22:36	1
3 & 4 Methylphenol	0.53	U	21	0.53	0.27	ug/L		10/31/18 22:36	1
3,3'-Dichlorobenzidine	4.7	U	53	4.7	2.1	ug/L		10/31/18 22:36	1
3-Nitroaniline	4.7	U	53	4.7	2.1	ug/L		10/31/18 22:36	1
4,6-Dinitro-2-methylphenol	9.3	U	85	9.3	4.2	ug/L		10/31/18 22:36	1
4-Bromophenyl phenyl ether	1.1	U	11	1.1	0.46	ug/L		10/31/18 22:36	1
4-Chloro-3-methylphenol	5.3	U	21	5.3	2.6	ug/L		10/31/18 22:36	1
4-Chloroaniline	4.7	U	27	4.7	2.3	ug/L		10/31/18 22:36	1
4-Chlorophenyl phenyl ether	4.7	U	11	4.7	1.8	ug/L		10/31/18 22:36	1
4-Nitroaniline	4.7	U	53	4.7	2.1	ug/L		10/31/18 22:36	1
4-Nitrophenol	4.2	U	53	4.2	1.3	ug/L		10/31/18 22:36	1
Benzoic acid	32	U	85	32	11	ug/L		10/31/18 22:36	1
Benzyl alcohol	0.53	U	27	0.53	0.24	ug/L		10/31/18 22:36	1
bis (2-chloroisopropyl) ether	1.1	U	11	1.1	0.30	ug/L		10/31/18 22:36	1
Bis(2-chloroethoxy)methane	2.1	U	11	2.1	1.0	ug/L		10/31/18 22:36	1
Bis(2-chloroethyl)ether	1.1	U	21	1.1	0.44	ug/L		10/31/18 22:36	1
Bis(2-ethylhexyl) phthalate	2.1	U	11	2.1	0.59	ug/L		10/31/18 22:36	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.1	ug/L		10/31/18 22:36	1
Carbazole	1.1	U	11	1.1	0.46	ug/L		10/31/18 22:36	1
Dibenzofuran	1.1	U	11	1.1	0.31	ug/L		10/31/18 22:36	1
Diethyl phthalate	1.1	U	21	1.1	0.40	ug/L		10/31/18 22:36	1
Dimethyl phthalate	0.53	U	21	0.53	0.22	ug/L		10/31/18 22:36	1
Di-n-butyl phthalate	4.7	U	21	4.7	1.2	ug/L		10/31/18 22:36	1
Di-n-octyl phthalate	1.1	U	21	1.1	0.37	ug/L		10/31/18 22:36	1
Hexachlorobenzene	2.1	U	11	2.1	0.70	ug/L		10/31/18 22:36	1
Hexachlorobutadiene	11	U	32	11	3.5	ug/L		10/31/18 22:36	1
Hexachlorocyclopentadiene	32	U	53	32	11	ug/L		10/31/18 22:36	1
Hexachloroethane	4.7	U	11	4.7	2.2	ug/L		10/31/18 22:36	1
Isophorone	0.53	U	11	0.53	0.22	ug/L		10/31/18 22:36	1
Nitrobenzene	2.1	U	21	2.1	0.86	ug/L		10/31/18 22:36	1
N-Nitrosodi-n-propylamine	1.1	U	21	1.1	0.37	ug/L		10/31/18 22:36	1
N-Nitrosodiphenylamine	1.1	U	11	1.1	0.47	ug/L		10/31/18 22:36	1
Pentachlorophenol	64	U	85	64	21	ug/L		10/31/18 22:36	1
Phenol	4.7	U	11	4.7	2.1	ug/L		10/31/18 22:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*94*		*43 - 140*	*10/24/18 13:18*	*10/31/18 22:36*	*1*
2-Fluorobiphenyl	*85*		*44 - 119*	*10/24/18 13:18*	*10/31/18 22:36*	*1*
2-Fluorophenol (Surr)	*86*		*19 - 119*	*10/24/18 13:18*	*10/31/18 22:36*	*1*
Nitrobenzene-d5 (Surr)	*85*		*44 - 120*	*10/24/18 13:18*	*10/31/18 22:36*	*1*
Phenol-d5 (Surr)	*89*		*10 - 115*	*10/24/18 13:18*	*10/31/18 22:36*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: RQLMW-011-181002-GW **Lab Sample ID: 280-115789-2**
Date Collected: 10/18/18 11:10 **Matrix: Water**
Date Received: 10/19/18 09:20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14 (Surr)	*99*		*50 - 134*	*10/24/18 13:18*	*10/31/18 22:36*	*1*

Client Sample ID: FWGER-181001-ER **Lab Sample ID: 280-115789-3**
Date Collected: 10/18/18 07:30 **Matrix: Water**
Date Received: 10/19/18 09:20

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4-Dinitrotoluene	4.5	U	21	4.5	1.7	ug/L		10/29/18 17:27	1
2,6-Dinitrotoluene	4.5	U	21	4.5	2.0	ug/L		10/29/18 17:27	1
Nitrobenzene	2.1	U	21	2.1	0.84	ug/L		10/29/18 17:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*94*		*43 - 140*	*10/25/18 13:12*	*10/29/18 17:27*	*1*
2-Fluorobiphenyl	*74*		*44 - 119*	*10/25/18 13:12*	*10/29/18 17:27*	*1*
2-Fluorophenol (Surr)	*70*		*19 - 119*	*10/25/18 13:12*	*10/29/18 17:27*	*1*
Nitrobenzene-d5 (Surr)	*73*		*44 - 120*	*10/25/18 13:12*	*10/29/18 17:27*	*1*
Phenol-d5 (Surr)	*74*		*10 - 115*	*10/25/18 13:12*	*10/29/18 17:27*	*1*
Terphenyl-d14 (Surr)	*98*		*50 - 134*	*10/25/18 13:12*	*10/29/18 17:27*	*1*

Client Sample ID: FWGFB-181001-FB **Lab Sample ID: 280-115789-4**
Date Collected: 10/18/18 07:20 **Matrix: Water**
Date Received: 10/19/18 09:20

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4-Dinitrotoluene	4.3	U	19	4.3	1.6	ug/L		10/29/18 17:56	1
2,6-Dinitrotoluene	4.3	U	19	4.3	1.8	ug/L		10/29/18 17:56	1
Nitrobenzene	1.9	U	19	1.9	0.78	ug/L		10/29/18 17:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*91*		*43 - 140*	*10/25/18 13:12*	*10/29/18 17:56*	*1*
2-Fluorobiphenyl	*79*		*44 - 119*	*10/25/18 13:12*	*10/29/18 17:56*	*1*
2-Fluorophenol (Surr)	*78*		*19 - 119*	*10/25/18 13:12*	*10/29/18 17:56*	*1*
Nitrobenzene-d5 (Surr)	*79*		*44 - 120*	*10/25/18 13:12*	*10/29/18 17:56*	*1*
Phenol-d5 (Surr)	*80*		*10 - 115*	*10/25/18 13:12*	*10/29/18 17:56*	*1*
Terphenyl-d14 (Surr)	*104*		*50 - 134*	*10/25/18 13:12*	*10/29/18 17:56*	*1*

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: FWGFB-181001-FB **Lab Sample ID: 280-115789-5**
Date Collected: 11/14/18 00:00 **Matrix: Water**
Date Received: 11/15/18 13:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.41	U	1.0	0.41	0.20	ug/L		11/26/18 15:13	1
1,3-Dinitrobenzene	0.20	U	0.41	0.20	0.091	ug/L		11/26/18 15:13	1
2,4,6-Trinitrotoluene	0.20	U	0.41	0.20	0.074	ug/L		11/26/18 15:13	1
2,4-Dinitrotoluene	0.20	U	0.41	0.20	0.086	ug/L		11/26/18 15:13	1
2,6-Dinitrotoluene	0.20	U	0.20	0.20	0.066	ug/L		11/26/18 15:13	1
2-Amino-4,6-dinitrotoluene	0.12	U	0.20	0.12	0.052	ug/L		11/26/18 15:13	1
2-Nitrotoluene	0.20	U	0.41	0.20	0.088	ug/L		11/26/18 15:13	1
3-Nitrotoluene	0.20	U	0.41	0.20	0.085	ug/L		11/26/18 15:13	1
4-Amino-2,6-dinitrotoluene	0.12	U	0.20	0.12	0.059	ug/L		11/26/18 15:13	1
4-Nitrotoluene	0.41	U	1.0	0.41	0.20	ug/L		11/26/18 15:13	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: FWGFB-181001-FB **Lab Sample ID: 280-115789-5**
Date Collected: 11/14/18 00:00 **Matrix: Water**
Date Received: 11/15/18 13:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
HMX	0.20	U	0.41	0.20	0.090	ug/L		11/26/18 15:13	1
Nitrobenzene	0.20	U	0.41	0.20	0.093	ug/L		11/26/18 15:13	1
Nitroglycerin	2.0	U	3.1	2.0	0.94	ug/L		11/26/18 15:13	1
PETN	1.2	U	2.0	1.2	0.43	ug/L		11/26/18 15:13	1
RDX	0.12	U	0.20	0.12	0.054	ug/L		11/26/18 15:13	1
Tetryl	0.20	U	0.25	0.20	0.081	ug/L		11/26/18 15:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*97*		*83 - 119*	*11/20/18 11:01*	*11/26/18 15:13*	*1*

General Chemistry

Client Sample ID: RQLMW-011-181001-GW **Lab Sample ID: 280-115789-1**
Date Collected: 10/18/18 11:10 **Matrix: Water**
Date Received: 10/19/18 09:20

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chromium, hexavalent ADR qualified for HT	0.010	U H J1 UJ A03 H02	0.020	0.010	0.0040	mg/L		10/19/18 14:23	1
Sulfide qual for Ms by ADR	1.9	U J1 UJ H02	4.0	1.9	0.79	mg/L		10/23/18 23:07	1
Nitrate as N	U0.10	U J1 ~~UJ A03~~	0.50	0.10	0.042	mg/L		10/19/18 17:25	1
Nitrite as N qual UJ for Ms by ADR	0.10	U J1	0.50	0.10	0.049	mg/L		10/19/18 17:25	1
Sulfate qual for Ms by ADR	**100**	**J1** J H01	5.0	0.50	0.23	mg/L		10/22/18 09:20	1
Alkalinity	**120**		5.0	5.0	1.1	mg/L		10/24/18 20:22	1

Client Sample ID: RQLMW-011-181002-GW **Lab Sample ID: 280-115789-2**
Date Collected: 10/18/18 11:10 **Matrix: Water**
Date Received: 10/19/18 09:20

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chromium, hexavalent ADR qualified for HT	0.010	U H UJ A03 H02	0.020	0.010	0.0040	mg/L		10/19/18 14:23	1
Sulfide qual for Ms by ADR	1.9	U UJ H02	4.0	1.9	0.79	mg/L		10/23/18 23:07	1
Nitrate as N	**0.049**	**J** ~~J A03~~	0.50	0.10	0.042	mg/L		10/19/18 18:37	1
Nitrite as N qual UJ for Ms by ADR	0.10	U	0.50	0.10	0.049	mg/L		10/19/18 18:37	1
Sulfate NOT QUALIFIED BY ADR	**96**	J H01	5.0	0.50	0.23	mg/L		10/19/18 18:37	1
Alkalinity	**120**		5.0	5.0	1.1	mg/L		10/24/18 20:28	1

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-115789-1						
Method: 2320B						
ROLMW-011-181001-GW	280-115789-1	AQ	N	METHOD	10/18/2018 11:10:00 AM	S2AVE
ROLMW-011-181002-GW	280-115789-2	AQ	N	METHOD	10/18/2018 11:10:00 AM	S2AVE
Method: 7196A						
ROLMW-011-181001-GW	280-115789-1	AQ	N	METHOD	10/18/2018 11:10:00 AM	S2AVE
ROLMW-011-181001-GWDUP	280-115789-1DUP	AQ	DUP	METHOD	10/18/2018 11:10:00 AM	S2AVE
ROLMW-011-181001-GWMS	280-115789-1MS	AQ	MS	METHOD	10/18/2018 11:10:00 AM	S2AVE
ROLMW-011-181001-GWMSD	280-115789-1MSD	AQ	MSD	METHOD	10/18/2018 11:10:00 AM	S2AVE
ROLMW-011-181002-GW	280-115789-2	AQ	N	METHOD	10/18/2018 11:10:00 AM	S2AVE
Method: 8270D						
FWGER-181001-ER	280-115789-3	AQ	EB	3520C	10/18/2018 7:30:00 AM	S2AVE
FWGFB-181001-FB	280-115789-4	AQ	FB	3520C	10/18/2018 7:20:00 AM	S2AVE
ROLMW-011-181001-GW	280-115789-1	AQ	N	3520C	10/18/2018 11:10:00 AM	S2AVE
ROLMW-011-181001-GWMS	280-115789-1MS	AQ	MS	3520C	10/18/2018 11:10:00 AM	S2AVE
ROLMW-011-181001-GWMSD	280-115789-1MSD	AQ	MSD	3520C	10/18/2018 11:10:00 AM	S2AVE
ROLMW-011-181002-GW	280-115789-2	AQ	N	3520C	10/18/2018 11:10:00 AM	S2AVE
Method: 8270D-SIM						
FWGER-181001-ER	280-115789-3	AQ	EB	3510C	10/18/2018 7:30:00 AM	S2AVE
FWGFB-181001-FB	280-115789-4	AQ	FB	3510C	10/18/2018 7:20:00 AM	S2AVE
ROLMW-011-181001-GW	280-115789-1	AQ	N	3510C	10/18/2018 11:10:00 AM	S2AVE
ROLMW-011-181001-GWMS	280-115789-1MS	AQ	MS	3510C	10/18/2018 11:10:00 AM	S2AVE
ROLMW-011-181001-GWMSD	280-115789-1MSD	AQ	MSD	3510C	10/18/2018 11:10:00 AM	S2AVE
ROLMW-011-181002-GW	280-115789-2	AQ	N	3510C	10/18/2018 11:10:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 8330B						
FWGFB-181001-FB	280-115789-5	AQ	FB	3535	11/14/2018	S2AVE
Method: 9034						
ROLMW-011-181001-GW	280-115789-1	AQ	N	Gen Prep	10/18/2018 11:10:00 ΔM	S2AVE
ROLMW-011-181001-GWMS	280-115789-1MS	AQ	MS	Gen Prep	10/18/2018 11:10:00 ΔM	S2AVE
ROLMW-011-181001-GWMSD	280-115789-1MSD	AQ	MSD	Gen Prep	10/18/2018 11:10:00 ΔM	S2AVE
ROLMW-011-181002-GW	280-115789-2	AQ	N	Gen Prep	10/18/2018 11:10:00 ΔM	S2AVE
Method: 9056A						
ROLMW-011-181001-GW	280-115789-1	AQ	N	METHOD	10/18/2018 11:10:00 ΔM	S2AVE
ROLMW-011-181001-GWDUP	280-115789-1DUP	AQ	DUP	METHOD	10/18/2018 11:10:00 ΔM	S2AVE
ROLMW-011-181001-GWMS	280-115789-1MS	AQ	MS	METHOD	10/18/2018 11:10:00 ΔM	S2AVE
ROLMW-011-181001-GWMSD	280-115789-1MSD	AQ	MSD	METHOD	10/18/2018 11:10:00 ΔM	S2AVE
ROLMW-011-181002-GW	280-115789-2	AQ	N	METHOD	10/18/2018 11:10:00 ΔM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-115789-1
EDD Filename: 280-115789-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	SR
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	A
Matrix Spike/Matrix Spike Duplicates	SR
Laboratory Duplicates	A
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	N
Field Triplicates	N
Field Blanks	A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-115789-1 **Laboratory: TA DEN**

EDD Filename: 280-115789-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 7196A **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
RQLMW-011-181001-GW (RES/TO	Sampling To Analysis	27.25	24.00	HOURS	J (all detects)
RQLMW-011-181001-GWDUP (RES		27.25	24.00	HOURS	UJ (all non-detects)
RQLMW-011-181001-GWMS (RES/		27.25	24.00	HOURS	
RQLMW-011-181001-GWMSD (RES		27.25	24.00	HOURS	
RQLMW-011-181002-GW (RES/TO		27.25	24.00	HOURS	

Method: 9056A **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
RQLMW-011-181001-GW (RE2/TO	Sampling To Analysis	94.25	48.00	HOURS	J(all detects)
RQLMW-011-181001-GWDUP (RE2	SULFATE ANALYSIS	86.75	48.00	HOURS	UJ(all non-detects)
RQLMW-011-181001-GWMS (RE2/	TIMES - HT 28 DAYS	94.50	48.00	HOURS	
RQLMW-011-181001-GWMSD (RE2		87.00	48.00	HOURS	

THESE SAMPLES WERE COLLECTED 10/18 1110;
ANALYZED FOR NITRATE BY 9056 PER BELOW:

BATCH 434136 (NO2, NO3) ON 10/19 1725, 1837,
434137 (SO4) ON 10/19, 434308 (S04) ON 10/22

Method Blank Outlier Report

Lab Reporting Batch ID: 280-115789-1 **Laboratory: TA DEN**

EDD Filename: 280-115789-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: **9056A**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-434308/6	10/22/2018 1:37:00 AM	SULFATE	0 384 mg/L	RQLMW-011-181001-GW

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-115789-1 **Laboratory: TA DEN**

EDD Filename: 280-115789-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 9056A
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
RQLMW-011-181001-GWMS RQLMW-011-181001-GWMSD (RQLMW-011-181001-GW RQLMW-011-181002-GW)	Nitrate as N Nitrite as N	- 82	- -	88.00-111.00 87.00-111.00	14 (10.00) 14 (10.00)	~~Nitrate as N~~ Nitrite as N	J (all detects) UJ (all non-detects)
RQLMW-011-181001-GWMS RQLMW-011-181001-GWMSD (RQLMW-011-181001-GW)	SULFATE	120	116	87.00-112.00	-	SULFATE	J(all detects)

NO3 OK NO QUAL

NO2 ONLY

Method: 9034
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
RQLMW-011-181001-GWMSD (RQLMW-011-181001-GW RQLMW-011-181002-GW)	SULFIDE	-	-	44.00-110.00	36 (20.00)	SULFIDE	J(all detects) UJ(all non-detects)

NOT REPORTED BY ADR

hex Cr 47% 43% 90-111 J / UJ

Reporting Limit Outliers

Lab Reporting Batch ID: 280-115789-1 **Laboratory: TA DEN**

EDD Filename: 280-115789-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 8270D-SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
RQLMW-011-181002-GW	BENZO(A)PYRENE	J	0.0090	0.10	LOQ	ug/L	J (all detects)

Method: 9056A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
RQLMW-011-181002-GW	Nitrate as N	J	0.049	0.50	LOQ	mg/L	J (all detects)

Data Qualifier Summary

Lab Reporting Batch ID: 280-115789-1 **Laboratory: TA DEN**

EDD Filename: 280-115789-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: GENCHEM
Method: 9034 **Matrix:** AQ

Sample ID: RQLMW-011-181001-GW **Collected:** 10/18/2018 11:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SULFIDE	1.9	U J1	1.9	LOD	4.0	LOQ	mg/L	UJ	Ms

Sample ID: RQLMW-011-181002-GW **Collected:** 10/18/2018 11:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SULFIDE	1.9	U	1.9	LOD	4.0	LOQ	mg/L	UJ	Ms

Method Category: GENCHEM
Method: 9056A **Matrix:** AQ

Sample ID: RQLMW-011-181001-GW **Collected:** 10/18/2018 11:10:00 AM **Analysis Type:** RE2/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SULFATE	100	J1	0.50	LOD	5.0	LOQ	mg/L	J	Ms

Sample ID: RQLMW-011-181001-GW **Collected:** 10/18/2018 11:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate as N	0.10	U J1	0.10	LOD	0.50	LOQ	mg/L	UJ	~~Ms~~ DELETE
Nitrite as N	0.10	U J1	0.10	LOD	0.50	LOQ	mg/L	UJ	Ms, Ms

Sample ID: RQLMW-011-181002-GW **Collected:** 10/18/2018 11:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate as N	0.049	J	0.10	LOD	0.50	LOQ	mg/L	J	RI, ~~Ms~~ DELETE Ms
Nitrite as N	0.10	U	0.10	LOD	0.50	LOQ	mg/L	UJ	Ms, Ms

SULFATE J Ms

NOTE: NO3 NOT QUALIFIED FOR RPD EXCEEDANCE SINCE RESULTS EITHER ND OR ESTIMATED BELOW LOD

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-115789-1 **Laboratory: TA DEN**

EDD Filename: 280-115789-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 7196A **Matrix:** AQ

Sample ID: RQLMW-011-181001-GW **Collected:** 10/18/2018 11:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEXAVALENT CHROMIUM	0.010	U H J1	0.010	LOD	0.020	LOQ	mg/L	UJ	StoA , MS

Sample ID: RQLMW-011-181002-GW **Collected:** 10/18/2018 11:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEXAVALENT CHROMIUM	0.010	U H	0.010	LOD	0.020	LOQ	mg/L	UJ	StoA, MS

Method Category: SVOA

Method: 8270D-SIM **Matrix:** AQ

Sample ID: RQLMW-011-181002-GW **Collected:** 10/18/2018 11:10:00 AM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)PYRENE	0.0090	J	0.013	LOD	0.10	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-115789-1 **Laboratory: TA DEN**

EDD Filename: 280-115789-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
RI	Reporting Limit Trace Value
StoA	Sampling to Analysis Estimation

* denotes a non-reportable result

LEIDOS
Laboratory Data Verification Checklist

Project: RVAAP

SDG No: J115877

Analyte Group: VOC, SVOC, Pesticides, PCB, Explosives, Metals, Wet Chem

Sample Matrix: Water

EDD (Y/N):

Disposition of Data Package:

NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)		Y
Check for LCS results (e.g., org. form III, inorg. form XII)		Y
Check for method blank results (e.g., org. form IV, inorg. form III)		Y
Check for MS/MSD results (e.g., inorg. form V)		Y
Check for laboratory duplicate results (e.g., inorg. form VI)		Y
Check for Method Calibration and Run Documentation		
organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	method linear range	Y
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	Y
other:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	sample run sequence	Y

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Brooke Francis Date: 12/22/18

QA Review By: Richman Stark Date: 01/03/2019

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: J115877

Analyte Group: VOC, SVOC, Explosives, Pest, PCB, Metals, Wet Chem

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:
RQLmw-009-181001-GW	115877-1	W	VOC, SVOC, Explosives, Pest,	PCB, Metals, Wet Chem incl PAH
FWGTB-181001-TB	115877-2		VOC	
RQLmw-016-181001-GW	115877-3		Wet Chem	
EBGmw-125-181001-GW	115877-4			
EBGmw-131-181001-GW	115877-5			
RQLmw-013-181001-GW	115877-6		Cr6	
RQLmw-014-181001-GW	115877-7		Explosives Cr6	
RQLmw-012-181001-GW	115877-8		Cr6	

Comments:

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J115877

Analysis: VOC

Method: 8260

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/22/18

QA Reviewed by: Date: 01/03/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: All surrogates met control limits

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: All IS results met control limits

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes / No
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MB and TB were free from contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: 10/22/18
VOC - Date(s) of continuing calibration: 11/2/18
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration:
SVOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: Calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria: percent recovery (%R)	VOC	SVOC	Pest	PCB
	80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-436013

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS%R results met control limits

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J115877

Analysis: SVOCs/PAH

Method: 8270/SIM

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/26/18

QA Reviewed by: Date: 01/03/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No sample results were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
RQLmw-009-181001-GW						41					
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No qual

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: All IS results met control limits

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MBs were free from contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration:
VOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: 10/23/18 10/29/18
SVOC - Date(s) of continuing calibration: 10/31/18 10/29/18
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: All calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS/D 280-434728 LCS 280-434609

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS/D %R and RPD results met control limits

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J115877 **Analysis:** PCB/Pesticides

Method: 8081-8082

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

Some pesticide results were qualified as estimated due to LCS discrepancies and column comparison

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooks Francis Date: 12/26/18

QA Reviewed by: Richman Stark Date: 01/03/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted Column comparison outliers not noted

Pest

The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: RQLmw-009-181001-GW (280-115877-1), (LCS 280-434423/2-A), (LCS 280-434423/6-A), (LCSD 280-434423/3-A), (LCSD 280-434423/7-A) and (MB 280-434423/1-A).

The following sample formed emulsions during the extraction procedure: RQLmw-009-181001-GW (280-115877-1). The emulsions were broken up using a pour-back for all three extractions. Sample RQLmw-009-181001-GW (280-115877-1) was diluted due to the nature of the sample matrix. The reporting limits were raised accordingly.

PCB

The following samples required a sulfuric acid clean-up, via EPA Method 3665A, to reduce matrix interferences: RQLmw-009-181001-GW (280-115877-1), (LCS 280-434423/4-A), (LCSD 280-434423/5-A) and (MB 280-434423/1-A). Acid Lot: 161554

The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: RQLmw-009-181001-GW (280-115877-1), (LCS 280-434423/4-A), (LCSD 280-434423/5-A) and (MB 280-434423/1-A). The reagent lot number used was T11E059.

The following sample formed emulsions during the extraction procedure: RQLmw-009-181001-GW (280-115877-1). The emulsions were broken up using a pour-back for all three extractions.

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: All results were reported at a 10x dilution

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
LCS 280-434423/2-A										26	30
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: All surrogates met control limits

LCS also had target recoveries low, see note on Form X

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: ~~IS were within control limits~~

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes / No
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MB were free from contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: _____
VOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: _____
SVOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: NA

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected
Delta-BHC RQLmw-009-181001-GW			43.9% RPD (Column discrepancy) Sample result J M08
Toxaphene (ICV)			32.56% Average %D (-32.6) ~~ND, no qual~~ UJ C05

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: _____

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS/D 280-434423

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: See ADR for discrepancies

The laboratory control sample (LCS) associated with batch 280-438624 was outside control limits for all surrogates and spikes. There was a note from the prep lab stating some of the extract was lost during concentration. The LCSD sample is in control for all spikes. RPD values were outside control limits due to the failed LCS sample. Because the LCSD was in control and it is known that the LCS is out do to loss of sample, data is reported. This LCS/LCSD is associated with sample RQLmw-009-181001-GW (280-115877-1) .

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J115877

Analysis: Explosives

Method: 8330B

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/26/18

QA Reviewed by: Richman Stark Date: 01/03/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No sample results were reanalyzed or diluted

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes:
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be ≥ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be ≤ 20%
Continuing calibration %D must be within ± 15%

Deviations:

Compound	Correlation Coefficient	% RSD	%D	Samples Affected	
Tetryl			21.6	CCV 435098/42	115877-1
Tetryl			21.0	CCV 435098/54	115877-1, 2
Tetryl			20.1	CCV 435098/64	115877-2

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks: Tetryl results were ND, no qual

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks: All surrogates met control limits

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MB was free from contamination

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS/D 280-434708

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS/D %R and RPD results met control limits

LEIDOS
Metals Data Review Checklist

Project: RVAAP

SDG No: J115877

Analysis: Metals/Mercury

Method: 6010/6020/7470

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on an examination of the following:

Case Narrative	MS/MSD Recoveries and Differences
Analytical Holding Times	Duplicate Relative Percent Differences
Sample Preservation	ICP Serial Dilution
Method Calibration	Furnace Atomic Absorption QC
Method and Project Blanks	Re-analysis and Secondary Dilution
LCS Recoveries	Internal Standard Performance (if applicable)

Project specific QA/QC or contract requirements may take priority over validation criteria in this proceudre.

Overall remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/26/18

QA Reviewed by: Richman Stark Date: 01/03/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Metals - Waters - preserved to pH<2, 180 days from sample collection
Metals - Soils - 180 days from sample collection
Mercury - Waters - preserved to pH<2, 28 days from sample collection
Mercury - Soils - 28 days from sample collection

Deviations:

Sample #	Metals				Mercury			
	Date Collected	Date Analyzed	Days >HT	pH Check	Date Collected	Date Analyzed	Days >HT	pH Check

Actions:

1. If preserved samples exceed holding time, qualify all associated results as estimated (J/UJ).
2. If unpreserved samples exceed holding time, qualify all associated results as unusable (R).
3. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
4. If water samples are not acidified, use professional judgement. Minimally, qualify data as estimated (J) and non-detects unusable (R).
5. If soil samples exceed holding time, use professional judgement to qualify data.

Remarks: All holding times were met

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.)

Initial calibration linearity criteria is r ≥ 0.995
ICV and CCV criteria are ± 10% recovery, low level check standard allowed ± 30%
ICP inter-element check standard criteria ± 20%

Deviations:

Element	Date	Intial Calib.	ICV/ CCV	%R	Samples Affected
Cadmium	11/2 19:01		CCVL	78	None
Beryllium	11/3 00:17		CCVL	128	None

Actions:

1. If any elements initial claibration linearity is <0.995, qualify the data as estimated (J/UJ)
2. If any elements initial claibration linearity is <0.95, qualify the data as unusable (R)

3a. If any elements ICV or CCV recovery is <90%, qualify the data as estimated (J/UJ)

3b. If any elements ICV or CCV recovery is > 110%, qualify results ≥ MDL as estimated (J). Do not qualify non-detects.

4a. If any elements ICV or CCV recovery is <75%, qualify the data as unusable (R)

4b. If any elements ICV or CCV recovery is > 125% qualify positive results as estimated (J) or non-detects as unusable (R).

4c. If any element ICV or CCV recovery is ≥ 160%, qualify positive results ≥ MDL as unusable (R). Do not qualify non-detects.

5a. If any elements CRI recovery is 50 - 69% (30 - 49% for Sb, Pb, Tb), qualify results ≥ MDL (but < 2 times CRQL) as estimated (J/UJ) and results > 2 times CRQL are not qualified.

5b. If any elements CRI recovery is < 50% (<30% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) and non-detects as unusable (R). Results > 2 times CRQL are estimated (J).

5c. If any elements CRI recovery is > 130% but < 180% (>150% but ≤ 200% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) as esimated (J). And non-detects and results ≥ 2x CRQL are not qualified.

5d. If CRI or (R) > 180% (> 200% for Sb, Pb, Ti), qualify results that are ≥ MDL as unusable (R).

Remarks: _____

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.) (continued)

Analytical Sequence and MS Tune	(Y/N)
1. Were the appropriate number of ICP standards used?	Y
2. Were the appropriate number of AA standards used?	Y
3. Was calibration performed and documented at the beginning of each run?	Y
4. Were calibration check standards run at 10% frequency or every two hours?	Y
5. Were low level standard checks analyzed at approximately 2X the PQL?	Y
6. Was ICP-MS mass calibration within 0.1 AMU?	Y
7. Was ICP-MS % RSD of the aboslute signals for all analytes < 5%?	Y

Deviations:

Element	Deviation	Samples Affected

Actions:

1. If instrument calibration is questionable, use professional judgement, qualify the data as estimated (J/UJ)
2. If instrument calibration documentation can not be obtained or is inadequate, qualify the data as unusable (R)
3. If mass calibration for ICP-MS was not within 0.1 AMU qualify analyte results as estimated (J/UJ)
4. If % RSD for ICP-MS was > 5% for any analyte in the tuning solution, qualify associated results as estimated (J/UJ).

Results:

V. Blanks (ICB, CCB, Method Blank, Equipment Rinsate Blank)

A. Blank Results

If the blank level is > CRQL for any analyte, check that the analyte's concentration in the samples is > 10 times the blank value. The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account when applying the action level.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
ICB 11/2 16:11	Vanadium	1.11 ug/L	11.1 ug/L	None
CCB 11/2 18:57	Antimony	0.483 ug/L	4.83 ug/L	None
	Vanadium	0.544 ug/L	5.44 ug/L	None
CCB 11/2 22:53	Antimony	0.448 ug/L	4.48 ug/L	115877-1 ND no qual
MB 434973	Calcium	54.2 ug/L	542 ug/L	115877-1 >AL, no qual
MB 434761	Manganese	0.624 ug/L	6.24 ug/L	115877-1 >AL, no qual

If additional space is required, use next page

Actions:

1. For blank results ≥ MDL but ≤ CRQL, qualify samples ≥ MDL but < CRQL as CRQL U.
   Use proffessional judgement to qualify sample results exceeding the CRQL.

2a. If blank results are > CRQL: For sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < 10 times the blank qualify results as unusable (R) or estimated (J). No action is taken for sample results ≥ 10 times the blank levels.

2b. If ICB/ CCB results are > CRQL; for sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < blank results, qualify results as not detected (U) at the level of the blank or unusable (R). Use professional judgement for sample results > blank results.

Remarks: _____

V. Blanks (continued)

The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected

V. Blanks (continued)

B. Frequency Requirements (Y/N)

1. Was a method (preparation) blank analyzed for each matrix? Y
2. Was a method blank processed for every analytical batch (20 samples)? Y
3. Was a calibration blank analyzed at 10% frequency or every two hours? Y

Deviations:

Element	Deviation	Samples Affected

Remarks:

C. Baseline Shift Evaluation

List the highest negative blank concentration for each analyte observed in laboratory or project blanks.

Deviations:

Blank ID	Element	Max. Neg Conc.	Action Level	Samples Affected

Actions:

1. If the absolute value of the maximum negative blank result is > the CRQL, qualify positive results as estimated (J) and non-detects as estimated (UJ).

Remarks:

VI. Laboratory Control Sample Evaluation

All LCS recovery criteria are set at 80-120%
An LCS must be analyzed for each matrix and for each digestion batch or set of twenty samples

Deviations:

Element	Date	%R	Matrix	Samples Affected

Actions:

1. If any element's LCS recovery is >120%, qualify positive results as (J).
2. If any element's LCS recovery is 50-79%, qualify positive results as (J) and non-detect results as (UJ)

3a. If any element's LCS recovery is <50%, qualify positive results as (J) and non-detect results as (R)
3b. If the LCS recovery is > 150%, qualify all results as unusable (R).

4. For soil LCS recovery > upper limit, qualify samples results ≥ MDL as estimated (J).
5. For soil LCS recovery < lower limit, qualify results ≥ MDL as esimated (J) and non-detected estimated (UJ).
6. Use professional judgement to qualify data if the LCS frequency criteria are not met.

Remarks: All LCS %R and RPD results met control limits

VII. Matrix Spike Evaluation

All MS recovery criteria are set at 75-125%
An MS must be analyzed for each matrix and for each digestion batch or set of twenty samples
Verify that a field blank or PE sample was not used for spiked sample analysis
Verify that a post-digestion spike was analyzed for those anlytes where the pre-digestion spike recovery is outside control limits and the sample result is < 4 times the spike added.
Project Sample(s) Spiked: _____

Deviations:

Element	Spiked Sample Result	Sample Result	Spike Amount	%R	Samples Affected

Actions:

1. If the sample concentration exceeds the spiking level by a factor of 4X or more, do not qualify the data
2. If the spike recovery is >125%, qualify all positive values as (J).
3. If the spike recovery is between 30-74%, qualify positive values as (J) and non-detect values as estimated (UJ)
4. If the spike recovery is <30%, qualify positive values as (J) and non-detects are qualified unusable (R)
if the post-digestion spike recovery is < 75% (or none was performed); non-detects are qualified as estimated (UJ)
If the post-digestion spike reocvery is ≥ 75%. There is no post-digestion spike performed for mercury.
5. Qualify all samples of similar matrix to the spiked sample in the same manner
6. Use professional judgement to qualify data if the MS frequency criteria are not met.
7. Use professional judgement for qualification of data for unspiked elements

Remarks: NA

VIII. Laboratory Duplicate Evaluation

Duplicate relative percent difference (RPD) for water is 20% (both results > 5 times CDRL) or < CRDL difference (if either result is < 5 times CRDL) and RPD for soil is 35% (if both results are > 5 times CRDL or < 2 times CRDL if either result is < 5 times CRDL).
When duplicate sample values are both less than the reporting level they are considered acceptable
When dupicate sample values are within 5X the reporting level they are acceptable if their absolute difference is within 3X the reporting level
Verify that a field blank on PE sample was not used for duplicate analysis.

Deviations: ____

Element	Sample #	Duplicate #	RPD	Samples Affected

Actions:

1. If an element's RPD is >20% (water) / >35% (soil), qualify positive results as (J) and non-detect results as (UJ)
2. For low concentrations, if an element's duplicate absolute difference is > 3X the reporting level, qualify positive results as (J) and non-detect results as (UJ)
3. Use professional judgement to qualify data if the duplicate frequency criteria are not met.

Remarks: NA

IX. Inductively Coupled Plasma (ICP) Serial Dilution Analysis

Verify that a field blank or PE sample was not used for serial dilution.
Serial dilution of positive results are performed when values exceed 50X the IDL
Results from serial dilutions should agree within 10% of the original undiluted analysis

Deviations:

Element	Sample #	Sample Result	Serial Dilution	%D	Action

Actions:

1. If the serial dilution %D is >10 and the analyte results are >50X the IDL, qualify all positive results as estimated (J) and non-detects as estimated (UJ).

Remarks: NA

X. Furnace Atomic Absorption QC

A. Duplicate Precision (Y/N)

1. Were duplicate injections performed for all samples? _____
2. Were one point analytical spikes performed for all samples? _____
3. Did duplicate injections agree within ± 20%? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If duplicate injection results are outside ± 20%, qualify positive results as (J) and non-detect results as (UJ)

Remarks: NA

B. Post Digestion Spike Recoveries (Y/N)

1. Did post digestion spike recoveries meet an 85-115% recovery criteria? _____
2. If spike recoveries did not meet recovery criteria were samples analyzed by MSA? _____
3. If MSA was used to analyze samples, was its' correlation coefficient ≥ 0.995? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If post digestion spike recoveries are >115%, qualify positive results as (J) and non-detect results as (U)
2. If post digestion spike recoveries are 11-84%, qualify positive results as (J) and non-detect results as (UJ)
3. If post digestion spike recoveries are <10%, qualify positive results as (R) and non-detect results as (R)
4. If MSA was used to quantitate values and the correlation coefficient was <0.995, qualify data as (J or UJ)
5. If MSA was used to quantitate values and the correlation coefficient was <0.95, qualify data as (R)

Remarks: NA

XI. Inductively Coupled Plasma (ICP) Interference Check Sample Evaluation

Interference check samples should be analyzed at the beginning and end of each analysis run, or at a minimum of twice per 8 hour working shift.
Results for the ICS solution AB must fall within control limits of 20% for analytes included in the solution.
Evaluate the ICS A solution raw data for results with an absolute value ≥ MDL for analytes that are not present in the ICS A solution.

Deviations:

Element	Sample #	Sample Result	Interferent Result	Action

Actions:

1. If the ICS AB %R for an analyte is > 120%, qualify sample results ≥ MDL as estimated (J) and non-detects should not be qualified.
2. If the ICS AB %R for an analyte is 50-79%, qualify sample results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ).
3. If the ICS AB %R for an analyte is <50%, qualify all sample results that are ≥ MDL and all non-detects as as unusable (R).
4. If results ≥ MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents and with analyte concentration that approximate those levels in the ICS A, sample results ≥ MDL should be qualified as estimated (J) and non-detects should not be qualified.
5. If negative results with absolute values > MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents, affected sample results > MDL should be qualified as estimated (J) and non-detects (UJ).

Remarks: All ICS results met control limits

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J115877

Analysis: Cyanide, Sulfide, Nitrate/Nitrate, Sulfate, Alkalinity

Method: 9012, 9034, 9056, 2320

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: No sample results were qualified

Some results were qualified as non-detect due to blank contamination

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/26/18

QA Reviewed by: Date: 01/03/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No results were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: See ADR Output

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected
Nitrate	0.0668 mg/L	0.668 mg/L	CCB 10/20 11:17 All samples
Nitrate	0.0547 mg/L	0.547 mg/L	CCB 10/20 21:57 All samples
Nitrate	0.042 mg/L	0.42 mg/L	280-115877-6

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks:

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS %R results met control limits

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: MS/MSD %R results met control limits

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: Duplicate results met control limits

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J115877-2

Analysis: Hexa Chrom

Method: 7196

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: Laboratory limits, lab is not DoD certified for this method, client approved

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12-26-18

QA Reviewed by: Richman Stark Date: 01/03/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: MB and CCBs were free from contamination

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R met control limits

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: NA

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

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

Client Sample ID: RQLmw-009-181001-GW **Lab Sample ID: 280-115877-1**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		11/02/18 11:57	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/02/18 11:57	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/02/18 11:57	1
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		11/02/18 11:57	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		11/02/18 11:57	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/02/18 11:57	1
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/02/18 11:57	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/02/18 11:57	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/02/18 11:57	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/02/18 11:57	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/02/18 11:57	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/02/18 11:57	1
Acetone	**4.5**	**J**	10	6.4	1.9	ug/L		11/02/18 11:57	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/02/18 11:57	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/02/18 11:57	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/02/18 11:57	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/02/18 11:57	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/02/18 11:57	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/02/18 11:57	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		11/02/18 11:57	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/02/18 11:57	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/02/18 11:57	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/02/18 11:57	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/02/18 11:57	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/02/18 11:57	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/02/18 11:57	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/02/18 11:57	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/02/18 11:57	1
Methylene Chloride	**0.86**	**J**	5.0	0.80	0.32	ug/L		11/02/18 11:57	1
Styrene	0.40	U	1.0	0.40	0.17	ug/L		11/02/18 11:57	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/02/18 11:57	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		11/02/18 11:57	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/02/18 11:57	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/02/18 11:57	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/02/18 11:57	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/02/18 11:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*81 - 118*		*11/02/18 11:57*	*1*
4-Bromofluorobenzene (Surr)	*101*		*85 - 114*		*11/02/18 11:57*	*1*
Dibromofluoromethane (Surr)	*107*		*80 - 119*		*11/02/18 11:57*	*1*
Toluene-d8 (Surr)	*103*		*89 - 112*		*11/02/18 11:57*	*1*

Client Sample ID: FWGTB-181001-TB **Lab Sample ID: 280-115877-2**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		11/02/18 10:22	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/02/18 10:22	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/02/18 10:22	1

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

Client Sample ID: FWGTB-181001-TB **Lab Sample ID: 280-115877-2**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		11/02/18 10:22	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		11/02/18 10:22	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/02/18 10:22	1
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/02/18 10:22	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/02/18 10:22	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/02/18 10:22	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/02/18 10:22	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/02/18 10:22	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/02/18 10:22	1
Acetone	6.4	U	10	6.4	1.9	ug/L		11/02/18 10:22	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/02/18 10:22	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/02/18 10:22	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/02/18 10:22	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/02/18 10:22	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/02/18 10:22	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/02/18 10:22	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		11/02/18 10:22	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/02/18 10:22	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/02/18 10:22	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/02/18 10:22	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/02/18 10:22	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/02/18 10:22	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/02/18 10:22	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/02/18 10:22	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/02/18 10:22	1
Methylene Chloride	0.80	U	5.0	0.80	0.32	ug/L		11/02/18 10:22	1
Styrene	0.40	U	1.0	0.40	0.17	ug/L		11/02/18 10:22	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/02/18 10:22	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		11/02/18 10:22	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/02/18 10:22	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/02/18 10:22	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/02/18 10:22	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/02/18 10:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*11/02/18 10:22*	*1*
4-Bromofluorobenzene (Surr)	*106*		*85 - 114*		*11/02/18 10:22*	*1*
Dibromofluoromethane (Surr)	*112*		*80 - 119*		*11/02/18 10:22*	*1*
Toluene-d8 (Surr)	*109*		*89 - 112*		*11/02/18 10:22*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: RQLmw-009-181001-GW **Lab Sample ID: 280-115877-1**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.013	U	0.11	0.013	0.0064	ug/L		10/30/18 05:01	1
2-Methylnaphthalene	0.013	U	0.11	0.013	0.0065	ug/L		10/30/18 05:01	1
Acenaphthene	0.043	U M u	0.11	0.043	0.0046	ug/L		10/30/18 05:01	1
Acenaphthylene	0.043	U	0.11	0.043	0.0055	ug/L		10/30/18 05:01	1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: RQLmw-009-181001-GW **Lab Sample ID: 280-115877-1**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Anthracene	0.043	U M u	0.11	0.043	0.0061	ug/L		10/30/18 05:01	1
Benzo[a]anthracene	0.013	U	0.11	0.013	0.0046	ug/L		10/30/18 05:01	1
Benzo[a]pyrene	0.013	U M u	0.11	0.013	0.0075	ug/L		10/30/18 05:01	1
Benzo[b]fluoranthene	0.013	U M u	0.11	0.013	0.0034	ug/L		10/30/18 05:01	1
Benzo[g,h,i]perylene	0.013	U M u	0.11	0.013	0.0067	ug/L		10/30/18 05:01	1
Benzo[k]fluoranthene	0.013	U M u	0.11	0.013	0.0068	ug/L		10/30/18 05:01	1
Chrysene	0.013	U	0.11	0.013	0.0036	ug/L		10/30/18 05:01	1
Dibenz(a,h)anthracene	0.013	U	0.11	0.013	0.0045	ug/L		10/30/18 05:01	1
Fluoranthene	**0.025**	**J**	0.11	0.013	0.0052	ug/L		10/30/18 05:01	1
Fluorene	0.043	U	0.11	0.043	0.0060	ug/L		10/30/18 05:01	1
Indeno[1,2,3-cd]pyrene	0.043	U	0.11	0.043	0.0049	ug/L		10/30/18 05:01	1
Naphthalene	0.013	U	0.11	0.013	0.0087	ug/L		10/30/18 05:01	1
Phenanthrene	**0.020**	**J**	0.11	0.022	0.010	ug/L		10/30/18 05:01	1
Pyrene	0.022	U	0.11	0.022	0.0066	ug/L		10/30/18 05:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*64*		*53 - 106*	*10/23/18 16:35*	*10/30/18 05:01*	*1*
Nitrobenzene-d5	*64*		*55 - 111*	*10/23/18 16:35*	*10/30/18 05:01*	*1*
Terphenyl-d14	*75*		*58 - 132*	*10/23/18 16:35*	*10/30/18 05:01*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: RQLmw-009-181001-GW **Lab Sample ID: 280-115877-1**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4,5-Trichlorophenol	1.1	U	23	1.1	0.51	ug/L		10/31/18 23:05	1
2,4,6-Trichlorophenol	1.1	U	23	1.1	0.33	ug/L		10/31/18 23:05	1
2,4-Dichlorophenol	2.3	U	11	2.3	0.72	ug/L		10/31/18 23:05	1
2,4-Dimethylphenol	2.3	U	11	2.3	0.65	ug/L		10/31/18 23:05	1
2,4-Dinitrophenol	34	U	90	34	11	ug/L		10/31/18 23:05	1
2-Chlorophenol	5.0	U	11	5.0	2.3	ug/L		10/31/18 23:05	1
2-Methylphenol	2.3	U	11	2.3	1.1	ug/L		10/31/18 23:05	1
2-Nitrophenol	1.1	U	23	1.1	0.44	ug/L		10/31/18 23:05	1
3 & 4 Methylphenol	0.56	U	23	0.56	0.28	ug/L		10/31/18 23:05	1
4,6-Dinitro-2-methylphenol	9.9	U	90	9.9	4.5	ug/L		10/31/18 23:05	1
4-Chloro-3-methylphenol	5.6	U	23	5.6	2.7	ug/L		10/31/18 23:05	1
4-Nitrophenol	4.5	U	56	4.5	1.4	ug/L		10/31/18 23:05	1
Bis(2-ethylhexyl) phthalate	2.3	U	11	2.3	0.63	ug/L		10/31/18 23:05	1
Butyl benzyl phthalate	2.3	U	23	2.3	1.1	ug/L		10/31/18 23:05	1
Diethyl phthalate	1.1	U	23	1.1	0.43	ug/L		10/31/18 23:05	1
Dimethyl phthalate	0.56	U	23	0.56	0.24	ug/L		10/31/18 23:05	1
Di-n-butyl phthalate	5.0	U	23	5.0	1.3	ug/L		10/31/18 23:05	1
Di-n-octyl phthalate	1.1	U	23	1.1	0.39	ug/L		10/31/18 23:05	1
Pentachlorophenol	68	U	90	68	23	ug/L		10/31/18 23:05	1
Phenol	5.0	U	11	5.0	2.3	ug/L		10/31/18 23:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*87*		*43 - 140*	*10/24/18 13:18*	*10/31/18 23:05*	*1*
2-Fluorobiphenyl	*84*		*44 - 119*	*10/24/18 13:18*	*10/31/18 23:05*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: RQLmw-009-181001-GW **Lab Sample ID: 280-115877-1**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	81		19 - 119	10/24/18 13:18	10/31/18 23:05	1
Nitrobenzene-d5 (Surr)	84		44 - 120	10/24/18 13:18	10/31/18 23:05	1
Phenol-d5 (Surr)	82		10 - 115	10/24/18 13:18	10/31/18 23:05	1
Terphenyl-d14 (Surr)	41	Q	50 - 134	10/24/18 13:18	10/31/18 23:05	1

Method: 8081B - Organochlorine Pesticides (GC)

Client Sample ID: RQLmw-009-181001-GW **Lab Sample ID: 280-115877-1**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

NOTE: qualifiers due to LCS ("P02") were applied by ADR; add M08 code for delta-BHC

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.21	U Q UJ P02	0.51	0.21	0.079	ug/L		11/28/18 17:07	10
4,4'-DDE	0.21	U Q	0.51	0.21	0.077	ug/L		11/28/18 17:07	10
4,4'-DDT	0.51	U Q	0.51	0.51	0.15	ug/L		11/28/18 17:07	10
Aldrin	0.21	U Q	0.51	0.21	0.061	ug/L		11/28/18 17:07	10
alpha-BHC	0.21	U Q	0.51	0.21	0.054	ug/L		11/28/18 17:07	10
alpha-Chlordane	0.21	U Q	0.51	0.21	0.054	ug/L		11/28/18 17:07	10
beta-BHC	0.21	U Q	0.51	0.21	0.089	ug/L		11/28/18 17:07	10
delta-BHC	**0.20**	**J Q D** J M08 P02	0.51	0.21	0.060	ug/L		11/28/18 17:07	10
Dieldrin	0.21	U Q UJ P02	0.51	0.21	0.065	ug/L		11/28/18 17:07	10
Endosulfan I	0.21	U Q	0.51	0.21	0.060	ug/L		11/28/18 17:07	10
Endosulfan II	0.21	U Q	0.51	0.21	0.072	ug/L		11/28/18 17:07	10
Endosulfan sulfate	0.21	U Q	0.51	0.21	0.059	ug/L		11/28/18 17:07	10
Endrin	0.21	U Q	0.51	0.21	0.081	ug/L		11/28/18 17:07	10
Endrin aldehyde	0.21	U Q	0.51	0.21	0.090	ug/L		11/28/18 17:07	10
Endrin ketone	0.21	U Q	0.51	0.21	0.072	ug/L		11/28/18 17:07	10
gamma-BHC (Lindane)	0.21	U Q	0.51	0.21	0.071	ug/L		11/28/18 17:07	10
gamma-Chlordane	0.21	U Q	0.51	0.21	0.093	ug/L		11/28/18 17:07	10
Heptachlor	0.21	U Q	0.51	0.21	0.079	ug/L		11/28/18 17:07	10
Heptachlor epoxide	0.21	U Q	0.51	0.21	0.077	ug/L		11/28/18 17:07	10
Methoxychlor	0.51	U Q	0.51	0.51	0.13	ug/L		11/28/18 17:07	10
Toxaphene	8.2	U UJ C05	21	8.2	3.8	ug/L		11/28/18 17:07	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	87	Q	34 - 122	10/22/18 17:47	11/28/18 17:07	10
Tetrachloro-m-xylene	85		44 - 124	10/22/18 17:47	11/28/18 17:07	10

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: RQLmw-009-181001-GW **Lab Sample ID: 280-115877-1**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	4.1	U	10	4.1	1.3	ug/L		11/24/18 04:25	10
PCB-1221	2.6	U M u	10	2.6	2.2	ug/L		11/24/18 04:25	10
PCB-1232	6.2	U	10	6.2	1.7	ug/L		11/24/18 04:25	10
PCB-1242	3.1	U	10	3.1	1.1	ug/L		11/24/18 04:25	10
PCB-1248	3.1	U Q u	10	3.1	0.94	ug/L		11/24/18 04:25	10
PCB-1254	2.6	U M u	10	2.6	1.2	ug/L		11/24/18 04:25	10
PCB-1260	4.1	U	10	4.1	1.6	ug/L		11/24/18 04:25	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	*71*		*25 - 120*	*10/22/18 17:47*	*11/24/18 04:25*	*10*
DCB Decachlorobiphenyl	*80*	*Q*	*30 - 136*	*10/22/18 17:47*	*11/24/18 04:25*	*10*

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: RQLmw-009-181001-GW **Lab Sample ID: 280-115877-1**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.45	U	1.1	0.45	0.23	ug/L		10/27/18 06:15	1
1,3-Dinitrobenzene	0.23	U	0.45	0.23	0.10	ug/L		10/27/18 06:15	1
2,4,6-Trinitrotoluene	0.23	U	0.45	0.23	0.082	ug/L		10/27/18 06:15	1
2,4-Dinitrotoluene	0.23	U	0.45	0.23	0.095	ug/L		10/30/18 15:24	1
2,6-Dinitrotoluene	0.23	U	0.23	0.23	0.073	ug/L		10/27/18 06:15	1
2-Amino-4,6-dinitrotoluene	0.14	U	0.23	0.14	0.057	ug/L		10/27/18 06:15	1
2-Nitrotoluene	0.23	U	0.45	0.23	0.097	ug/L		10/27/18 06:15	1
3-Nitrotoluene	0.23	U M u	0.45	0.23	0.094	ug/L		10/27/18 06:15	1
4-Amino-2,6-dinitrotoluene	0.14	U	0.23	0.14	0.065	ug/L		10/27/18 06:15	1
4-Nitrotoluene	0.45	U	1.1	0.45	0.23	ug/L		10/27/18 06:15	1
HMX	0.23	U	0.45	0.23	0.099	ug/L		10/27/18 06:15	1
Nitrobenzene	0.23	U	0.45	0.23	0.10	ug/L		10/27/18 06:15	1
Nitroglycerin	2.3	U	3.4	2.3	1.0	ug/L		10/27/18 06:15	1
PETN	1.4	U	2.3	1.4	0.47	ug/L		10/27/18 06:15	1
RDX	**0.69**	**M** =	0.23	0.14	0.059	ug/L		10/27/18 06:15	1
Tetryl	0.23	U	0.27	0.23	0.090	ug/L		10/30/18 15:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dinitrobenzene	*101*	*M*	*83 - 119*	*10/24/18 12:14*	*10/27/18 06:15*	*1*
1,2-Dinitrobenzene	*89*		*83 - 119*	*10/24/18 12:14*	*10/30/18 15:24*	*1*

Client Sample ID: RQLmw-014-181001-GW **Lab Sample ID: 280-115877-7**
Date Collected: 10/18/18 15:25 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.40	U	1.0	0.40	0.20	ug/L		10/27/18 07:24	1
1,3-Dinitrobenzene	0.20	U	0.40	0.20	0.089	ug/L		10/27/18 07:24	1
2,4,6-Trinitrotoluene	0.20	U	0.40	0.20	0.073	ug/L		10/27/18 07:24	1
2,4-Dinitrotoluene	0.20	U	0.40	0.20	0.085	ug/L		10/27/18 07:24	1
2,6-Dinitrotoluene	0.20	U	0.20	0.20	0.065	ug/L		10/27/18 07:24	1
2-Amino-4,6-dinitrotoluene	0.12	U	0.20	0.12	0.051	ug/L		10/27/18 07:24	1
2-Nitrotoluene	0.20	U	0.40	0.20	0.086	ug/L		10/27/18 07:24	1
3-Nitrotoluene	0.20	U	0.40	0.20	0.084	ug/L		10/27/18 07:24	1
4-Amino-2,6-dinitrotoluene	0.12	U	0.20	0.12	0.058	ug/L		10/27/18 07:24	1
4-Nitrotoluene	0.40	U	1.0	0.40	0.20	ug/L		10/27/18 07:24	1
HMX	0.20	U M u	0.40	0.20	0.088	ug/L		10/27/18 07:24	1
Nitrobenzene	0.20	U	0.40	0.20	0.092	ug/L		10/27/18 07:24	1
Nitroglycerin	2.0	U	3.0	2.0	0.93	ug/L		10/27/18 07:24	1
PETN	1.2	U	2.0	1.2	0.42	ug/L		10/27/18 07:24	1
RDX	0.12	U	0.20	0.12	0.053	ug/L		10/27/18 07:24	1
Tetryl	0.20	U Q u	0.24	0.20	0.080	ug/L		10/27/18 07:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dinitrobenzene	*94*	*M*	*83 - 119*	*10/24/18 12:14*	*10/27/18 07:24*	*1*

Method: 6010C - Metals (ICP)

Client Sample ID: RQLmw-009-181001-GW **Lab Sample ID: 280-115877-1**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**43**	**J**	300	70	18	ug/L		10/30/18 01:24	1
Calcium	**20000**		1000	140	35	ug/L		10/30/18 01:24	1
Iron	**6400**		100	85	22	ug/L		10/30/18 01:24	1
Magnesium	**23000**		500	40	11	ug/L		10/30/18 01:24	1
Potassium	**3700**		3000	940	240	ug/L		10/30/18 01:24	1
Sodium	**1300**	**J**	5000	350	120	ug/L		10/30/18 01:24	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: RQLmw-009-181001-GW **Lab Sample ID: 280-115877-1**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/02/18 23:16	1
Arsenic	**6.9**		5.0	1.0	0.33	ug/L		11/02/18 23:16	1
Barium	**33**		3.0	0.95	0.29	ug/L		11/02/18 23:16	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/02/18 23:16	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/02/18 23:16	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/02/18 23:16	1
Cobalt	**3.4**		1.0	0.20	0.054	ug/L		11/02/18 23:16	1
Copper	**1.4**	**J**	2.0	1.8	0.56	ug/L		11/02/18 23:16	1
Lead	**0.76**	**J**	3.0	0.70	0.18	ug/L		11/02/18 23:16	1
Manganese	**740**		3.5	0.95	0.31	ug/L		11/02/18 23:16	1
Nickel	**4.9**		3.0	1.0	0.30	ug/L		11/02/18 23:16	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/02/18 23:16	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/02/18 23:16	1
Thallium	**0.11**	**J**	1.0	0.20	0.050	ug/L		11/02/18 23:16	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/02/18 23:16	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/02/18 23:16	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: RQLmw-009-181001-GW **Lab Sample ID: 280-115877-1**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/03/18 00:29	1

General Chemistry

Client Sample ID: RQLmw-009-181001-GW **Lab Sample ID: 280-115877-1**
Date Collected: 10/19/18 14:20 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/02/18 11:33	1

General Chemistry

Client Sample ID: RQLmw-016-181001-GW **Lab Sample ID: 280-115877-3**
Date Collected: 10/19/18 12:05 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	**0.0030**	**J**	0.010	0.0050	0.0020	mg/L		11/02/18 11:38	1

Client Sample ID: EBGmw-125-181001-GW **Lab Sample ID: 280-115877-4**
Date Collected: 10/19/18 14:55 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/02/18 11:39	1

Client Sample ID: EBGmw-131-181001-GW **Lab Sample ID: 280-115877-5**
Date Collected: 10/19/18 13:10 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/02/18 11:48	1

Client Sample ID: RQLmw-013-181001-GW **Lab Sample ID: 280-115877-6**
Date Collected: 10/18/18 14:45 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Sulfide	1.9	U	4.0	1.9	0.79	mg/L		10/25/18 20:03	1
Nitrate as N	0.10 **0.042**	**J** UJ A03 F06	0.50	0.10	0.042	mg/L		10/20/18 18:32	1
Nitrite as N	0.10	U UJ A03	0.50	0.10	0.049	mg/L		10/20/18 18:32	1
Sulfate	**150**		5.0	0.50	0.23	mg/L		10/20/18 18:32	1
Alkalinity	5.0	U	5.0	5.0	1.1	mg/L		10/25/18 17:56	1

Client Sample ID: RQLmw-014-181001-GW **Lab Sample ID: 280-115877-7**
Date Collected: 10/18/18 15:25 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Sulfide	1.9	U	4.0	1.9	0.79	mg/L		10/25/18 20:03	1
Nitrate as N	0.10 **0.092**	**J** UJ A03 F06	0.50	0.10	0.042	mg/L		10/20/18 19:46	1
Nitrite as N	0.10	U UJ A03	0.50	0.10	0.049	mg/L		10/20/18 19:46	1
Sulfate	**120**	**M** =	5.0	0.50	0.23	mg/L		10/20/18 19:46	1
Alkalinity	**79**		5.0	5.0	1.1	mg/L		10/25/18 18:09	1

Client Sample ID: RQLmw-012-181001-GW **Lab Sample ID: 280-115877-8**
Date Collected: 10/19/18 09:40 **Matrix: Water**
Date Received: 10/20/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	**0.0054**	**J**	0.010	0.0050	0.0020	mg/L		11/02/18 11:50	1
Sulfide	1.9	U	4.0	1.9	0.79	mg/L		10/25/18 20:03	1
Nitrate as N	**0.90**	J A03	0.50	0.10	0.042	mg/L		10/20/18 20:05	1
Nitrite as N	0.10	U UJ A03	0.50	0.10	0.049	mg/L		10/20/18 20:05	1
Sulfate	**100**		5.0	0.50	0.23	mg/L		10/20/18 20:05	1
Alkalinity	**6.7**		5.0	5.0	1.1	mg/L		10/25/18 18:02	1

Client Sample ID: RQLmw-013-181001-GW — Lab Sample ID: 280-115877-6

Date Collected: 10/18/18 14:45 **Matrix: Water**
Date Received: 10/20/18 08:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexavalent chromium	ND	U	0.020	0.0030	mg/L			10/19/18 14:14	1

Client Sample ID: RQLmw-014-181001-GW — Lab Sample ID: 280-115877-7

Date Collected: 10/18/18 15:25 **Matrix: Water**
Date Received: 10/20/18 08:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexavalent chromium	ND	U	0.020	0.0030	mg/L			10/19/18 14:15	1

Client Sample ID: RQLmw-012-181001-GW — Lab Sample ID: 280-115877-8

Date Collected: 10/19/18 09:40 **Matrix: Water**
Date Received: 10/20/18 08:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexavalent chromium	ND	U	0.020	0.0030	mg/L			10/19/18 14:13	1

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-115877-1						
Method: 2320B						
ROLmw-012-181001-GW	280-115877-8	AQ	N	METHOD	10/19/2018 9:40:00 AM	S2AVE
ROLmw-013-181001-GW	280-115877-6	AQ	N	METHOD	10/18/2018 2:45:00 PM	S2AVE
ROLmw-014-181001-GW	280-115877-7	AQ	N	METHOD	10/18/2018 3:25:00 PM	S2AVE
Method: 6010C						
ROLmw-009-181001-GW	280-115877-1	AQ	N	3010A	10/19/2018 2:20:00 PM	S2AVE
Method: 6010C-KNA						
ROLmw-009-181001-GW	280-115877-1	AQ	N	3010A	10/19/2018 2:20:00 PM	S2AVE
Method: 6020A						
ROLmw-009-181001-GW	280-115877-1	AQ	N	3020A	10/19/2018 2:20:00 PM	S2AVE
Method: 7470A						
ROLmw-009-181001-GW	280-115877-1	AQ	N	7470A	10/19/2018 2:20:00 PM	S2AVE
Method: 8081B						
ROLmw-009-181001-GW	280-115877-1	AQ	N	3510C	10/19/2018 2:20:00 PM	S2AVE
Method: 8082A						
ROLmw-009-181001-GW	280-115877-1	AQ	N	3510C	10/19/2018 2:20:00 PM	S2AVE
Method: 8260B						
FWGTB-181001-TB	280-115877-2	AQ	TB	METHOD	10/19/2018 2:20:00 PM	S2AVE
ROLmw-009-181001-GW	280-115877-1	AQ	N	METHOD	10/19/2018 2:20:00 PM	S2AVE
Method: 8270D						
ROLmw-009-181001-GW	280-115877-1	AQ	N	3520C	10/19/2018 2:20:00 PM	S2AVE
Method: 8270D-SIM						
ROLmw-009-181001-GW	280-115877-1	AQ	N	3510C	10/19/2018 2:20:00 PM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method		Collection Date	Validation Code
Method: 8330B							
RQLmw-009-181001-GW	280-115877-1	AQ	N		3535	10/19/2018 2:20:00 PM	S2AVE
RQLmw-014-181001-GW	280-115877-7	AQ	N		3535	10/18/2018 3:25:00 PM	S2AVE
Method: 9012B							
EBGmw-125-181001-GW	280-115877-4	AQ	N	Gen Prep		10/19/2018 2:55:00 PM	S2AVE
EBGmw-131-181001-GW	280-115877-5	AQ	N	Gen Prep		10/19/2018 1:10:00 PM	S2AVE
RQLmw-009-181001-GW	280-115877-1	AQ	N	Gen Prep		10/19/2018 2:20:00 PM	S2AVE
RQLmw-009-181001-GWMS	280-115877-1MS	AQ	MS	Gen Prep		10/19/2018 2:20:00 PM	S2AVE
RQLmw-009-181001-GWMSD	280-115877-1MSD	AQ	MSD	Gen Prep		10/19/2018 2:20:00 PM	S2AVE
RQLmw-012-181001-GW	280-115877-8	AQ	N	Gen Prep		10/19/2018 9:40:00 AM	S2AVE
RQLmw-016-181001-GW	280-115877-3	AQ	N	Gen Prep		10/19/2018 12:05:00 PM	S2AVE
Method: 9034							
RQLmw-012-181001-GW	280-115877-8	AQ	N	Gen Prep		10/19/2018 9:40:00 AM	S2AVE
RQLmw-013-181001-GW	280-115877-6	AQ	N	Gen Prep		10/18/2018 2:45:00 PM	S2AVE
RQLmw-014-181001-GW	280-115877-7	AQ	N	Gen Prep		10/18/2018 3:25:00 PM	S2AVE
Method: 9056A							
RQLmw-012-181001-GW	280-115877-8	AQ	N	METHOD		10/19/2018 9:40:00 AM	S2AVE
RQLmw-013-181001-GW	280-115877-6	AQ	N	METHOD		10/18/2018 2:45:00 PM	S2AVE
RQLmw-013-181001-GWDUP	280-115877-6DUP	AQ	DUP	METHOD		10/18/2018 2:45:00 PM	S2AVE
RQLmw-013-181001-GWMS	280-115877-6MS	AQ	MS	METHOD		10/18/2018 2:45:00 PM	S2AVE
RQLmw-013-181001-GWMSD	280-115877-6MSD	AQ	MSD	METHOD		10/18/2018 2:45:00 PM	S2AVE
RQLmw-014-181001-GW	280-115877-7	AQ	N	METHOD		10/18/2018 3:25:00 PM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-115877-1
EDD Filename: 280-115877-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	SR
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	SR
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	A
Laboratory Replicates	N
Laboratory Control Samples	SR
Compound Quantitation	SR
Field Duplicates	N
Field Triplicates	N
Field Blanks	A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-115877-1 **Laboratory: TA DEN**

EDD Filename: 280-115877-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 9056A **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
RQLmw-013-181001-GW (RE2/TOT	Sampling To Analysis	51.75	48.00	HOURS	J (all detects)
RQLmw-013-181001-GW (RES/TOT		51.75	48.00	HOURS	UJ (all non-detects)
RQLmw-013-181001-GWDUP (RE2		52.00	48.00	HOURS	
RQLmw-013-181001-GWDUP (RES		52.00	48.00	HOURS	
RQLmw-013-181001-GWMS (RE2/T		52.50	48.00	HOURS	
RQLmw-013-181001-GWMS (RES/T		52.50	48.00	HOURS	
RQLmw-013-181001-GWMSD (RE2		52.75	48.00	HOURS	
RQLmw-013-181001-GWMSD (RES		52.75	48.00	HOURS	
RQLmw-014-181001-GW (RE2/TOT		52.25	48.00	HOURS	
RQLmw-014-181001-GW (RES/TOT		52.25	48.00	HOURS	

* Confirm

Method Blank Outlier Report

Lab Reporting Batch ID: 280-115877-1 **Laboratory: TA DEN**

EDD Filename: 280-115877-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-434973/1-A	10/30/2018 12:29:00 AM	CALCIUM	54.2 ug/L	RQLmw-009-181001-GW

*Confirm

Method: 6020A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-434761/1-A	11/2/2018 11:01:00 PM	MANGANESE	0.624 ug/L	RQLmw-009-181001-GW

*Confirm

Surrogate Outlier Report

Lab Reporting Batch ID: 280-115877-1 **Laboratory: TA DEN**

EDD Filename: 280-115877-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8270D
Matrix: AQ

Sample ID (Analysis Type)	Surrogate	Sample % Recovery	% Recovery Limits	Affected Compounds	Flag
RQLmw-009-181001-GW	Terphenyl-d14	41	50.00-134.00	No Affected Compounds	

*Confirm

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-115877-1 **Laboratory: TA DEN**

EDD Filename: 280-115877-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8081B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCS 280-434423/2-A LCSD 280-434423/3-A (RQLmw-009-181001-GW)	4,4'-DDD	32	-	56.00-143.00	113 (30.00)	4,4'-DDD	
	4,4'-DDE	31	-	57.00-135.00	112 (30.00)	4,4'-DDE	
	4,4'-DDT	31	-	51.00-143.00	111 (30.00)	4,4'-DDT	
	ALDRIN	-	-	45.00-134.00	108 (30.00)	ALDRIN	
	ALPHA-BHC	-	-	54.00-138.00	112 (30.00)	ALPHA-BHC	
	ALPHA-CHLORDANE	32	-	60.00-129.00	110 (30.00)	ALPHA-CHLORDANE	
	BETA-BHC	30	-	56.00-136.00	111 (30.00)	BETA-BHC	
	DELTA-BHC	31	-	52.00-142.00	113 (30.00)	DELTA-BHC	
	DIELDRIN	34	-	60.00-136.00	111 (30.00)	DIELDRIN	
	ENDOSULFAN I	32	-	62.00-126.00	109 (30.00)	ENDOSULFAN I	J (all detects) UJ (all non-detects)
	ENDOSULFAN II	30	-	52.00-135.00	112 (30.00)	ENDOSULFAN II	
	ENDOSULFAN SULFATE	35	-	62.00-133.00	115 (30.00)	ENDOSULFAN SULFATE	
	ENDRIN	36	-	60.00-138.00	109 (30.00)	ENDRIN	
	ENDRIN ALDEHYDE	-	-	51.00-132.00	145 (30.00)	ENDRIN ALDEHYDE	
	ENDRIN KETONE	32	-	58.00-134.00	115 (30.00)	ENDRIN KETONE	
	gamma-BHC [Lindane]	30	-	59.00-134.00	111 (30.00)	gamma-BHC [Lindane]	
	GAMMA-CHLORDANE	32	-	56.00-136.00	111 (30.00)	GAMMA-CHLORDANE	
	HEPTACHLOR	31	-	54.00-130.00	107 (30.00)	HEPTACHLOR	
	HEPTACHLOR EPOXIDE	34	-	61.00-133.00	109 (30.00)	HEPTACHLOR EPOXIDE	
	METHOXYCHLOR	35	-	54.00-145.00	111 (30.00)	METHOXYCHLOR	

*Confirm

Reporting Limit Outliers

Lab Reporting Batch ID: 280-115877-1 **Laboratory: TA DEN**

EDD Filename: 280-115877-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
RQLmw-009-181001-GW	ALUMINUM	J	43	300	LOQ	ug/L	J (all detects)

Method: 6010C-KNA
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
RQLmw-009-181001-GW	SODIUM	J	1300	5000	LOQ	ug/L	J (all detects)

Method: 6020A
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
RQLmw-009-181001-GW	COPPER	J	1.4	2.0	LOQ	ug/L	J (all detects)
	LEAD	J	0.76	3.0	LOQ	ug/L	
	THALLIUM	J	0.11	1.0	LOQ	ug/L	

Method: 8081B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
RQLmw-009-181001-GW	DELTA-BHC	J Q D	0.20	0.51	LOQ	ug/L	J (all detects)

Method: 8260B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
RQLmw-009-181001-GW	ACETONE	J	4.5	10	LOQ	ug/L	J (all detects)
	METHYLENE CHLORIDE	J	0.86	5.0	LOQ	ug/L	

Method: 8270D-SIM
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
RQLmw-009-181001-GW	FLUORANTHENE	J	0.025	0.11	LOQ	ug/L	J (all detects)
	PHENANTHRENE	J	0.020	0.11	LOQ	ug/L	

Reporting Limit Outliers

Lab Reporting Batch ID: 280-115877-1 **Laboratory: TA DEN**

EDD Filename: 280-115877-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 9012B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
RQLmw-012-181001-GW	Cyanide, Total	J	0.0054	0.010	LOQ	mg/L	J (all detects)
RQLmw-016-181001-GW	Cyanide, Total	J	0.0030	0.010	LOQ	mg/L	J (all detects)

Method: 9056A
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
RQLmw-013-181001-GW	Nitrate as N	J	0.042	0.50	LOQ	mg/L	J (all detects)
RQLmw-014-181001-GW	Nitrate as N	J	0.092	0.50	LOQ	mg/L	J (all detects)

Data Qualifier Summary

Lab Reporting Batch ID: 280-115877-1 **Laboratory: TA DEN**

EDD Filename: 280-115877-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: GENCHEM
Method: 9012B **Matrix:** AQ

Sample ID: RQLmw-012-181001-GW **Collected:** 10/19/2018 9:40:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Cyanide, Total	0.0054	J	0.0050	LOD	0.010	LOQ	mg/L	J	RI

Sample ID: RQLmw-016-181001-GW **Collected:** 10/19/2018 12:05:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Cyanide, Total	0.0030	J	0.0050	LOD	0.010	LOQ	mg/L	J	RI

Method Category: GENCHEM
Method: 9056A **Matrix:** AQ

Sample ID: RQLmw-013-181001-GW **Collected:** 10/18/2018 2:45:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate as N * nitrate also qual for hold time	0.042	J	0.10	LOD	0.50	LOQ	mg/L	J	RI StoA (A03)
Nitrite as N	0.10	U	0.10	LOD	0.50	LOQ	mg/L	UJ	StoA

Sample ID: RQLmw-014-181001-GW **Collected:** 10/18/2018 3:25:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate as N * nitrate also qual for hold time	0.092	J	0.10	LOD	0.50	LOQ	mg/L	J	RI StoA (A03)
Nitrite as N	0.10	U	0.10	LOD	0.50	LOQ	mg/L	UJ	StoA

*also qualified for blank contamination so final validation qualifier is UJ at the LOD; see revised Form 1s

Method Category: METALS
Method: 6010C **Matrix:** AQ

Sample ID: RQLmw-009-181001-GW **Collected:** 10/19/2018 2:20:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	43	J	70	LOD	300	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-115877-1 **Laboratory: TA DEN**

EDD Filename: 280-115877-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6010C-KNA **Matrix:** AQ

Sample ID: RQLmw-009-181001-GW **Collected:** 10/19/2018 2:20:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SODIUM	1300	J	350	LOD	5000	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: RQLmw-009-181001-GW **Collected:** 10/19/2018 2:20:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
COPPER	1.4	J	1.8	LOD	2.0	LOQ	ug/L	J	RI
LEAD	0.76	J	0.70	LOD	3.0	LOQ	ug/L	J	RI
THALLIUM	0.11	J	0.20	LOD	1.0	LOQ	ug/L	J	RI

Method Category: SVOA
Method: 8081B **Matrix:** AQ

Sample ID: RQLmw-009-181001-GW **Collected:** 10/19/2018 2:20:00 PM **Analysis Type:** RE **Dilution:** 10

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
gamma-BHC [Lindane]	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs

Sample ID: RQLmw-009-181001-GW **Collected:** 10/19/2018 2:20:00 PM **Analysis Type:** RES **Dilution:** 10

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDD	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs
4,4'-DDE	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs
4,4'-DDT	0.51	U Q	0.51	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs
ALDRIN	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs
ALPHA-BHC	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs
ALPHA-CHLORDANE	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs
BETA-BHC	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs
DELTA-BHC	0.20	J Q D	0.21	LOD	0.51	LOQ	ug/L	J	RI, Lcs, Lcs
DIELDRIN	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-115877-1 **Laboratory: TA DEN**

EDD Filename: 280-115877-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: SVOA
Method: 8081B **Matrix:** AQ

Sample ID: RQLmw-009-181001-GW **Collected:** 10/19/2018 2:20:00 PM **Analysis Type:** RES **Dilution:** 10

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ENDOSULFAN I	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs
ENDOSULFAN II	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs
ENDOSULFAN SULFATE	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs
ENDRIN	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs
ENDRIN ALDEHYDE	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs
ENDRIN KETONE	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs
GAMMA-CHLORDANE	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs
HEPTACHLOR	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs
HEPTACHLOR EPOXIDE	0.21	U Q	0.21	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs
METHOXYCHLOR	0.51	U Q	0.51	LOD	0.51	LOQ	ug/L	UJ	Lcs, Lcs

Method Category: SVOA
Method: 8270D-SIM **Matrix:** AQ

Sample ID: RQLmw-009-181001-GW **Collected:** 10/19/2018 2:20:00 PM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
FLUORANTHENE	0.025	J	0.013	LOD	0.11	LOQ	ug/L	J	RI
PHENANTHRENE	0.020	J	0.022	LOD	0.11	LOQ	ug/L	J	RI

Method Category: VOA
Method: 8260B **Matrix:** AQ

Sample ID: RQLmw-009-181001-GW **Collected:** 10/19/2018 2:20:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	4.5	J	6.4	LOD	10	LOQ	ug/L	J	RI
METHYLENE CHLORIDE	0.86	J	0.80	LOD	5.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-115877-1 **Laboratory: TA DEN**

EDD Filename: 280-115877-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
Lcs	Laboratory Control Precision
Lcs	Laboratory Control Spike Lower Estimation
Mb	Method Blank Contamination
RI	Reporting Limit Trace Value
StoA	Sampling to Analysis Estimation
Surr	Surrogate/Tracer Recovery Lower Estimation

* denotes a non-reportable result

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA CAN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-115877-2						
Method: 7196A						
ROLmw-012-181001-GW	280-115877-8	AQ	N	METHOD	10/19/2018 9:40:00 AM	S2AVE
ROLmw-013-181001-GW	280-115877-6	AQ	N	METHOD	10/18/2018 2:45:00 PM	S2AVE
ROLmw-014-181001-GW	280-115877-7	AQ	N	METHOD	10/18/2018 3:25:00 PM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-115877-2
EDD Filename: 280-115877-2

Laboratory: TA CAN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	A
Surrogate/Tracer Spikes	N
Matrix Spike/Matrix Spike Duplicates	N
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	A
Field Duplicates	N
Field Triplicates	N
Field Blanks	N

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

LEIDOS
Laboratory Data Verification Checklist

Project: RVAAP

SDG No: J115950

Analyte Group: VOCs, SVOCs, PAHs, Pesticides, PCBs, Explosives; Metals/Mercury, Cyanide, Alkalinity

Sample Matrix:

EDD (Y/N):

Disposition of Data Package:

NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)	Y
Check for LCS results (e.g., org. form III, inorg. form XII)	Y
Check for method blank results (e.g., org. form IV, inorg. form III)	Y
Check for MS/MSD results (e.g., inorg. form V)	Y
Check for laboratory duplicate results (e.g., inorg. form VI)	Y

No laboratory duplicates performed; MS/MSDs were analyzed

Check for Method Calibration and Run Documentation

organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	method linear range	Y
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	Y
other:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	sample run sequence	Y

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Joseph C Peters Date: 1/9/19

QA Review By: Date:

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: J115950

Analyte Group: See next page

SEE ATTACHED

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:

Comments:

Sample Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-115950-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-115950-1	LL1mw-064-181001-GW explosives, TAL metals	Water	10/22/18 12:20	10/23/18 08:50
280-115950-2	LL1mw-088-181001-GW SVOC, explosives, pesticides, PCBs, TAL metals, alkalinity	Water	10/22/18 10:40	10/23/18 08:50
280-115950-3	LL1mw-088-181002-GW SVOC, explosives, pesticides, PCBs	Water	10/22/18 10:40	10/23/18 08:50
280-115950-4	RQLmw-007-181001-GW VOC,SVOC,PAH, Explosives, pesticides, TAL metals, Cyanide	Water	10/22/18 12:50	10/23/18 08:50
280-115950-5	RQLmw-008-181001-GW VOC,SVOC,PAH,Explosives,pesticides, TAL metals, cyanide	Water	10/22/18 10:05	10/23/18 08:50
280-115950-6	FWGTB-181001-TB VOCs	Water	10/22/18 10:05	10/23/18 08:50

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J115950

Analysis: VOCs

Method: SW 8260B

Laboratory: TestAmerica

Matrix: aqueous

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DOD QSM

All results estimated because analytical hold times were exceeded by one day.

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Joseph C Peters Date: 1/6/19

QA Reviewed by: Date:

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks:

All VOC samples analyzed on day late due to backlog as noted in case narrative; not documented in ADR

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks:

No dilutions or reanalysis

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed
RQLmw-007-181001-GW	10/22/18	11/6/18						
RQLmw-008-181001-GW	↓	↓						
FWGTB-181001-TB	↓	↓						

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks:

All holding times exceeded by one day; not documented in ADR output. Qualify as estimated, A03

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks:

All surrogates within control limits; ADR confirmed

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks:

All internal standard area counts acceptable; ~~ADR confirmed~~ ADR DOES NOT EVALUATE; MANUALLY VALIDATED

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: No MB contamination; ADR & data package confirmed

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: 10/29/18
VOC - Date(s) of continuing calibration: 11/5/18 11/6/18
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration:
SVOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks:

All initial and continuing calibration criteria met TARGET COMPOUNDS

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? NA Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: _____

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: NONE

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks:

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-436416/5

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks:

All recovery criteria met; ADR confirmed

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J115950 **Analysis:** SVOCs, PAHs

Method: SW 8270D, 8270D-SIM

Laboratory: TestAmerica **Matrix:** aqueous

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DOD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Joseph C Peters Date: 1/7/19

QA Reviewed by: _____ Date: _____

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No discrepancies noted.

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No dilutions/re-analysis required.

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks:

Holding times were met; ADR confirmed

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks:

Surrogates were within control limits. ADR confirmed

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks:

Internal standard area counts were within control limits. ~~ADR confirmed~~ ADR DOES NOT EVALUATE; MANUALLY VALIDATED

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: Method blanks free from contamination; ADR confirmed.

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration:
VOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: 10/23/18 10/29/18
SVOC - Date(s) of continuing calibration: 10/29/18 10/30/18
Was the 12 hour critieria met? Y or N Y

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks:

All initial and continuing calibration criteria were met

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? NA Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: _____

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: None

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks:

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-434912/2-A, LCSD 280-434912/3-A
LCS 280-434941/2-A LCSD 280-434941/3-A

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks:

All LCS/LCSD recovery and RPD values within control limits; ADR confirmed

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J115950

Analysis: Explosives

Method: SW 8330B

Laboratory: TestAmerica

Matrix: Aqueous

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DOD QSM

Sample results were qualified J/UJ in sample RQLmw-008-181001-GW due to low surrogate. RDX was estimated (J) in the same sample due to column comparison RPDs exceeding 40%.

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Joseph C Peters Date: 1/8/19

QA Reviewed by: Date:

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks:

The %RPD between the primary and confirmation column exceeded 40% for 2-Amino-4,6-dinitrotoluene, 2,6-Dinitrotoluene and RDX for the following samples: LL1mw-064-181001-GW (280-115950-1), LL1mw-088-181001-GW (280-115950-2), LL1mw-088-181002-GW (280-115950-3), RQLmw-007-181001-GW (280-115950-4) and RQLmw-008-181001-GW (280-115950-5). Both values have been reported and qualified in accordance with the laboratory's SOP.

The above column comparison RPDs are not part of the ADR output. The above compounds were not reported in the samples with the exception of HMX and RDX in sample 115950-5 (RQLmw-008-181001-GW). The raw data were examined for all samples and it was determined that the samples were reported correctly and the case narrative was incorrect. The lab will need to revise the case narrative.

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks:

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks:

All holding times were met; ADR confirmed

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be ≥ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be ≤ 20% <= 15%
Continuing calibration %D must be within ± 15% +/- 20%

Deviations: column

Compound	Correlation Coefficient	date/time % RSD	%D	Samples Affected
Tetryl	column 2	10/27/02:02	+21.6	None; samples ND, CCV bias high; column 1 OK
↓	column 2	10/27/06:38	+21.0	↓
↓	column 2	10/27/10:27	+20.1	

CCV ↓

Actions:
1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks:

Except as noted above, all other initial and continuing calibration criteria met; no results were qualified due to calibration outliers.

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected
RQLmw-008-181001-GW	12DNB; column2	81	83-119	listed sample; J/UJ G02*

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks:

*Although column 1 was within control for surrogate recovery, the low surrogate recovery and the RDX RPD between columns indicate that matrix interference is present, so professional judgment was used and the results were estimated based on the low surrogate recovery on column 2.

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: Laboratory method blanks free from contamination; ADR and data package confirmed

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: None

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks:

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-434708/2-A LCSD 280-434708/3-A

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks:

LCS/LCSD recovery and RPD values within control limits; ADR and data package confirmed.

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J115950

Analysis: Pesticides

Method: SW 8081B

Laboratory: TestAmerica

Matrix: Aqueous

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DOD QSM

No sample results were qualified.

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Joseph C Peters Date: 1/7/19

QA Reviewed by: Date:

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks:

No discrepancies noted

The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur:
LL1mw-088-181001-GW (280-115950-2), LL1mw-088-181002-GW (280-115950-3), RQLmw-007-181001-GW (280-115950-4),
RQLmw-008-181001-GW (280-115950-5), (LCS 280-434851/11-A), (LCS 280-434851/2-A), (LCSD 280-434851/12-A), (LCSD
280-434851/3-A) and (MB 280-434851/1-A).

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks:

No dilutions or re-analysis were required or performed.

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks:

All holding times were met. ADR confirmed.

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be ≥ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be ≤ 20%
Continuing calibration %D must be within ± 15%

Deviations:

	Compound	~~Correlation Coefficient~~ Column	~~% RSD~~ date/time	%D	Samples Affected
ICV	Toxaphene-1	CLP-1	10/13/21:24	-53.6	Average %D <10%, no samples qualified
	Toxaphene-2	CLP-1		-34.0	|AVG %D| > 20%; QUAL UJ
	Toxaphene-5	CLP-1		+48.4	
	Toxaphene-2	CLP-2		-35.8	
	Toxaphene-3	CLP-2		-22.1	|AVG %D| > 20%; QUAL UJ
	Toxaphene-4	CLP-2		+52.3	AFFECTS ALL SPLS AGAINST ICV SEQUENCE
CCV	Toxaphene-5	CLP-1	11/23/19:19	+25.3	Average %D <10%, no samples qualified
CCV	Methoxychlor	CLP-1	11/23/19:54	+21.0	CLP-2 %D acceptable, no samples qualified*
	Endosulfan sulfate			+24.3	
	Endrin Ketone			+23.7	
	DCB (surrogate)			+27.4	
CCV	Toxaphene-4	CLP-1	11/23/23:07	+23.7	Average %D <10%, no samples qualified
CCV	Toxaphene-5	CLP-1		+29.0	Average %D <10%, no samples qualified
CCV	Endosulfan sulfate	CLP-1	11/23/23:42	+21.8	CLP-2 %D acceptable, no samples qualified*
	DCB	CLP-1		+20.2	CLP-2 %D acceptable, no samples qualified*

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks:

*The %D on the second column (CLP-2) was acceptable; sample results were reported from CLP-2. In addition, the %D outliers were biased high and the sample results were non-detect; therefore, no results required qualification.

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks:

All surrogates within control limits; ADR confirmed

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: Method blanks free from contamination; ADR and data package confirmed

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: None

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks:

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-434851/2-A, LCSD 280-434851/3-A

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied
Toxaphene (LCSD)		139%	Bias high, samples ND; no qualifiers applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks:

LCS/LCSD recovery and RPD values within control limits except for toxaphene noted above; ADR and data package confirmed

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J115950

Analysis: PCB Aroclors

Method: SW 8082A

Laboratory: TestAmerica

Matrix: Aqueous

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DOD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Joseph C Peters Date: 1/8/19

QA Reviewed by: Date:

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No discrepancies were noted

The following samples required a sulfuric acid clean-up, via EPA Method 3665A, to reduce matrix interferences: RQLmw-007-181001-GW (280-115950-4), RQLmw-008-181001-GW (280-115950-5), (LCS 280-434851/4-A), (LCSD 280-434851/5-A) and (MB 280-434851/1-A).

The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: RQLmw-007-181001-GW (280-115950-4), RQLmw-008-181001-GW (280-115950-5), (LCS 280-434851/4-A), (LCSD 280-434851/5-A) and (MB 280-434851/1-A).

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks:

No dilutions/re-analysis required or performed

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks:

All holding times were met; ADR confirmed

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be ≥ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be ≤ 20%
Continuing calibration %D must be within ± 15% 20%D Max

Deviations:

	Compound	Correlation Coefficient	% RSD	%D	Samples Affected
ICV	AR1268-4	CLP-1		-29.2	Average %D <10%, no samples qualified
ICV	AR1268-4	CLP-2		-25.9	Average %D <10%, no samples qualified

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks:

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks:

All surrogates were within control limits; ADR confirmed

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: Method blank free from contamination; ADR confirmed

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: None

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks:

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-434851/4-A, LCSD 280-434851/5-A

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks:

LCS/LCSD recovery and RPD values within control limits; ADR confirmed

LEIDOS
Metals Data Review Checklist

Project: RVAAP

SDG No: J115950

Analysis: Metals/Mercury

Method: 6010C/6020A/7470A

Laboratory: TestAmerica

Matrix: Aqueous

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on an examination of the following:

Case Narrative	MS/MSD Recoveries and Differences
Analytical Holding Times	Duplicate Relative Percent Differences
Sample Preservation	ICP Serial Dilution
Method Calibration	Furnace Atomic Absorption QC
Method and Project Blanks	Re-analysis and Secondary Dilution
LCS Recoveries	Internal Standard Performance (if applicable)

Project specific QA/QC or contract requirements may take priority over validation criteria in this proceudre.

Overall remarks: DOD QSM

One beryllium result estimated (J) due to high low level standard recovery

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Joseph C Peters Date: 1/9/18

QA Reviewed by: Date:

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No discrepancies noted

Although not required for data validation, a field duplicate was analyzed for ICP and ICPMS metals and the ADR output showed the results were in good agreement. The only instances where the RPD exceeded 50% was when the results were below the LOQ.

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No re-analysis or dilutions performed or required

III. Holding Times

Metals - Waters - preserved to pH<2, 180 days from sample collection
Metals - Soils - 180 days from sample collection
Mercury - Waters - preserved to pH<2, 28 days from sample collection
Mercury - Soils - 28 days from sample collection

Deviations:

Sample #	Metals				Mercury			
	Date Collected	Date Analyzed	Days >HT	pH Check	Date Collected	Date Analyzed	Days >HT	pH Check

Actions:

1. If preserved samples exceed holding time, qualify all associated results as estimated (J/UJ).
2. If unpreserved samples exceed holding time, qualify all associated results as unusable (R).
3. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
4. If water samples are not acidified, use professional judgement. Minimally, qualify data as estimated (J) and non-detects unusable (R).
5. If soil samples exceed holding time, use professional judgement to qualify data.

Remarks:

All holding times were met

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.)

Initial calibration linearity criteria is r ≥ 0.995
ICV and CCV criteria are ± 10% recovery, low level check standard allowed ± 30%
ICP inter-element check standard criteria ± 20%

Deviations:

Element	Date	Intial Calib.	ICV/ CCV	%R	Samples Affected
Cr; 11/2@19:01, CCVL				78	None
Be, 11/3@00:17, CCVL				128	Associated Be results within 2X the LOQ, J D04 *

Actions:

1. If any elements initial claibration linearity is <0.995, qualify the data as estimated (J/UJ)
2. If any elements initial claibration linearity is <0.95, qualify the data as unusable (R)

3a. If any elements ICV or CCV recovery is <90%, qualify the data as estimated (J/UJ)

3b. If any elements ICV or CCV recovery is > 110%, qualify results ≥ MDL as estimated (J). Do not qualify non-detects.

4a. If any elements ICV or CCV recovery is <75%, qualify the data as unusable (R)

4b. If any elements ICV or CCV recovery is > 125% qualify positive results as estimated (J) or non-detects as unusable (R).

4c. If any element ICV or CCV recovery is ≥ 160%, qualify positive results ≥ MDL as unusable (R). Do not qualify non-detects.

5a. If any elements CRI recovery is 50 - 69% (30 - 49% for Sb, Pb, Tb), qualify results ≥ MDL (but < 2 times CRQL) as estimated (J/UJ) and results > 2 times CRQL are not qualified.

5b. If any elements CRI recovery is < 50% (<30% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) and non-detects as unusable (R). Results > 2 times CRQL are estimated (J).

5c. If any elements CRI recovery is > 130% but < 180% (>150% but ≤ 200% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) as esimated (J). And non-detects and results ≥ 2x CRQL are not qualified.

5d. If CRI or (R) > 180% (> 200% for Sb, Pb, Ti), qualify results that are ≥ MDL as unusable (R).

Remarks:

Professional judgment was used and the CCVL was treated like a CLP CRDL standard and used 80-120% recovery. Used 90-110% for other CCVs. *Be results near the LOQ are estimated since the CCVL shows potential potitive bias at the LOQ; the CCVs were acceptable for Be, indicating to bias at higher levels

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.) (continued)

Analytical Sequence and MS Tune	(Y/N)
1. Were the appropriate number of ICP standards used?	y
2. Were the appropriate number of AA standards used?	y
3. Was calibration performed and documented at the beginning of each run?	y
4. Were calibration check standards run at 10% frequency or every two hours?	y
5. Were low level standard checks analyzed at approximately 2X the PQL?	y
6. Was ICP-MS mass calibration within 0.1 AMU?	y
7. Was ICP-MS % RSD of the aboslute signals for all analytes < 5%?	

Deviations:

Element	Deviation	Samples Affected

Actions:

1. If instrument calibration is questionable, use professional judgement, qualify the data as estimated (J/UJ)
2. If instrument calibration documentation can not be obtained or is inadequate, qualify the data as unusable (R)
3. If mass calibration for ICP-MS was not within 0.1 AMU qualify analyte results as estimated (J/UJ)
4. If % RSD for ICP-MS was > 5% for any analyte in the tuning solution, qualify associated results as estimated (J/UJ).

Results:

V. Blanks (ICB, CCB, Method Blank, Equipment Rinsate Blank)

A. Blank Results

If the blank level is > CRQL for any analyte, check that the analyte's concentration in the samples is > 10 times the blank value. The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account when applying the action level.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
ICB 11/2@16:11	Vanadium	1.11 ug/L	11.1	None; samples non-detect
MB	Calcium	54.2 ug/L	542	None; results > action level
MB	Manganese	0.624 ug/L	6.24	None; results > action level
CCB 280-436227/52	Sb	0.483	4.83	QUAL DETECTS < 4.8 AS U F06/F07
CCB 280-436227/114	Sb	0.448	4.48	

If additional space is required, use next page

Actions:

1. For blank results ≥ MDL but ≤ CRQL, qualify samples ≥ MDL but < CRQL as CRQL U.
   Use proffessional judgement to qualify sample results exceeding the CRQL.

2a. If blank results are > CRQL: For sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < 10 times the blank qualify results as unusable (R) or estimated (J). No action is taken for sample results ≥ 10 times the blank levels.

2b. If ICB/ CCB results are > CRQL; for sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < blank results, qualify results as not detected (U) at the level of the blank or unusable (R). Use professional judgement for sample results > blank results.

Remarks: _____

V. Blanks (continued)

The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected

V. Blanks (continued)

B. Frequency Requirements (Y/N)

1. Was a method (preparation) blank analyzed for each matrix? y
2. Was a method blank processed for every analytical batch (20 samples)? y
3. Was a calibration blank analyzed at 10% frequency or every two hours? y

Deviations:

Element	Deviation	Samples Affected

Remarks:

C. Baseline Shift Evaluation

List the highest negative blank concentration for each analyte observed in laboratory or project blanks.

Deviations:

Blank ID	Element	Max. Neg Conc.	Action Level	Samples Affected

Actions:

1. If the absolute value of the maximum negative blank result is > the CRQL, qualify positive results as estimated (J) and non-detects as estimated (UJ).

Remarks:

VI. Laboratory Control Sample Evaluation

All LCS recovery criteria are set at 80-120%
An LCS must be analyzed for each matrix and for each digestion batch or set of twenty samples

Deviations:

Element	Date	%R	Matrix	Samples Affected

Actions:

1. If any element's LCS recovery is >120%, qualify positive results as (J).
2. If any element's LCS recovery is 50-79%, qualify positive results as (J) and non-detect results as (UJ)

3a. If any element's LCS recovery is <50%, qualify positive results as (J) and non-detect results as (R)
3b. If the LCS recovery is > 150%, qualify all results as unusable (R).

4. For soil LCS recovery > upper limit, qualify samples results ≥ MDL as estimated (J).
5. For soil LCS recovery < lower limit, qualify results ≥ MDL as esimated (J) and non-detected estimated (UJ).
6. Use professional judgement to qualify data if the LCS frequency criteria are not met.

Remarks:

No outliers; ADR confirmed

VII. Matrix Spike Evaluation

All MS recovery criteria are set at 75-125%
An MS must be analyzed for each matrix and for each digestion batch or set of twenty samples
Verify that a field blank or PE sample was not used for spiked sample analysis
Verify that a post-digestion spike was analyzed for those anlytes where the pre-digestion spike recovery is outside control limits and the sample result is < 4 times the spike added.

Project Sample(s) Spiked: LL1mw-088-181001-GW

Deviations:

Element	Spiked Sample Result	Sample Result	Spike Amount	%R	Samples Affected

Actions:

1. If the sample concentration exceeds the spiking level by a factor of 4X or more, do not qualify the data
2. If the spike recovery is >125%, qualify all positive values as (J).
3. If the spike recovery is between 30-74%, qualify positive values as (J) and non-detect values as estimated (UJ)
4. If the spike recovery is <30%, qualify positive values as (J) and non-detects are qualified unusable (R)
if the post-digestion spike recovery is < 75% (or none was performed); non-detects are qualified as estimated (UJ)
If the post-digestion spike reocvery is ≥ 75%. There is no post-digestion spike performed for mercury.
5. Qualify all samples of similar matrix to the spiked sample in the same manner
6. Use professional judgement to qualify data if the MS frequency criteria are not met.
7. Use professional judgement for qualification of data for unspiked elements

Remarks:

No outliers, ADR confirmed

VIII. Laboratory Duplicate Evaluation

Duplicate relative percent difference (RPD) for water is 20% (both results > 5 times CDRL) or < CRDL difference (if either result is < 5 times CRDL) and RPD for soil is 35% (if both results are > 5 times CRDL or < 2 times CRDL if either result is < 5 times CRDL).
When duplicate sample values are both less than the reporting level they are considered acceptable
When dupicate sample values are within 5X the reporting level they are acceptable if their absolute difference is within 3X the reporting level
Verify that a field blank on PE sample was not used for duplicate analysis.

Deviations: No laboratory duplicates analyzed. MS/MSD performed for ICPMS metals LCS/LCSD evaluated for precision on other metals.

Element	Sample #	Duplicate #	RPD	Samples Affected

Actions:

1. If an element's RPD is >20% (water) / >35% (soil), qualify positive results as (J) and non-detect results as (UJ)
2. For low concentrations, if an element's duplicate absolute difference is > 3X the reporting level, qualify positive results as (J) and non-detect results as (UJ)
3. Use professional judgement to qualify data if the duplicate frequency criteria are not met.

Remarks:

IX. Inductively Coupled Plasma (ICP) Serial Dilution Analysis

Verify that a field blank or PE sample was not used for serial dilution.
Serial dilution of positive results are performed when values exceed 50X the IDL
Results from serial dilutions should agree within 10% of the original undiluted analysis

Deviations:

Element	Sample #	Sample Result	Serial Dilution	%D	Action

Actions:

1. If the serial dilution %D is >10 and the analyte results are >50X the IDL, qualify all positive results as estimated (J) and non-detects as estimated (UJ).

Remarks:

Serial dilution results acceptable

X. Furnace Atomic Absorption QC

A. Duplicate Precision (Y/N)

1. Were duplicate injections performed for all samples? _____
2. Were one point analytical spikes performed for all samples? _____
3. Did duplicate injections agree within ± 20%? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If duplicate injection results are outside ± 20%, qualify positive results as (J) and non-detect results as (UJ)

Remarks: _____

B. Post Digestion Spike Recoveries (Y/N)

1. Did post digestion spike recoveries meet an 85-115% recovery criteria? _____
2. If spike recoveries did not meet recovery criteria were samples analyzed by MSA? _____
3. If MSA was used to analyze samples, was its' correlation coefficient ≥ 0.995? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If post digestion spike recoveries are >115%, qualify positive results as (J) and non-detect results as (U)
2. If post digestion spike recoveries are 11-84%, qualify positive results as (J) and non-detect results as (UJ)
3. If post digestion spike recoveries are <10%, qualify positive results as (R) and non-detect results as (R)
4. If MSA was used to quantitate values and the correlation coefficient was <0.995, qualify data as (J or UJ)
5. If MSA was used to quantitate values and the correlation coefficient was <0.95, qualify data as (R)

Remarks: NA

XI. Inductively Coupled Plasma (ICP) Interference Check Sample Evaluation

Interference check samples should be analyzed at the beginning and end of each analysis run, or at a minimum of twice per 8 hour working shift.
Results for the ICS solution AB must fall within control limits of 20% for analytes included in the solution.
Evaluate the ICS A solution raw data for results with an absolute value ≥ MDL for analytes that are not present in the ICS A solution.

Deviations:

Element	Sample #	Sample Result	Interferent Result	Action

Actions:

1. If the ICS AB %R for an analyte is > 120%, qualify sample results ≥ MDL as estimated (J) and non-detects should not be qualified.
2. If the ICS AB %R for an analyte is 50-79%, qualify sample results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ).
3. If the ICS AB %R for an analyte is <50%, qualify all sample results that are ≥ MDL and all non-detects as as unusable (R).
4. If results ≥ MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents and with analyte concentration that approximate those levels in the ICS A, sample results ≥ MDL should be qualified as estimated (J) and non-detects should not be qualified.
5. If negative results with absolute values > MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents, affected sample results > MDL should be qualified as estimated (J) and non-detects (UJ).

Remarks: All ICS results met control limits

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J115950

Analysis: Alkalinity, Cyanide

Method: 2320B, 9012B

Laboratory: TestAmerica

Matrix: Aqueous

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: QAPP and Lab guidance/limits

No sample results were qualified.

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Joseph C Peters Date: 1/9/18

QA Reviewed by: Date:

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No discrepancies noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks:

No re-analysis or dilutions required or performed

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks:

All holding times met; ADR confirmed

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks:

All initial and continuing calibration criteria met

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks:

No method blank or ICB/CCB detections

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks:

LCS was within control limits; ADR and data package confirmed

VII. Matrix Spike Information

NA; no project samples spiked with this SDG

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks:

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

NA; no laboratory duplicates analyzed with this SDG

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks:

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

Client Sample ID: RQLmw-007-181001-GW **Lab Sample ID: 280-115950-4**
Date Collected: 10/22/18 12:50 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H UJ A03	1.0	0.40	0.16	ug/L		11/06/18 04:14	1
1,1,2,2-Tetrachloroethane	0.80	U H	1.0	0.80	0.21	ug/L		11/06/18 04:14	1
1,1,2-Trichloroethane	0.80	U H	1.0	0.80	0.27	ug/L		11/06/18 04:14	1
1,1-Dichloroethane	0.80	U H	1.0	0.80	0.22	ug/L		11/06/18 04:14	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/06/18 04:14	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/06/18 04:14	1
1,2-Dichloroethane	0.40	U H	1.0	0.40	0.13	ug/L		11/06/18 04:14	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/06/18 04:14	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/06/18 04:14	1
2-Butanone (MEK)	4.0	U H	6.0	4.0	2.0	ug/L		11/06/18 04:14	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/06/18 04:14	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/06/18 04:14	1
Acetone	6.4	U M H	10	6.4	1.9	ug/L		11/06/18 04:14	1
Benzene	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:14	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:14	1
Bromochloromethane	0.20	U H	1.0	0.20	0.10	ug/L		11/06/18 04:14	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:14	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/06/18 04:14	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/06/18 04:14	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/06/18 04:14	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/06/18 04:14	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:14	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/06/18 04:14	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:14	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/06/18 04:14	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:14	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:14	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:14	1
Methylene Chloride	0.80	U H	5.0	0.80	0.32	ug/L		11/06/18 04:14	1
Styrene	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:14	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/06/18 04:14	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:14	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/06/18 04:14	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:14	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/06/18 04:14	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/06/18 04:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*11/06/18 04:14*	*1*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*		*11/06/18 04:14*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*11/06/18 04:14*	*1*
Toluene-d8 (Surr)	*101*		*89 - 112*		*11/06/18 04:14*	*1*

Client Sample ID: RQLmw-008-181001-GW **Lab Sample ID: 280-115950-5**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H UJ A03	1.0	0.40	0.16	ug/L		11/06/18 04:34	1
1,1,2,2-Tetrachloroethane	0.80	U H	1.0	0.80	0.21	ug/L		11/06/18 04:34	1
1,1,2-Trichloroethane	0.80	U H	1.0	0.80	0.27	ug/L		11/06/18 04:34	1

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

Client Sample ID: RQLmw-008-181001-GW **Lab Sample ID: 280-115950-5**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethane	0.80	U H UJ A03	1.0	0.80	0.22	ug/L		11/06/18 04:34	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/06/18 04:34	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/06/18 04:34	1
1,2-Dichloroethane	0.40	U H	1.0	0.40	0.13	ug/L		11/06/18 04:34	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/06/18 04:34	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/06/18 04:34	1
2-Butanone (MEK)	4.0	U H	6.0	4.0	2.0	ug/L		11/06/18 04:34	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/06/18 04:34	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/06/18 04:34	1
Acetone	6.4	U M H	10	6.4	1.9	ug/L		11/06/18 04:34	1
Benzene	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:34	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:34	1
Bromochloromethane	0.20	U H	1.0	0.20	0.10	ug/L		11/06/18 04:34	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:34	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/06/18 04:34	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/06/18 04:34	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/06/18 04:34	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/06/18 04:34	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:34	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/06/18 04:34	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:34	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/06/18 04:34	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:34	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:34	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:34	1
Methylene Chloride	0.80	U H	5.0	0.80	0.32	ug/L		11/06/18 04:34	1
Styrene	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:34	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/06/18 04:34	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:34	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/06/18 04:34	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:34	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/06/18 04:34	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/06/18 04:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*81 - 118*		*11/06/18 04:34*	*1*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*		*11/06/18 04:34*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 119*		*11/06/18 04:34*	*1*
Toluene-d8 (Surr)	*101*		*89 - 112*		*11/06/18 04:34*	*1*

Client Sample ID: FWGTB-181001-TB **Lab Sample ID: 280-115950-6**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H UJ A03	1.0	0.40	0.16	ug/L		11/06/18 04:54	1
1,1,2,2-Tetrachloroethane	0.80	U H	1.0	0.80	0.21	ug/L		11/06/18 04:54	1
1,1,2-Trichloroethane	0.80	U H	1.0	0.80	0.27	ug/L		11/06/18 04:54	1
1,1-Dichloroethane	0.80	U H	1.0	0.80	0.22	ug/L		11/06/18 04:54	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/06/18 04:54	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/06/18 04:54	1

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

Client Sample ID: FWGTB-181001-TB **Lab Sample ID: 280-115950-6**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2-Dichloroethane	0.40	U H UJ A03	1.0	0.40	0.13	ug/L		11/06/18 04:54	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/06/18 04:54	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/06/18 04:54	1
2-Butanone (MEK)	4.0	U H	6.0	4.0	2.0	ug/L		11/06/18 04:54	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/06/18 04:54	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/06/18 04:54	1
Acetone	6.4	U H	10	6.4	1.9	ug/L		11/06/18 04:54	1
Benzene	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:54	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:54	1
Bromochloromethane	0.20	U H	1.0	0.20	0.10	ug/L		11/06/18 04:54	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:54	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/06/18 04:54	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/06/18 04:54	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/06/18 04:54	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/06/18 04:54	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:54	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/06/18 04:54	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:54	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/06/18 04:54	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:54	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:54	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:54	1
Methylene Chloride	0.80	U H	5.0	0.80	0.32	ug/L		11/06/18 04:54	1
Styrene	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:54	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/06/18 04:54	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/06/18 04:54	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/06/18 04:54	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/06/18 04:54	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/06/18 04:54	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/06/18 04:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*81 - 118*		*11/06/18 04:54*	*1*
4-Bromofluorobenzene (Surr)	*101*		*85 - 114*		*11/06/18 04:54*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 119*		*11/06/18 04:54*	*1*
Toluene-d8 (Surr)	*99*		*89 - 112*		*11/06/18 04:54*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: RQLmw-007-181001-GW **Lab Sample ID: 280-115950-4**
Date Collected: 10/22/18 12:50 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.013	U	0.11	0.013	0.0063	ug/L		10/30/18 06:58	1
2-Methylnaphthalene	0.013	U	0.11	0.013	0.0064	ug/L		10/30/18 06:58	1
Acenaphthene	0.043	U M U	0.11	0.043	0.0045	ug/L		10/30/18 06:58	1
Acenaphthylene	0.043	U	0.11	0.043	0.0055	ug/L		10/30/18 06:58	1
Anthracene	0.043	U M U	0.11	0.043	0.0060	ug/L		10/30/18 06:58	1
Benzo[a]anthracene	0.013	U	0.11	0.013	0.0045	ug/L		10/30/18 06:58	1
Benzo[a]pyrene	0.013	U M U	0.11	0.013	0.0074	ug/L		10/30/18 06:58	1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: RQLmw-007-181001-GW **Lab Sample ID: 280-115950-4**
Date Collected: 10/22/18 12:50 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Benzo[b]fluoranthene	0.013	U	0.11	0.013	0.0033	ug/L		10/30/18 06:58	1
Benzo[g,h,i]perylene	0.013	U	0.11	0.013	0.0066	ug/L		10/30/18 06:58	1
Benzo[k]fluoranthene	0.013	U M U	0.11	0.013	0.0067	ug/L		10/30/18 06:58	1
Chrysene	0.013	U	0.11	0.013	0.0035	ug/L		10/30/18 06:58	1
Dibenz(a,h)anthracene	0.013	U	0.11	0.013	0.0044	ug/L		10/30/18 06:58	1
Fluoranthene	**0.018**	**J**	0.11	0.013	0.0051	ug/L		10/30/18 06:58	1
Fluorene	0.043	U	0.11	0.043	0.0059	ug/L		10/30/18 06:58	1
Indeno[1,2,3-cd]pyrene	0.043	U	0.11	0.043	0.0048	ug/L		10/30/18 06:58	1
Naphthalene	0.013	U	0.11	0.013	0.0086	ug/L		10/30/18 06:58	1
Phenanthrene	**0.025**	**J**	0.11	0.021	0.010	ug/L		10/30/18 06:58	1
Pyrene	0.021	U	0.11	0.021	0.0065	ug/L		10/30/18 06:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*74*		*53 - 106*	*10/25/18 12:34*	*10/30/18 06:58*	*1*
Nitrobenzene-d5	*70*		*55 - 111*	*10/25/18 12:34*	*10/30/18 06:58*	*1*
Terphenyl-d14	*76*		*58 - 132*	*10/25/18 12:34*	*10/30/18 06:58*	*1*

Client Sample ID: RQLmw-008-181001-GW **Lab Sample ID: 280-115950-5**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.012	U	0.099	0.012	0.0058	ug/L		10/30/18 07:27	1
2-Methylnaphthalene	0.012	U	0.099	0.012	0.0059	ug/L		10/30/18 07:27	1
Acenaphthene	0.039	U	0.099	0.039	0.0041	ug/L		10/30/18 07:27	1
Acenaphthylene	0.039	U	0.099	0.039	0.0050	ug/L		10/30/18 07:27	1
Anthracene	0.039	U	0.099	0.039	0.0055	ug/L		10/30/18 07:27	1
Benzo[a]anthracene	0.012	U	0.099	0.012	0.0041	ug/L		10/30/18 07:27	1
Benzo[a]pyrene	0.012	U M U	0.099	0.012	0.0068	ug/L		10/30/18 07:27	1
Benzo[b]fluoranthene	0.012	U	0.099	0.012	0.0031	ug/L		10/30/18 07:27	1
Benzo[g,h,i]perylene	0.012	U	0.099	0.012	0.0061	ug/L		10/30/18 07:27	1
Benzo[k]fluoranthene	0.012	U M U	0.099	0.012	0.0062	ug/L		10/30/18 07:27	1
Chrysene	0.012	U	0.099	0.012	0.0033	ug/L		10/30/18 07:27	1
Dibenz(a,h)anthracene	0.012	U	0.099	0.012	0.0040	ug/L		10/30/18 07:27	1
Fluoranthene	0.012	U	0.099	0.012	0.0047	ug/L		10/30/18 07:27	1
Fluorene	0.039	U	0.099	0.039	0.0054	ug/L		10/30/18 07:27	1
Indeno[1,2,3-cd]pyrene	0.039	U	0.099	0.039	0.0044	ug/L		10/30/18 07:27	1
Naphthalene	0.012	U	0.099	0.012	0.0079	ug/L		10/30/18 07:27	1
Phenanthrene	0.020	U	0.099	0.020	0.0092	ug/L		10/30/18 07:27	1
Pyrene	0.020	U	0.099	0.020	0.0060	ug/L		10/30/18 07:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*70*		*53 - 106*	*10/25/18 12:34*	*10/30/18 07:27*	*1*
Nitrobenzene-d5	*65*		*55 - 111*	*10/25/18 12:34*	*10/30/18 07:27*	*1*
Terphenyl-d14	*77*		*58 - 132*	*10/25/18 12:34*	*10/30/18 07:27*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: LL1mw-088-181001-GW **Lab Sample ID: 280-115950-2**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.1	U	11	2.1	0.59	ug/L		10/29/18 15:31	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.1	ug/L		10/29/18 15:31	1
Diethyl phthalate	1.1	U	21	1.1	0.40	ug/L		10/29/18 15:31	1
Dimethyl phthalate	0.53	U	21	0.53	0.22	ug/L		10/29/18 15:31	1
Di-n-butyl phthalate	4.6	U	21	4.6	1.2	ug/L		10/29/18 15:31	1
Di-n-octyl phthalate	1.1	U	21	1.1	0.37	ug/L		10/29/18 15:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*97*		*43 - 140*	*10/25/18 13:12*	*10/29/18 15:31*	*1*
2-Fluorobiphenyl	*91*		*44 - 119*	*10/25/18 13:12*	*10/29/18 15:31*	*1*
2-Fluorophenol (Surr)	*92*		*19 - 119*	*10/25/18 13:12*	*10/29/18 15:31*	*1*
Nitrobenzene-d5 (Surr)	*92*		*44 - 120*	*10/25/18 13:12*	*10/29/18 15:31*	*1*
Phenol-d5 (Surr)	*93*		*10 - 115*	*10/25/18 13:12*	*10/29/18 15:31*	*1*
Terphenyl-d14 (Surr)	*111*		*50 - 134*	*10/25/18 13:12*	*10/29/18 15:31*	*1*

Client Sample ID: LL1mw-088-181002-GW **Lab Sample ID: 280-115950-3**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.1	U	11	2.1	0.59	ug/L		10/29/18 16:00	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.1	ug/L		10/29/18 16:00	1
Diethyl phthalate	1.1	U	21	1.1	0.40	ug/L		10/29/18 16:00	1
Dimethyl phthalate	0.53	U	21	0.53	0.22	ug/L		10/29/18 16:00	1
Di-n-butyl phthalate	4.6	U	21	4.6	1.2	ug/L		10/29/18 16:00	1
Di-n-octyl phthalate	1.1	U	21	1.1	0.37	ug/L		10/29/18 16:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*93*		*43 - 140*	*10/25/18 13:12*	*10/29/18 16:00*	*1*
2-Fluorobiphenyl	*79*		*44 - 119*	*10/25/18 13:12*	*10/29/18 16:00*	*1*
2-Fluorophenol (Surr)	*73*		*19 - 119*	*10/25/18 13:12*	*10/29/18 16:00*	*1*
Nitrobenzene-d5 (Surr)	*77*		*44 - 120*	*10/25/18 13:12*	*10/29/18 16:00*	*1*
Phenol-d5 (Surr)	*80*		*10 - 115*	*10/25/18 13:12*	*10/29/18 16:00*	*1*
Terphenyl-d14 (Surr)	*110*		*50 - 134*	*10/25/18 13:12*	*10/29/18 16:00*	*1*

Client Sample ID: RQLmw-007-181001-GW **Lab Sample ID: 280-115950-4**
Date Collected: 10/22/18 12:50 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4,5-Trichlorophenol	1.0	U	21	1.0	0.47	ug/L		10/29/18 16:29	1
2,4,6-Trichlorophenol	1.0	U	21	1.0	0.30	ug/L		10/29/18 16:29	1
2,4-Dichlorophenol	2.1	U	10	2.1	0.66	ug/L		10/29/18 16:29	1
2,4-Dimethylphenol	2.1	U	10	2.1	0.60	ug/L		10/29/18 16:29	1
2,4-Dinitrophenol	31	U	83	31	10	ug/L		10/29/18 16:29	1
2-Chlorophenol	4.5	U	10	4.5	2.1	ug/L		10/29/18 16:29	1
2-Methylphenol	2.1	U	10	2.1	1.0	ug/L		10/29/18 16:29	1
2-Nitrophenol	1.0	U	21	1.0	0.40	ug/L		10/29/18 16:29	1
3 & 4 Methylphenol	0.52	U	21	0.52	0.26	ug/L		10/29/18 16:29	1
4,6-Dinitro-2-methylphenol	9.1	U	83	9.1	4.1	ug/L		10/29/18 16:29	1
4-Chloro-3-methylphenol	5.2	U	21	5.2	2.5	ug/L		10/29/18 16:29	1
4-Nitrophenol	4.1	U	52	4.1	1.3	ug/L		10/29/18 16:29	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: RQLmw-007-181001-GW **Lab Sample ID: 280-115950-4**
Date Collected: 10/22/18 12:50 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.1	U	10	2.1	0.58	ug/L		10/29/18 16:29	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.0	ug/L		10/29/18 16:29	1
Diethyl phthalate	1.0	U	21	1.0	0.39	ug/L		10/29/18 16:29	1
Dimethyl phthalate	0.52	U	21	0.52	0.22	ug/L		10/29/18 16:29	1
Di-n-butyl phthalate	4.5	U	21	4.5	1.2	ug/L		10/29/18 16:29	1
Di-n-octyl phthalate	1.0	U M U	21	1.0	0.36	ug/L		10/29/18 16:29	1
Pentachlorophenol	62	U	83	62	21	ug/L		10/29/18 16:29	1
Phenol	4.5	U	10	4.5	2.1	ug/L		10/29/18 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*96*		*43 - 140*	*10/25/18 13:12*	*10/29/18 16:29*	*1*
2-Fluorobiphenyl	*96*		*44 - 119*	*10/25/18 13:12*	*10/29/18 16:29*	*1*
2-Fluorophenol (Surr)	*95*		*19 - 119*	*10/25/18 13:12*	*10/29/18 16:29*	*1*
Nitrobenzene-d5 (Surr)	*94*		*44 - 120*	*10/25/18 13:12*	*10/29/18 16:29*	*1*
Phenol-d5 (Surr)	*99*		*10 - 115*	*10/25/18 13:12*	*10/29/18 16:29*	*1*
Terphenyl-d14 (Surr)	*97*		*50 - 134*	*10/25/18 13:12*	*10/29/18 16:29*	*1*

Client Sample ID: RQLmw-008-181001-GW **Lab Sample ID: 280-115950-5**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4,5-Trichlorophenol	1.0	U	21	1.0	0.46	ug/L		10/29/18 16:58	1
2,4,6-Trichlorophenol	1.0	U	21	1.0	0.30	ug/L		10/29/18 16:58	1
2,4-Dichlorophenol	2.1	U	10	2.1	0.66	ug/L		10/29/18 16:58	1
2,4-Dimethylphenol	2.1	U	10	2.1	0.60	ug/L		10/29/18 16:58	1
2,4-Dinitrophenol	31	U	82	31	10	ug/L		10/29/18 16:58	1
2-Chlorophenol	4.5	U	10	4.5	2.1	ug/L		10/29/18 16:58	1
2-Methylphenol	2.1	U	10	2.1	1.0	ug/L		10/29/18 16:58	1
2-Nitrophenol	1.0	U	21	1.0	0.40	ug/L		10/29/18 16:58	1
3 & 4 Methylphenol	0.51	U	21	0.51	0.26	ug/L		10/29/18 16:58	1
4,6-Dinitro-2-methylphenol	9.0	U	82	9.0	4.1	ug/L		10/29/18 16:58	1
4-Chloro-3-methylphenol	5.1	U	21	5.1	2.5	ug/L		10/29/18 16:58	1
4-Nitrophenol	4.1	U	51	4.1	1.3	ug/L		10/29/18 16:58	1
Bis(2-ethylhexyl) phthalate	2.1	U	10	2.1	0.58	ug/L		10/29/18 16:58	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.0	ug/L		10/29/18 16:58	1
Diethyl phthalate	1.0	U	21	1.0	0.39	ug/L		10/29/18 16:58	1
Dimethyl phthalate	0.51	U	21	0.51	0.22	ug/L		10/29/18 16:58	1
Di-n-butyl phthalate	4.5	U	21	4.5	1.2	ug/L		10/29/18 16:58	1
Di-n-octyl phthalate	1.0	U	21	1.0	0.36	ug/L		10/29/18 16:58	1
Pentachlorophenol	62	U	82	62	21	ug/L		10/29/18 16:58	1
Phenol	4.5	U	10	4.5	2.1	ug/L		10/29/18 16:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*92*		*43 - 140*	*10/25/18 13:12*	*10/29/18 16:58*	*1*
2-Fluorobiphenyl	*92*		*44 - 119*	*10/25/18 13:12*	*10/29/18 16:58*	*1*
2-Fluorophenol (Surr)	*89*		*19 - 119*	*10/25/18 13:12*	*10/29/18 16:58*	*1*
Nitrobenzene-d5 (Surr)	*91*		*44 - 120*	*10/25/18 13:12*	*10/29/18 16:58*	*1*
Phenol-d5 (Surr)	*93*		*10 - 115*	*10/25/18 13:12*	*10/29/18 16:58*	*1*
Terphenyl-d14 (Surr)	*96*		*50 - 134*	*10/25/18 13:12*	*10/29/18 16:58*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Client Sample ID: LL1mw-088-181001-GW **Lab Sample ID: 280-115950-2**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.021	U	0.053	0.021	0.0081	ug/L		11/23/18 21:04	1
4,4'-DDE	0.021	U	0.053	0.021	0.0079	ug/L		11/23/18 21:04	1
4,4'-DDT	0.053	U	0.053	0.053	0.016	ug/L		11/23/18 21:04	1
Aldrin	0.021	U	0.053	0.021	0.0062	ug/L		11/23/18 21:04	1
alpha-BHC	0.021	U	0.053	0.021	0.0056	ug/L		11/23/18 21:04	1
alpha-Chlordane	0.021	U	0.053	0.021	0.0056	ug/L		11/23/18 21:04	1
beta-BHC	0.021	U	0.053	0.021	0.0092	ug/L		11/23/18 21:04	1
delta-BHC	0.021	U	0.053	0.021	0.0061	ug/L		11/23/18 21:04	1
Dieldrin	0.021	U	0.053	0.021	0.0067	ug/L		11/23/18 21:04	1
Endosulfan I	0.021	U	0.053	0.021	0.0061	ug/L		11/23/18 21:04	1
Endosulfan II	0.021	U	0.053	0.021	0.0074	ug/L		11/23/18 21:04	1
Endosulfan sulfate	0.021	U	0.053	0.021	0.0060	ug/L		11/23/18 21:04	1
Endrin	0.021	U	0.053	0.021	0.0084	ug/L		11/23/18 21:04	1
Endrin aldehyde	0.021	U	0.053	0.021	0.0093	ug/L		11/23/18 21:04	1
Endrin ketone	0.021	U	0.053	0.021	0.0074	ug/L		11/23/18 21:04	1
gamma-BHC (Lindane)	0.021	U	0.053	0.021	0.0073	ug/L		11/23/18 21:04	1
gamma-Chlordane	0.021	U	0.053	0.021	0.0096	ug/L		11/23/18 21:04	1
Heptachlor	0.021	U	0.053	0.021	0.0081	ug/L		11/23/18 21:04	1
Heptachlor epoxide	0.021	U	0.053	0.021	0.0079	ug/L		11/23/18 21:04	1
Methoxychlor	0.053	U	0.053	0.053	0.014	ug/L		11/23/18 21:04	1
Toxaphene	0.85	U Q ~~U~~ UJ C05 RMSS	2.1	0.85	0.39	ug/L		11/23/18 21:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*89*		*34 - 122*	*10/25/18 09:01*	*11/23/18 21:04*	*1*
Tetrachloro-m-xylene	*86*		*44 - 124*	*10/25/18 09:01*	*11/23/18 21:04*	*1*

Client Sample ID: LL1mw-088-181002-GW **Lab Sample ID: 280-115950-3**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.021	U	0.052	0.021	0.0081	ug/L		11/23/18 21:22	1
4,4'-DDE	0.021	U	0.052	0.021	0.0079	ug/L		11/23/18 21:22	1
4,4'-DDT	0.052	U	0.052	0.052	0.016	ug/L		11/23/18 21:22	1
Aldrin	0.021	U	0.052	0.021	0.0062	ug/L		11/23/18 21:22	1
alpha-BHC	0.021	U	0.052	0.021	0.0056	ug/L		11/23/18 21:22	1
alpha-Chlordane	0.021	U	0.052	0.021	0.0056	ug/L		11/23/18 21:22	1
beta-BHC	0.021	U	0.052	0.021	0.0091	ug/L		11/23/18 21:22	1
delta-BHC	0.021	U	0.052	0.021	0.0061	ug/L		11/23/18 21:22	1
Dieldrin	0.021	U	0.052	0.021	0.0066	ug/L		11/23/18 21:22	1
Endosulfan I	0.021	U	0.052	0.021	0.0061	ug/L		11/23/18 21:22	1
Endosulfan II	0.021	U	0.052	0.021	0.0073	ug/L		11/23/18 21:22	1
Endosulfan sulfate	0.021	U	0.052	0.021	0.0060	ug/L		11/23/18 21:22	1
Endrin	0.021	U	0.052	0.021	0.0083	ug/L		11/23/18 21:22	1
Endrin aldehyde	0.021	U	0.052	0.021	0.0092	ug/L		11/23/18 21:22	1
Endrin ketone	0.021	U	0.052	0.021	0.0073	ug/L		11/23/18 21:22	1
gamma-BHC (Lindane)	0.021	U	0.052	0.021	0.0072	ug/L		11/23/18 21:22	1
gamma-Chlordane	0.021	U	0.052	0.021	0.0095	ug/L		11/23/18 21:22	1
Heptachlor	0.021	U	0.052	0.021	0.0081	ug/L		11/23/18 21:22	1
Heptachlor epoxide	0.021	U	0.052	0.021	0.0079	ug/L		11/23/18 21:22	1
Methoxychlor	0.052	U	0.052	0.052	0.014	ug/L		11/23/18 21:22	1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: LL1mw-088-181002-GW **Lab Sample ID: 280-115950-3**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Toxaphene	0.84	U Q ~~U~~ UJ C05 RMSS	2.1	0.84	0.38	ug/L		11/23/18 21:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*89*		*34 - 122*	*10/25/18 09:01*	*11/23/18 21:22*	*1*
Tetrachloro-m-xylene	*91*		*44 - 124*	*10/25/18 09:01*	*11/23/18 21:22*	*1*

Client Sample ID: RQLmw-007-181001-GW **Lab Sample ID: 280-115950-4**
Date Collected: 10/22/18 12:50 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.019	U	0.048	0.019	0.0074	ug/L		11/23/18 21:39	1
4,4'-DDE	0.019	U	0.048	0.019	0.0072	ug/L		11/23/18 21:39	1
4,4'-DDT	0.048	U	0.048	0.048	0.014	ug/L		11/23/18 21:39	1
Aldrin	0.019	U	0.048	0.019	0.0057	ug/L		11/23/18 21:39	1
alpha-BHC	0.019	U	0.048	0.019	0.0051	ug/L		11/23/18 21:39	1
alpha-Chlordane	0.019	U	0.048	0.019	0.0051	ug/L		11/23/18 21:39	1
beta-BHC	0.019	U	0.048	0.019	0.0084	ug/L		11/23/18 21:39	1
delta-BHC	0.019	U	0.048	0.019	0.0056	ug/L		11/23/18 21:39	1
Dieldrin	0.019	U	0.048	0.019	0.0061	ug/L		11/23/18 21:39	1
Endosulfan I	0.019	U	0.048	0.019	0.0056	ug/L		11/23/18 21:39	1
Endosulfan II	0.019	U	0.048	0.019	0.0068	ug/L		11/23/18 21:39	1
Endosulfan sulfate	0.019	U	0.048	0.019	0.0055	ug/L		11/23/18 21:39	1
Endrin	0.019	U	0.048	0.019	0.0076	ug/L		11/23/18 21:39	1
Endrin aldehyde	0.019	U	0.048	0.019	0.0085	ug/L		11/23/18 21:39	1
Endrin ketone	0.019	U	0.048	0.019	0.0068	ug/L		11/23/18 21:39	1
gamma-BHC (Lindane)	0.019	U	0.048	0.019	0.0067	ug/L		11/23/18 21:39	1
gamma-Chlordane	0.019	U	0.048	0.019	0.0088	ug/L		11/23/18 21:39	1
Heptachlor	0.019	U	0.048	0.019	0.0074	ug/L		11/23/18 21:39	1
Heptachlor epoxide	0.019	U	0.048	0.019	0.0072	ug/L		11/23/18 21:39	1
Methoxychlor	0.048	U	0.048	0.048	0.013	ug/L		11/23/18 21:39	1
Toxaphene	0.77	U Q ~~U~~ UJ C05 RMSS	1.9	0.77	0.35	ug/L		11/23/18 21:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*64*		*34 - 122*	*10/25/18 09:01*	*11/23/18 21:39*	*1*
Tetrachloro-m-xylene	*82*		*44 - 124*	*10/25/18 09:01*	*11/23/18 21:39*	*1*

Client Sample ID: RQLmw-008-181001-GW **Lab Sample ID: 280-115950-5**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.021	U	0.051	0.021	0.0079	ug/L		11/23/18 21:57	1
4,4'-DDE	0.021	U	0.051	0.021	0.0077	ug/L		11/23/18 21:57	1
4,4'-DDT	0.051	U	0.051	0.051	0.015	ug/L		11/23/18 21:57	1
Aldrin	0.021	U	0.051	0.021	0.0061	ug/L		11/23/18 21:57	1
alpha-BHC	0.021	U	0.051	0.021	0.0055	ug/L		11/23/18 21:57	1
alpha-Chlordane	0.021	U	0.051	0.021	0.0055	ug/L		11/23/18 21:57	1
beta-BHC	0.021	U	0.051	0.021	0.0089	ug/L		11/23/18 21:57	1
delta-BHC	0.021	U	0.051	0.021	0.0060	ug/L		11/23/18 21:57	1
Dieldrin	0.021	U	0.051	0.021	0.0065	ug/L		11/23/18 21:57	1
Endosulfan I	0.021	U	0.051	0.021	0.0060	ug/L		11/23/18 21:57	1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: RQLmw-008-181001-GW **Lab Sample ID: 280-115950-5**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Endosulfan II	0.021	U	0.051	0.021	0.0072	ug/L		11/23/18 21:57	1
Endosulfan sulfate	0.021	U	0.051	0.021	0.0059	ug/L		11/23/18 21:57	1
Endrin	0.021	U	0.051	0.021	0.0081	ug/L		11/23/18 21:57	1
Endrin aldehyde	0.021	U	0.051	0.021	0.0091	ug/L		11/23/18 21:57	1
Endrin ketone	0.021	U	0.051	0.021	0.0072	ug/L		11/23/18 21:57	1
gamma-BHC (Lindane)	0.021	U	0.051	0.021	0.0071	ug/L		11/23/18 21:57	1
gamma-Chlordane	0.021	U	0.051	0.021	0.0094	ug/L		11/23/18 21:57	1
Heptachlor	0.021	U	0.051	0.021	0.0079	ug/L		11/23/18 21:57	1
Heptachlor epoxide	0.021	U	0.051	0.021	0.0077	ug/L		11/23/18 21:57	1
Methoxychlor	0.051	U	0.051	0.051	0.013	ug/L		11/23/18 21:57	1
Toxaphene	0.82	U Q	2.1	0.82	0.38	ug/L		11/23/18 21:57	1

UJ C05 RMSS

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*61*		*34 - 122*	*10/25/18 09:01*	*11/23/18 21:57*	*1*
Tetrachloro-m-xylene	*76*		*44 - 124*	*10/25/18 09:01*	*11/23/18 21:57*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: RQLmw-007-181001-GW **Lab Sample ID: 280-115950-4**
Date Collected: 10/22/18 12:50 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.39	U	0.97	0.39	0.12	ug/L		11/16/18 03:07	1
PCB-1221	0.24	U M U	0.97	0.24	0.21	ug/L		11/16/18 03:07	1
PCB-1232	0.58	U M U	0.97	0.58	0.16	ug/L		11/16/18 03:07	1
PCB-1242	0.29	U	0.97	0.29	0.10	ug/L		11/16/18 03:07	1
PCB-1248	0.29	U	0.97	0.29	0.088	ug/L		11/16/18 03:07	1
PCB-1254	0.24	U	0.97	0.24	0.11	ug/L		11/16/18 03:07	1
PCB-1260	0.39	U	0.97	0.39	0.15	ug/L		11/16/18 03:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*87*		*25 - 120*	*10/25/18 09:01*	*11/16/18 03:07*	*1*
DCB Decachlorobiphenyl	*67*		*30 - 136*	*10/25/18 09:01*	*11/16/18 03:07*	*1*

Client Sample ID: RQLmw-008-181001-GW **Lab Sample ID: 280-115950-5**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.41	U M U	1.0	0.41	0.13	ug/L		11/16/18 03:28	1
PCB-1221	0.26	U M U	1.0	0.26	0.22	ug/L		11/16/18 03:28	1
PCB-1232	0.62	U M U	1.0	0.62	0.17	ug/L		11/16/18 03:28	1
PCB-1242	0.31	U M U	1.0	0.31	0.11	ug/L		11/16/18 03:28	1
PCB-1248	0.31	U M U	1.0	0.31	0.094	ug/L		11/16/18 03:28	1
PCB-1254	0.26	U	1.0	0.26	0.12	ug/L		11/16/18 03:28	1
PCB-1260	0.41	U	1.0	0.41	0.16	ug/L		11/16/18 03:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*84*		*25 - 120*	*10/25/18 09:01*	*11/16/18 03:28*	*1*
DCB Decachlorobiphenyl	*69*		*30 - 136*	*10/25/18 09:01*	*11/16/18 03:28*	*1*

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: LL1mw-064-181001-GW **Lab Sample ID: 280-115950-1**
Date Collected: 10/22/18 12:20 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.41	U	1.0	0.41	0.20	ug/L		10/27/18 08:32	1
1,3-Dinitrobenzene	0.20	U	0.41	0.20	0.091	ug/L		10/27/18 08:32	1
2,4,6-Trinitrotoluene	0.20	U	0.41	0.20	0.074	ug/L		10/27/18 08:32	1
2,4-Dinitrotoluene	0.20	U	0.41	0.20	0.086	ug/L		10/27/18 08:32	1
2,6-Dinitrotoluene	0.20	U	0.20	0.20	0.066	ug/L		10/27/18 08:32	1
2-Amino-4,6-dinitrotoluene	0.12	U	0.20	0.12	0.052	ug/L		10/27/18 08:32	1
2-Nitrotoluene	0.20	U	0.41	0.20	0.087	ug/L		10/27/18 08:32	1
3-Nitrotoluene	0.20	U	0.41	0.20	0.085	ug/L		10/27/18 08:32	1
4-Amino-2,6-dinitrotoluene	0.12	U	0.20	0.12	0.059	ug/L		10/27/18 08:32	1
4-Nitrotoluene	0.41	U	1.0	0.41	0.20	ug/L		10/27/18 08:32	1
HMX	0.20	U M U	0.41	0.20	0.089	ug/L		10/27/18 08:32	1
Nitrobenzene	0.20	U	0.41	0.20	0.093	ug/L		10/27/18 08:32	1
Nitroglycerin	2.0	U	3.1	2.0	0.94	ug/L		10/27/18 08:32	1
PETN	1.2	U	2.0	1.2	0.42	ug/L		10/27/18 08:32	1
RDX	0.12	U	0.20	0.12	0.053	ug/L		10/27/18 08:32	1
Tetryl	0.20	U Q U	0.25	0.20	0.081	ug/L		10/27/18 08:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*96*		*83 - 119*	*10/24/18 12:14*	*10/27/18 08:32*	*1*

Client Sample ID: LL1mw-088-181001-GW **Lab Sample ID: 280-115950-2**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.42	U	1.1	0.42	0.21	ug/L		10/27/18 08:55	1
1,3-Dinitrobenzene	0.21	U	0.42	0.21	0.094	ug/L		10/27/18 08:55	1
2,4,6-Trinitrotoluene	0.21	U	0.42	0.21	0.077	ug/L		10/27/18 08:55	1
2,4-Dinitrotoluene	0.21	U	0.42	0.21	0.089	ug/L		10/27/18 08:55	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.068	ug/L		10/27/18 08:55	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.21	0.13	0.054	ug/L		10/27/18 08:55	1
2-Nitrotoluene	0.21	U	0.42	0.21	0.090	ug/L		10/27/18 08:55	1
3-Nitrotoluene	0.21	U	0.42	0.21	0.088	ug/L		10/27/18 08:55	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.21	0.13	0.061	ug/L		10/27/18 08:55	1
4-Nitrotoluene	0.42	U	1.1	0.42	0.21	ug/L		10/27/18 08:55	1
HMX	0.21	U M U	0.42	0.21	0.093	ug/L		10/27/18 08:55	1
Nitrobenzene	0.21	U	0.42	0.21	0.096	ug/L		10/27/18 08:55	1
Nitroglycerin	2.1	U	3.2	2.1	0.97	ug/L		10/27/18 08:55	1
PETN	1.3	U	2.1	1.3	0.44	ug/L		10/27/18 08:55	1
RDX	0.13	U	0.21	0.13	0.055	ug/L		10/27/18 08:55	1
Tetryl	0.21	U Q U	0.25	0.21	0.084	ug/L		10/27/18 08:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*98*		*83 - 119*	*10/24/18 12:14*	*10/27/18 08:55*	*1*

Client Sample ID: LL1mw-088-181002-GW **Lab Sample ID: 280-115950-3**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.42	U	1.1	0.42	0.21	ug/L		10/27/18 09:18	1
1,3-Dinitrobenzene	0.21	U	0.42	0.21	0.094	ug/L		10/27/18 09:18	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: LL1mw-088-181002-GW **Lab Sample ID: 280-115950-3**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4,6-Trinitrotoluene	0.21	U	0.42	0.21	0.077	ug/L		10/27/18 09:18	1
2,4-Dinitrotoluene	0.21	U	0.42	0.21	0.089	ug/L		10/30/18 17:09	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.068	ug/L		10/27/18 09:18	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.21	0.13	0.054	ug/L		10/27/18 09:18	1
2-Nitrotoluene	0.21	U	0.42	0.21	0.091	ug/L		10/27/18 09:18	1
3-Nitrotoluene	0.21	U M U	0.42	0.21	0.088	ug/L		10/27/18 09:18	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.21	0.13	0.061	ug/L		10/27/18 09:18	1
4-Nitrotoluene	0.42	U	1.1	0.42	0.21	ug/L		10/27/18 09:18	1
HMX	0.21	U M U	0.42	0.21	0.093	ug/L		10/27/18 09:18	1
Nitrobenzene	0.21	U	0.42	0.21	0.097	ug/L		10/27/18 09:18	1
Nitroglycerin	2.1	U	3.2	2.1	0.98	ug/L		10/27/18 09:18	1
PETN	1.3	U	2.1	1.3	0.44	ug/L		10/27/18 09:18	1
RDX	0.13	U	0.21	0.13	0.055	ug/L		10/30/18 17:09	1
Tetryl	0.21	U Q U	0.25	0.21	0.084	ug/L		10/27/18 09:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*101*	*M*	*83 - 119*	*10/24/18 12:14*	*10/27/18 09:18*	*1*
1,2-Dinitrobenzene	*85*		*83 - 119*	*10/24/18 12:14*	*10/30/18 17:09*	*1*

Client Sample ID: RQLmw-007-181001-GW **Lab Sample ID: 280-115950-4**
Date Collected: 10/22/18 12:50 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.42	U	1.1	0.42	0.21	ug/L		10/27/18 09:41	1
1,3-Dinitrobenzene	0.21	U	0.42	0.21	0.093	ug/L		10/27/18 09:41	1
2,4,6-Trinitrotoluene	0.21	U	0.42	0.21	0.076	ug/L		10/27/18 09:41	1
2,4-Dinitrotoluene	0.21	U	0.42	0.21	0.088	ug/L		10/27/18 09:41	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.068	ug/L		10/27/18 09:41	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.21	0.13	0.053	ug/L		10/27/18 09:41	1
2-Nitrotoluene	0.21	U	0.42	0.21	0.090	ug/L		10/27/18 09:41	1
3-Nitrotoluene	0.21	U	0.42	0.21	0.088	ug/L		10/27/18 09:41	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.21	0.13	0.061	ug/L		10/27/18 09:41	1
4-Nitrotoluene	0.42	U	1.1	0.42	0.21	ug/L		10/27/18 09:41	1
HMX	0.21	U M U	0.42	0.21	0.092	ug/L		10/27/18 09:41	1
Nitrobenzene	0.21	U	0.42	0.21	0.096	ug/L		10/27/18 09:41	1
Nitroglycerin	2.1	U	3.2	2.1	0.97	ug/L		10/27/18 09:41	1
PETN	1.3	U	2.1	1.3	0.44	ug/L		10/27/18 09:41	1
RDX	0.13	U	0.21	0.13	0.055	ug/L		10/27/18 09:41	1
Tetryl	0.21	U Q U	0.25	0.21	0.084	ug/L		10/27/18 09:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*99*		*83 - 119*	*10/24/18 12:14*	*10/27/18 09:41*	*1*

Client Sample ID: RQLmw-008-181001-GW **Lab Sample ID: 280-115950-5**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.42	U	1.1	0.42	0.21	ug/L		10/27/18 10:04	1
1,3-Dinitrobenzene	0.21	U	0.42	0.21	0.094	ug/L		10/27/18 10:04	1
2,4,6-Trinitrotoluene	0.21	U	0.42	0.21	0.076	ug/L		10/27/18 10:04	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

All results qualified J/UJ, G02 due to low surrogate in this sample; RDX qualified J due to column RPD > 40%; Both RDX results reported; higher result should be used

Client Sample ID: RQLmw-008-181001-GW — **Lab Sample ID: 280-115950-5**
Date Collected: 10/22/18 10:05 — **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4-Dinitrotoluene	0.21	U Q UJ G02	0.42	0.21	0.088	ug/L		10/30/18 17:44	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.068	ug/L		10/27/18 10:04	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.21	0.13	0.053	ug/L		10/27/18 10:04	1
2-Nitrotoluene	0.21	U M	0.42	0.21	0.090	ug/L		10/27/18 10:04	1
3-Nitrotoluene	0.21	U M	0.42	0.21	0.088	ug/L		10/27/18 10:04	1
4-Amino-2,6-dinitrotoluene	0.13	U M	0.21	0.13	0.061	ug/L		10/27/18 10:04	1
4-Nitrotoluene	0.42	U M	1.1	0.42	0.21	ug/L		10/27/18 10:04	1
HMX	**0.27**	**J M** J	0.42	0.21	0.092	ug/L		10/27/18 10:04	1
Nitrobenzene	0.21	U UJ	0.42	0.21	0.096	ug/L		10/27/18 10:04	1
Nitroglycerin	2.1	U M UJ	3.2	2.1	0.97	ug/L		10/27/18 10:04	1
PETN	1.3	U UJ	2.1	1.3	0.44	ug/L		10/27/18 10:04	1
RDX	**0.85**	**M J1** J M08	0.21	0.13	0.055	ug/L		10/27/18 10:04	1
RDX * DO NOT USE	~~0.39~~	~~Q B J1~~	0.21	0.13	0.055	ug/L		10/30/18 17:44	1
Tetryl	0.21	U M Q UJ	0.25	0.21	0.084	ug/L		10/30/18 17:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*108*	*M*	*83 - 119*	*10/24/18 12:14*	*10/27/18 10:04*	*1*
1,2-Dinitrobenzene	*81*	*Q*	*83 - 119*	*10/24/18 12:14*	*10/30/18 17:44*	*1*

Method: 6010C - Metals (ICP)

Client Sample ID: LL1mw-064-181001-GW — **Lab Sample ID: 280-115950-1**
Date Collected: 10/22/18 12:20 — **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**44**	**J**	300	70	18	ug/L		10/30/18 00:40	1
Calcium	**62000**		1000	140	35	ug/L		10/30/18 00:40	1
Iron	**1100**		100	85	22	ug/L		10/30/18 00:40	1
Magnesium	**9500**		500	40	11	ug/L		10/30/18 00:40	1
Potassium	**1000**	**J**	3000	940	240	ug/L		10/30/18 00:40	1
Sodium	**5000**		5000	350	120	ug/L		10/30/18 00:40	1

Client Sample ID: LL1mw-088-181001-GW — **Lab Sample ID: 280-115950-2**
Date Collected: 10/22/18 10:40 — **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**39**	**J**	300	70	18	ug/L		10/30/18 00:43	1
Calcium	**88000**		1000	140	35	ug/L		10/30/18 00:43	1
Iron	**1600**		100	85	22	ug/L		10/30/18 00:43	1
Magnesium	**35000**		500	40	11	ug/L		10/30/18 00:43	1
Potassium	**2500**	**J**	3000	940	240	ug/L		10/30/18 00:43	1
Sodium	**25000**		5000	350	120	ug/L		10/30/18 00:43	1

Client Sample ID: LL1mw-088-181002-GW — **Lab Sample ID: 280-115950-3**
Date Collected: 10/22/18 10:40 — **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**38**	**J**	300	70	18	ug/L		10/30/18 01:13	1
Calcium	**87000**		1000	140	35	ug/L		10/30/18 01:13	1
Iron	**1600**		100	85	22	ug/L		10/30/18 01:13	1

Method: 6010C - Metals (ICP) (Continued)

Client Sample ID: LL1mw-088-181002-GW **Lab Sample ID: 280-115950-3**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Magnesium	**35000**		500	40	11	ug/L		10/30/18 01:13	1
Potassium	**2500**	**J**	3000	940	240	ug/L		10/30/18 01:13	1
Sodium	**25000**		5000	350	120	ug/L		10/30/18 01:13	1

Client Sample ID: RQLmw-007-181001-GW **Lab Sample ID: 280-115950-4**
Date Collected: 10/22/18 12:50 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		10/30/18 01:17	1
Phosphorus	**56**	**J**	3000	50	14	ug/L		10/30/18 01:17	1
Calcium	**150000**		1000	140	35	ug/L		10/30/18 01:17	1
Iron	**12000**		100	85	22	ug/L		10/30/18 01:17	1
Magnesium	**97000**		500	40	11	ug/L		10/30/18 01:17	1
Potassium	**6900**		3000	940	240	ug/L		10/30/18 01:17	1
Sodium	**5100**		5000	350	120	ug/L		10/30/18 01:17	1

Client Sample ID: RQLmw-008-181001-GW **Lab Sample ID: 280-115950-5**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		10/30/18 01:20	1
Calcium	**58000**		1000	140	35	ug/L		10/30/18 01:20	1
Iron	**53000**		100	85	22	ug/L		10/30/18 01:20	1
Magnesium	**49000**		500	40	11	ug/L		10/30/18 01:20	1
Potassium	**3900**		3000	940	240	ug/L		10/30/18 01:20	1
Sodium	**3600**	**J**	5000	350	120	ug/L		10/30/18 01:20	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: LL1mw-064-181001-GW **Lab Sample ID: 280-115950-1**
Date Collected: 10/22/18 12:20 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/02/18 23:20	1
Arsenic	**4.9**	**J**	5.0	1.0	0.33	ug/L		11/02/18 23:20	1
Barium	**54**		3.0	0.95	0.29	ug/L		11/02/18 23:20	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/02/18 23:20	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/02/18 23:20	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/02/18 23:20	1
Cobalt	**0.28**	**J**	1.0	0.20	0.054	ug/L		11/02/18 23:20	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/02/18 23:20	1
Lead	**0.18**	**J**	3.0	0.70	0.18	ug/L		11/02/18 23:20	1
Manganese	**190**		3.5	0.95	0.31	ug/L		11/02/18 23:20	1
Nickel	1.0	U	3.0	1.0	0.30	ug/L		11/02/18 23:20	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/02/18 23:20	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/02/18 23:20	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/02/18 23:20	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/02/18 23:20	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/02/18 23:20	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: LL1mw-088-181001-GW **Lab Sample ID: 280-115950-2**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/02/18 23:35	1
Arsenic	**29**		5.0	1.0	0.33	ug/L		11/02/18 23:35	1
Barium	**37**		3.0	0.95	0.29	ug/L		11/02/18 23:35	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/02/18 23:35	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/02/18 23:35	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/02/18 23:35	1
Cobalt	**0.096**	**J**	1.0	0.20	0.054	ug/L		11/02/18 23:35	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/02/18 23:35	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/02/18 23:35	1
Manganese	**45**		3.5	0.95	0.31	ug/L		11/02/18 23:35	1
Nickel	1.0	U	3.0	1.0	0.30	ug/L		11/02/18 23:35	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/02/18 23:35	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/02/18 23:35	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/02/18 23:35	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/02/18 23:35	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/02/18 23:35	1

Client Sample ID: LL1mw-088-181002-GW **Lab Sample ID: 280-115950-3**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0 **0.72**	**J** U F06	6.0	1.0	0.40	ug/L		11/02/18 23:54	1
Arsenic	**30**		5.0	1.0	0.33	ug/L		11/02/18 23:54	1
Barium	**35**		3.0	0.95	0.29	ug/L		11/02/18 23:54	1
Beryllium	**0.21**	**J** J D04	1.0	0.30	0.080	ug/L		11/02/18 23:54	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/02/18 23:54	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/02/18 23:54	1
Cobalt	**0.14**	**J**	1.0	0.20	0.054	ug/L		11/02/18 23:54	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/02/18 23:54	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/02/18 23:54	1
Manganese	**47**		3.5	0.95	0.31	ug/L		11/02/18 23:54	1
Nickel	1.0	U	3.0	1.0	0.30	ug/L		11/02/18 23:54	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/02/18 23:54	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/02/18 23:54	1
Thallium	**0.057**	**J**	1.0	0.20	0.050	ug/L		11/02/18 23:54	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/02/18 23:54	1
Zinc	**3.5**	**J**	20	8.0	2.0	ug/L		11/02/18 23:54	1

Client Sample ID: RQLmw-007-181001-GW **Lab Sample ID: 280-115950-4**
Date Collected: 10/22/18 12:50 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/02/18 23:58	1
Arsenic	**32**		5.0	1.0	0.33	ug/L		11/02/18 23:58	1
Barium	**50**		3.0	0.95	0.29	ug/L		11/02/18 23:58	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/02/18 23:58	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/02/18 23:58	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/02/18 23:58	1
Cobalt	**4.1**		1.0	0.20	0.054	ug/L		11/02/18 23:58	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/02/18 23:58	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: RQLmw-007-181001-GW **Lab Sample ID: 280-115950-4**
Date Collected: 10/22/18 12:50 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/02/18 23:58	1
Manganese	**1100**		3.5	0.95	0.31	ug/L		11/02/18 23:58	1
Nickel	**10**		3.0	1.0	0.30	ug/L		11/02/18 23:58	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/02/18 23:58	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/02/18 23:58	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/02/18 23:58	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/02/18 23:58	1
Zinc	**3.5**	**J**	20	8.0	2.0	ug/L		11/02/18 23:58	1

Client Sample ID: RQLmw-008-181001-GW **Lab Sample ID: 280-115950-5**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0 **0.43**	**J** U F06	6.0	1.0	0.40	ug/L		11/03/18 00:01	1
Arsenic	**20**		5.0	1.0	0.33	ug/L		11/03/18 00:01	1
Barium	**55**		3.0	0.95	0.29	ug/L		11/03/18 00:01	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/03/18 00:01	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/03/18 00:01	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/03/18 00:01	1
Cobalt	**4.2**		1.0	0.20	0.054	ug/L		11/03/18 00:01	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/03/18 00:01	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/03/18 00:01	1
Manganese	**500**		3.5	0.95	0.31	ug/L		11/03/18 00:01	1
Nickel	**9.5**		3.0	1.0	0.30	ug/L		11/03/18 00:01	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/03/18 00:01	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/03/18 00:01	1
Thallium	**0.26**	**J**	1.0	0.20	0.050	ug/L		11/03/18 00:01	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/03/18 00:01	1
Zinc	**820**		20	8.0	2.0	ug/L		11/03/18 00:01	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: LL1mw-064-181001-GW **Lab Sample ID: 280-115950-1**
Date Collected: 10/22/18 12:20 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/04/18 08:49	1

Client Sample ID: LL1mw-088-181001-GW **Lab Sample ID: 280-115950-2**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/04/18 08:51	1

Client Sample ID: LL1mw-088-181002-GW **Lab Sample ID: 280-115950-3**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/04/18 09:02	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: RQLmw-007-181001-GW **Lab Sample ID: 280-115950-4**
Date Collected: 10/22/18 12:50 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/04/18 09:05	1

Client Sample ID: RQLmw-008-181001-GW **Lab Sample ID: 280-115950-5**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	**0.31**		0.20	0.080	0.027	ug/L		11/04/18 09:07	1

General Chemistry

Client Sample ID: LL1mw-088-181001-GW **Lab Sample ID: 280-115950-2**
Date Collected: 10/22/18 10:40 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	**280**		5.0	5.0	1.1	mg/L		10/26/18 20:32	1

Client Sample ID: RQLmw-007-181001-GW **Lab Sample ID: 280-115950-4**
Date Collected: 10/22/18 12:50 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	**0.0046**	**J**	0.010	0.0050	0.0020	mg/L		11/05/18 17:26	1

Client Sample ID: RQLmw-008-181001-GW **Lab Sample ID: 280-115950-5**
Date Collected: 10/22/18 10:05 **Matrix: Water**
Date Received: 10/23/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/05/18 17:27	1

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-115950-1						
Method: 2320B						
LL1mw-088-181001-GW	280-115950-2	AQ	N	METHOD	10/22/2018 10:40:00 AM	S2AVE
Method: 6010C						
LL1mw-064-181001-GW	280-115950-1	AQ	N	3010A	10/22/2018 12:20:00 PM	S2AVE
LL1mw-088-181001-GW	280-115950-2	AQ	N	3010A	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181001-GWMS	280-115950-2MS	AQ	MS	3010A	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181001-GWMSD	280-115950-2MSD	AQ	MSD	3010A	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181002-GW	280-115950-3	AQ	FD	3010A	10/22/2018 10:40:00 AM	S2AVE
RQLmw-007-181001-GW	280-115950-4	AQ	N	3010A	10/22/2018 12:50:00 PM	S2AVE
RQLmw-008-181001-GW	280-115950-5	AQ	N	3010A	10/22/2018 10:05:00 AM	S2AVE
Method: 6010C-KNA						
LL1mw-064-181001-GW	280-115950-1	AQ	N	3010A	10/22/2018 12:20:00 PM	S2AVE
LL1mw-088-181001-GW	280-115950-2	AQ	N	3010A	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181001-GWMS	280-115950-2MS	AQ	MS	3010A	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181001-GWMSD	280-115950-2MSD	AQ	MSD	3010A	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181002-GW	280-115950-3	AQ	FD	3010A	10/22/2018 10:40:00 AM	S2AVE
RQLmw-007-181001-GW	280-115950-4	AQ	N	3010A	10/22/2018 12:50:00 PM	S2AVE
RQLmw-008-181001-GW	280-115950-5	AQ	N	3010A	10/22/2018 10:05:00 AM	S2AVE
Method: 6020A						
LL1mw-064-181001-GW	280-115950-1	AQ	N	3020A	10/22/2018 12:20:00 PM	S2AVE
LL1mw-088-181001-GW	280-115950-2	AQ	N	3020A	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181001-GWMS	280-115950-2MS	AQ	MS	3020A	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181001-GWMSD	280-115950-2MSD	AQ	MSD	3020A	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181002-GW	280-115950-3	AQ	FD	3020A	10/22/2018 10:40:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 6020A						
ROLmw-007-181001-GW	280-115950-4	AQ	N	3020A	10/22/2018 12:50:00 PM	S2AVE
ROLmw-008-181001-GW	280-115950-5	AQ	N	3020A	10/22/2018 10:05:00 AM	S2AVE
Method: 7470A						
LL1mw-064-181001-GW	280-115950-1	AQ	N	7470A	10/22/2018 12:20:00 PM	S2AVE
LL1mw-088-181001-GW	280-115950-2	AQ	N	7470A	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181001-GWMS	280-115950-2MS	AQ	MS	7470A	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181001-GWMSD	280-115950-2MSD	AQ	MSD	7470A	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181002-GW	280-115950-3	AQ	FD	7470A	10/22/2018 10:40:00 AM	S2AVE
ROLmw-007-181001-GW	280-115950-4	AQ	N	7470A	10/22/2018 12:50:00 PM	S2AVE
ROLmw-008-181001-GW	280-115950-5	AQ	N	7470A	10/22/2018 10:05:00 AM	S2AVE
Method: 8081B						
LL1mw-088-181001-GW	280-115950-2	AQ	N	3510C	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181002-GW	280-115950-3	AQ	FD	3510C	10/22/2018 10:40:00 AM	S2AVE
ROLmw-007-181001-GW	280-115950-4	AQ	N	3510C	10/22/2018 12:50:00 PM	S2AVE
ROLmw-008-181001-GW	280-115950-5	AQ	N	3510C	10/22/2018 10:05:00 AM	S2AVE
Method: 8082A						
ROLmw-007-181001-GW	280-115950-4	AQ	N	3510C	10/22/2018 12:50:00 PM	S2AVE
ROLmw-008-181001-GW	280-115950-5	AQ	N	3510C	10/22/2018 10:05:00 AM	S2AVE
Method: 8260B						
FWGTB-181001-TB	280-115950-6	AQ	N	METHOD	10/22/2018 10:05:00 AM	S2AVE
ROLmw-007-181001-GW	280-115950-4	AQ	N	METHOD	10/22/2018 12:50:00 PM	S2AVE
ROLmw-008-181001-GW	280-115950-5	AQ	N	METHOD	10/22/2018 10:05:00 AM	S2AVE
Method: 8270D						
LL1mw-088-181001-GW	280-115950-2	AQ	N	3520C	10/22/2018 10:40:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method		Collection Date	Validation Code
Method: 8270D							
LL1mw-088-181002-GW	280-115950-3	AQ	FD	3520C		10/22/2018 10:40:00 AM	S2AVE
RQLmw-007-181001-GW	280-115950-4	AQ	N	3520C		10/22/2018 12:50:00 PM	S2AVE
RQLmw-008-181001-GW	280-115950-5	AQ	N	3520C		10/22/2018 10:05:00 AM	S2AVE
Method: 8270D-SIM							
RQLmw-007-181001-GW	280-115950-4	AQ	N	3510C		10/22/2018 12:50:00 PM	S2AVE
RQLmw-008-181001-GW	280-115950-5	AQ	N	3510C		10/22/2018 10:05:00 AM	S2AVE
Method: 8330B							
LL1mw-064-181001-GW	280-115950-1	AQ	N		3535	10/22/2018 12:20:00 PM	S2AVE
LL1mw-088-181001-GW	280-115950-2	AQ	N		3535	10/22/2018 10:40:00 AM	S2AVE
LL1mw-088-181002-GW	280-115950-3	AQ	FD		3535	10/22/2018 10:40:00 AM	S2AVE
RQLmw-007-181001-GW	280-115950-4	AQ	N		3535	10/22/2018 12:50:00 PM	S2AVE
RQLmw-008-181001-GW	280-115950-5	AQ	N		3535	10/22/2018 10:05:00 AM	S2AVE
Method: 9012B							
RQLmw-007-181001-GW	280-115950-4	AQ	N	Gen Prep		10/22/2018 12:50:00 PM	S2AVE
RQLmw-008-181001-GW	280-115950-5	AQ	N	Gen Prep		10/22/2018 10:05:00 AM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-115950-1
EDD Filename: 280-115950-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times NOTE: ADR did not report or qualify missed VOC hold time	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	A
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	SR
Compound Quantitation	SR
Field Duplicates	A
Field Triplicates	N
Field Blanks	N

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review; manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Method Blank Outlier Report

Lab Reporting Batch ID: 280-115950-1 **Laboratory: TA DEN**

EDD Filename: 280-115950-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-434973/1-A	10/30/2018 12:29:00 AM	CALCIUM	54.2 ug/L	LL1mw-064-181001-GW LL1mw-088-181001-GW LL1mw-088-181002-GW RQLmw-007-181001-GW RQLmw-008-181001-GW

Method: 6020A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-434761/1-A	11/2/2018 11:01:00 PM	MANGANESE	0.624 ug/L	LL1mw-064-181001-GW LL1mw-088-181001-GW LL1mw-088-181002-GW RQLmw-007-181001-GW RQLmw-008-181001-GW

Confirmed

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-115950-1 **Laboratory: TA DEN**

EDD Filename: 280-115950-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8081B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCSD 280-434851/12-A (LL1mw-088-181001-GW LL1mw-088-181002-GW RQLmw-007-181001-GW RQLmw-008-181001-GW)	TOXAPHENE	-	139	33.00-134.00	-	TOXAPHENE	J (all detects)

Confirmed

Reporting Limit Outliers

Lab Reporting Batch ID: 280-115950-1 | **Laboratory: TA DEN**

EDD Filename: 280-115950-1 | **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL1mw-064-181001-GW	ALUMINUM	J	44	300	LOQ	ug/L	J (all detects)
LL1mw-088-181001-GW	ALUMINUM	J	39	300	LOQ	ug/L	J (all detects)
LL1mw-088-181002-GW	ALUMINUM	J	38	300	LOQ	ug/L	J (all detects)
RQLmw-007-181001-GW	PHOSPHORUS	J	56	3000	LOQ	ug/L	J (all detects)

Method: 6010C-KNA

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL1mw-064-181001-GW	POTASSIUM	J	1000	3000	LOQ	ug/L	J (all detects)
LL1mw-088-181001-GW	POTASSIUM	J	2500	3000	LOQ	ug/L	J (all detects)
LL1mw-088-181002-GW	POTASSIUM	J	2500	3000	LOQ	ug/L	J (all detects)
RQLmw-008-181001-GW	SODIUM	J	3600	5000	LOQ	ug/L	J (all detects)

Method: 6020A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL1mw-064-181001-GW	ARSENIC	J	4.9	5.0	LOQ	ug/L	
	COBALT	J	0.28	1.0	LOQ	ug/L	J (all detects)
	LEAD	J	0.18	3.0	LOQ	ug/L	
LL1mw-088-181001-GW	COBALT	J	0.096	1.0	LOQ	ug/L	J (all detects)
LL1mw-088-181002-GW	ANTIMONY	J	0.72	6.0	LOQ	ug/L	
	BERYLLIUM	J	0.21	1.0	LOQ	ug/L	
	COBALT	J	0.14	1.0	LOQ	ug/L	J (all detects)
	THALLIUM	J	0.057	1.0	LOQ	ug/L	
	ZINC	J	3.5	20	LOQ	ug/L	
RQLmw-007-181001-GW	ZINC	J	3.5	20	LOQ	ug/L	J (all detects)
RQLmw-008-181001-GW	ANTIMONY	J	0.43	6.0	LOQ	ug/L	J (all detects)
	THALLIUM	J	0.26	1.0	LOQ	ug/L	

Method: 8270D-SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
RQLmw-007-181001-GW	FLUORANTHENE	J	0.018	0.11	LOQ	ug/L	J (all detects)
	PHENANTHRENE	J	0.025	0.11	LOQ	ug/L	

Reporting Limit Outliers

Lab Reporting Batch ID: 280-115950-1 | **Laboratory: TA DEN**

EDD Filename: 280-115950-1 | **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 8330B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
RQLmw-008-181001-GW	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	J M	0.27	0.42	LOQ	ug/L	J (all detects)

Method: 9012B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
RQLmw-007-181001-GW	Cyanide, Total	J	0.0046	0.010	LOQ	mg/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-115950-1 **Laboratory: TA DEN**

EDD Filename: 280-115950-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 6010C
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	LL1mw-088-181001-GW (TOT)	LL1mw-088-181002-GW (TOT)			
ALUMINUM	39	38	3	50.00	No Qualifiers Applied
CALCIUM	88000	87000	1	50.00	
IRON	1600	1600	0	50.00	
MAGNESIUM	35000	35000	0	50.00	

Method: 6010C-KNA
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	LL1mw-088-181001-GW (TOT)	LL1mw-088-181002-GW (TOT)			
POTASSIUM	2500	2500	0	50.00	No Qualifiers Applied
SODIUM	25000	25000	0	50.00	

Method: 6020A
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	LL1mw-088-181001-GW (TOT)	LL1mw-088-181002-GW (TOT)			
ANTIMONY	6.0 U	0.72	200	50.00	No Qualifiers Applied
ARSENIC	29	30	3	50.00	
BARIUM	37	35	6	50.00	
BERYLLIUM	1.0 U	0.21	200	50.00	
COBALT	0.096	0.14	37	50.00	
MANGANESE	45	47	4	50.00	
THALLIUM	1.0 U	0.057	200	50.00	
ZINC	20 U	3.5	200	50.00	

Data Qualifier Summary

Lab Reporting Batch ID: 280-115950-1 **Laboratory: TA DEN**

EDD Filename: 280-115950-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: GENCHEM
Method: 9012B **Matrix:** AQ

Sample ID: RQLmw-007-181001-GW **Collected:** 10/22/2018 12:50:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Cyanide, Total	0.0046	J	0.0050	LOD	0.010	LOQ	mg/L	J	RI

Method Category: METALS
Method: 6010C **Matrix:** AQ

Sample ID: LL1mw-064-181001-GW **Collected:** 10/22/2018 12:20:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	44	J	70	LOD	300	LOQ	ug/L	J	RI

Sample ID: LL1mw-088-181001-GW **Collected:** 10/22/2018 10:40:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	39	J	70	LOD	300	LOQ	ug/L	J	RI

Sample ID: LL1mw-088-181002-GW **Collected:** 10/22/2018 10:40:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	38	J	70	LOD	300	LOQ	ug/L	J	RI

Sample ID: RQLmw-007-181001-GW **Collected:** 10/22/2018 12:50:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PHOSPHORUS	56	J	50	LOD	3000	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6010C-KNA **Matrix:** AQ

Sample ID: LL1mw-064-181001-GW **Collected:** 10/22/2018 12:20:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1000	J	940	LOD	3000	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-115950-1 | **Laboratory: TA DEN**

EDD Filename: 280-115950-1 | **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6010C-KNA **Matrix:** AQ

Sample ID: LL1mw-088-181001-GW **Collected:** 10/22/2018 10:40:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	2500	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: LL1mw-088-181002-GW **Collected:** 10/22/2018 10:40:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	2500	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: RQLmw-008-181001-GW **Collected:** 10/22/2018 10:05:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SODIUM	3600	J	350	LOD	5000	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: LL1mw-064-181001-GW **Collected:** 10/22/2018 12:20:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	4.9	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
COBALT	0.28	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
LEAD	0.18	J	0.70	LOD	3.0	LOQ	ug/L	J	RI

Sample ID: LL1mw-088-181001-GW **Collected:** 10/22/2018 10:40:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
COBALT	0.096	J	0.20	LOD	1.0	LOQ	ug/L	J	RI

Sample ID: LL1mw-088-181002-GW **Collected:** 10/22/2018 10:40:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.72	J	1.0	LOD	6.0	LOQ	ug/L	J	RI
BERYLLIUM	0.21	J	0.30	LOD	1.0	LOQ	ug/L	J	RI
COBALT	0.14	J	0.20	LOD	1.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-115950-1 **Laboratory: TA DEN**

EDD Filename: 280-115950-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 6020A **Matrix: AQ**

Sample ID: LL1mw-088-181002-GW **Collected:** 10/22/2018 10:40:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
THALLIUM	0.057	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
ZINC	3.5	J	8.0	LOD	20	LOQ	ug/L	J	RI

Sample ID: RQLmw-007-181001-GW **Collected:** 10/22/2018 12:50:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ZINC	3.5	J	8.0	LOD	20	LOQ	ug/L	J	RI

Sample ID: RQLmw-008-181001-GW **Collected:** 10/22/2018 10:05:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.43	J	1.0	LOD	6.0	LOQ	ug/L	J	RI
THALLIUM	0.26	J	0.20	LOD	1.0	LOQ	ug/L	J	RI

Method Category: SVOA

Method: 8270D-SIM **Matrix: AQ**

Sample ID: RQLmw-007-181001-GW **Collected:** 10/22/2018 12:50:00 PM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
FLUORANTHENE	0.018	J	0.013	LOD	0.11	LOQ	ug/L	J	RI
PHENANTHRENE	0.025	J	0.021	LOD	0.11	LOQ	ug/L	J	RI

Method Category: SVOA

Method: 8330B **Matrix: AQ**

Sample ID: RQLmw-008-181001-GW **Collected:** 10/22/2018 10:05:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.27	J M	0.21	LOD	0.42	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-115950-1

Laboratory: TA DEN

EDD Filename: 280-115950-1

eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined

MANUALLY ADDED QUALIFIERS FOR MISSED VOC HOLD TIME; SEE VALIDATION WORKSHEETS AND REVISED FORM 1s

MANUALLY ADDED QUALIFIERS FOR NONCOMPLIANT EXPLOSIVES SURROGATE RECOVERY; SEE VALIDATION WORKSHEETS AND REVISED FORM 1s FOR RATIONALE AND DETAILS

Data Qualifier Summary

Lab Reporting Batch ID: 280-115950-1 **Laboratory: TA DEN**

EDD Filename: 280-115950-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
Lcs	Laboratory Control Spike Upper Estimation
Mb	Method Blank Contamination
RI	Reporting Limit Trace Value

* denotes a non-reportable result

LEIDOS
Laboratory Data Verification Checklist

Project: RVAAP

SDG No: J116020

Analyte Group: VOC, SVOC, Pest/PCB, Explosives, Metals, wet Chem

Sample Matrix: Water

EDD (Y/N):

Disposition of Data Package:

NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)		Y
Check for LCS results (e.g., org. form III, inorg. form XII)		Y
Check for method blank results (e.g., org. form IV, inorg. form III)		Y
Check for MS/MSD results (e.g., inorg. form V)		Y
Check for laboratory duplicate results (e.g., inorg. form VI)		Y
Check for Method Calibration and Run Documentation		
organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	method linear range	Y
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	Y
other:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	sample run sequence	Y

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Brooke Francis Date: 12/27/18

QA Review By: Date: 01/04/2019

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: J116020

Analyte Group: VOC, SVOC, Pest/PCB, Explosives, Metals

SEE ATTACHED

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:

Comments:

Sample Summary

Client: Leidos, Inc. TestAmerica Job ID: 280-116020-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-116020-1	DET-003-181001-GW	Water	10/24/18 10:05	10/24/18 17:47
280-116020-2	DET-003-181002-GW	Water	10/24/18 10:05	10/24/18 17:47
280-116020-3	FWGTB-181002-TB	Water	10/24/18 10:05	10/24/18 17:47
280-116020-4	WBGmw-009-181001-GW	Water	10/23/18 14:35	10/24/18 17:47
280-116020-5	LL1mw-083-181001-GW	Water	10/24/18 13:25	10/24/18 17:47
280-116020-6	LL1mw-084-181001-GW	Water	10/24/18 09:30	10/24/18 17:47
280-116020-7	FWGmw-013-181001-GW	Water	10/24/18 13:55	10/24/18 17:47
280-116020-8	DA2mw-115-181001-GW	Water	10/24/18 12:45	10/24/18 17:47
280-116020-9	DA2mw-115-181002-GW	Water	10/24/18 12:45	10/24/18 17:47
280-116020-12	DET-004-181001-GW	Water	10/24/18 11:20	10/24/18 17:47

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116020

Analysis: VOC

Method: 8260B

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

Results were qualified as estimated due to missed holding time

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/27/18

QA Reviewed by: Richman Stark Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed
DET-003-181001-GW	10/24/18	11/14/18	HT + 7 DAYS (<2x HT, RESULTS QUALIFIED J / UJ)					
DET-003-181002-GW	↓	↓	↓					
FWGTB-181002-TB	↓	↓	↓					
DET-004-181001-GW	↓	↓	↓					

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: ADR did not qualify for missed holding times, see Form 1's

SAMPLES ALSO HAD HEADSPACE. PER NARRATIVE "The following volatile samples in analytical batch 280-437463 were analyzed with significant headspace in the sample containers:
DET-003-181001-GW (280-116020-1), DET-003-181001-GW (280-116020-1[MS]), DET-003-181001-GW (280-116020-1[MSD]), DET-003-181002-GW (280-116020-2) and DET-004-181001-GW (280-116020-12). Significant headspace is defined as a bubble greater than 6 mm in diameter."

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: All surrogates met control limits

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: _____

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MB and TB were free from contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: 9/28 10/29
VOC - Date(s) of continuing calibration: 11/13
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration:
SVOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: Calibration results met control limits for target analytes

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: DET-003-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: MS/MSD %R and RPD met control limits

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-437463

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS %R met control limits

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116020

Analysis: SVOCs/PAH

Method: 8270/SIM

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

Some results were qualified as estimated due to surrogate discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/27/18

QA Reviewed by: Richman Stark Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries: SEE ADR OUTPUT

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: See ADR output for PAH discrepancies

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: All IS results met control limits

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: See ADR for PAH contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration:
VOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: 10/17/18 10/29/18 11/7/18
SVOC - Date(s) of continuing calibration: 11/7/18 11/1/18 11/8/18
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: All calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:
percent recovery (%R)
relative percent difference (RPD)

VOC	SVOC	Pest	PCB
70-130	45-135	40-140	40-140
<30	<50	<50	<50

Project Sample(s) Spiked: DET-003-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected
2-chlorophenol			44%		DET-003-181001-GW ND, no qual
2-methylphenol			27%		
2-nitrophenol			27%		
nitrobenzene			32%		
phenol			35%		

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: See ADR output for MSD RPD discrepancies

X. Laboratory Control Sample Information

General LCS Criteria: percent recovery (%R)	VOC	SVOC	Pest	PCB
	80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-435328

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R results met control limits

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116020

Analysis: Pesticides/PCB

Method: 8081/8082

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/27/18

QA Reviewed by: Richmond Stark Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

PCBs

The following samples required a sulfuric acid clean-up, via EPA Method 3665A, to reduce matrix interferences: DET-003-181001-GW (280-116020-1), DET-003-181002-GW (280-116020-2), DET-004-181001-GW (280-116020-12), (LCS 280-435616/4-A), (LCSD 280-435616/5-A) and (MB 280-435616/1-A). Acid Lot: 161554

The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: DET-003-181001-GW (280-116020-1), DET-003-181002-GW (280-116020-2), DET-004-181001-GW (280-116020-12), (LCS 280-435616/4-A), (LCSD 280-435616/5-A) and (MB 280-435616/1-A).

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: Surrogates met control limits

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: ~~All IS results met control limits~~

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MBs were free from contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: _____
VOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: _____
SVOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: NA

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? (Yes) or No

Is the RPD between calibration factors ≤25? (Yes) or No

Are multicomponent calibration data provided for each analysis date? (Yes) or No

Is the difference between columns check ≤ 25%D? (Yes) or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% (Yes) or No

Deviations:

Compound	%RSD / %D	RPD	Samples Affected	
Toxaphene (Average)	- 32.56		ICV 10/13/18	~~All ND, no qual~~ UJ C05
Methoxychlor	26.1		CCV 438138/37	All ND, no qual
Methoxychlor	20.8		CCV 439676/27	All ND, no qual

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: The average %D for CCVs were calculated for validation

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria: percent recovery (%R)	VOC	SVOC	Pest	PCB
	80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS/D 280-435616

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: See ADR output for discrepancies

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J116020 **Analysis:** Explosives

Method: 8330B

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DoD QSM

Some results were qualified as estimated due to surrogate and column comparison discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/27/18

QA Reviewed by: Richman Stark Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: Column comparison discrepancies were not listed in ADR

The %RPD between the primary and confirmation column exceeded 40% for HMX and RDX in sample LL1mw-083-181001-GW (280-116020-5) and for HMX, RDX and 1,3-Dinitrobenzene in sample LL1mw-084-181001-GW (280-116020-6). Both values been reported and qualified in accordance with the laboratory's SOP.

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: One sample was reanalyzed due to surrogates outside control limits, the reanalysis was not reported

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes:
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	
WBGmw-009-181001-GW RE			10/23/18	11/02/18		

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: Reanalysis not reported

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be ≥ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be ≤ 20%
Continuing calibration %D must be within ± 15%

Deviations:

Compound	Correlation Coefficient	% RSD	%D	Samples Affected
Tetryl			21.1	CCV 435517/12 All ND, no qual
Tetryl			21.7	CCV 435517/24 All ND, no qual
Tetryl			22	CCV 435517/34 All ND, no qual

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks:

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks: See ADR output for discrepancies

The recovery for surrogate 1,2-Dinitrobenzene failed the surrogate recovery criteria in sample WBGmw-009-181001-GW (280-116020-4) and in the method blank MB 280-435346/1-A and in the LCS 280-435346/2-A in analytical batch 280-435517. The LCS spike recoveries for several analytes were also outside control limits. Sample WBGmw-009-181001-GW (280-116020-4) was re-analyzed outside hold times. The surrogate in this sample and the rerun QC was in control. All target compounds were "Un-Detect" in both sample runs. Both sets of data are reported

NOTE: Sample, LCS and MB marginally < LCL (71, 78, 81; LCL 83)

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: See ADR output for contamination

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks: See ADR output for discrepancies

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-435346 LCS 280-435504 LCS 280-436019

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: See ADR output for discrepancies

LEIDOS
Metals Data Review Checklist

Project: RVAAP

SDG No: J116020

Analysis: Metals

Method: 6010, 6020, 7470

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on an examination of the following:

Case Narrative	MS/MSD Recoveries and Differences
Analytical Holding Times	Duplicate Relative Percent Differences
Sample Preservation	ICP Serial Dilution
Method Calibration	Furnace Atomic Absorption QC
Method and Project Blanks	Re-analysis and Secondary Dilution
LCS Recoveries	Internal Standard Performance (if applicable)

Project specific QA/QC or contract requirements may take priority over validation criteria in this proceudre.

Overall remarks: DoD QSM

Some results are qualified as estimated due to calibration and MS/MSD discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/27/18

QA Reviewed by: Richman Stark Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Metals - Waters - preserved to pH<2, 180 days from sample collection
Metals - Soils - 180 days from sample collection
Mercury - Waters - preserved to pH<2, 28 days from sample collection
Mercury - Soils - 28 days from sample collection

Deviations:

Sample #	Metals				Mercury			
	Date Collected	Date Analyzed	Days >HT	pH Check	Date Collected	Date Analyzed	Days >HT	pH Check

Actions:

1. If preserved samples exceed holding time, qualify all associated results as estimated (J/UJ).
2. If unpreserved samples exceed holding time, qualify all associated results as unusable (R).
3. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
4. If water samples are not acidified, use professional judgement. Minimally, qualify data as estimated (J) and non-detects unusable (R).
5. If soil samples exceed holding time, use professional judgement to qualify data.

Remarks: Holding times were met

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.)

Initial calibration linearity criteria is r ≥ 0.995
ICV and CCV criteria are ± 10% recovery, low level check standard allowed ± 30%
ICP inter-element check standard criteria ± 20%

Deviations:

Element	Date	Intial Calib.	ICV/ CCV	%R	Samples Affected	
Aluminum	10/29		CCVL	121	435360/83	116020-1, 4, 6, 8, 9, 12
Calcium	10/29		CCVL	138	435360/97	116020-1, 4, 6, 8, 9, 12
Caclium	10/29		CCVL	149		
Cadmium	11/2		CCVL	78	436227/53	None
Manganese	11/2		CCVL	122	436227/74	None
Barium	11/2		CCVL	79	436227/92	116020-1, 4, 6, 8, 9, 12

Actions:

1. If any elements initial claibration linearity is <0.995, qualify the data as estimated (J/UJ)
2. If any elements initial claibration linearity is <0.95, qualify the data as unusable (R)

3a. If any elements ICV or CCV recovery is <90%, qualify the data as estimated (J/UJ)

3b. If any elements ICV or CCV recovery is > 110%, qualify results ≥ MDL as estimated (J). Do not qualify non-detects.

4a. If any elements ICV or CCV recovery is <75%, qualify the data as unusable (R)

4b. If any elements ICV or CCV recovery is > 125% qualify positive results as estimated (J) or non-detects as unusable (R).

4c. If any element ICV or CCV recovery is ≥ 160%, qualify positive results ≥ MDL as unusable (R). Do not qualify non-detects.

5a. If any elements CRI recovery is 50 - 69% (30 - 49% for Sb, Pb, Tb), qualify results ≥ MDL (but < 2 times CRQL) as estimated (J/UJ) and results > 2 times CRQL are not qualified.

5b. If any elements CRI recovery is < 50% (<30% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) and non-detects as unusable (R). Results > 2 times CRQL are estimated (J).

5c. If any elements CRI recovery is > 130% but < 180% (>150% but ≤ 200% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) as esimated (J). And non-detects and results ≥ 2x CRQL are not qualified.

5d. If CRI or (R) > 180% (> 200% for Sb, Pb, Ti), qualify results that are ≥ MDL as unusable (R).

Remarks: _____

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.) (continued)

Analytical Sequence and MS Tune	(Y/N)
1. Were the appropriate number of ICP standards used?	Y
2. Were the appropriate number of AA standards used?	Y
3. Was calibration performed and documented at the beginning of each run?	Y
4. Were calibration check standards run at 10% frequency or every two hours?	Y
5. Were low level standard checks analyzed at approximately 2X the PQL?	Y
6. Was ICP-MS mass calibration within 0.1 AMU?	Y
7. Was ICP-MS % RSD of the aboslute signals for all analytes < 5%?	Y

Deviations:

Element	Deviation	Samples Affected

Actions:

1. If instrument calibration is questionable, use professional judgement, qualify the data as estimated (J/UJ)
2. If instrument calibration documentation can not be obtained or is inadequate, qualify the data as unusable (R)
3. If mass calibration for ICP-MS was not within 0.1 AMU qualify analyte results as estimated (J/UJ)
4. If % RSD for ICP-MS was > 5% for any analyte in the tuning solution, qualify associated results as estimated (J/UJ).

Results:

V. Blanks (ICB, CCB, Method Blank, Equipment Rinsate Blank)

A. Blank Results

If the blank level is > CRQL for any analyte, check that the analyte's concentration in the samples is > 10 times the blank value. The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account when applying the action level.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected	
CCB 435360/82	Iron	47.1 ug/L	471	116020-1, 4, 6, 8, 9, 12	
CCB 435360/96	Calcium	92.6 ug/L	926	116020-1, 4, 6, 8, 9, 12	
ICB 4362247/9	Vanadium	1.11 ug/L	1.11	None	
CCB 436227/52	Antimony	0.483 ug/L	4.83	None	
	Vanadium	0.544 ug/L	5.44	None	
CCB 436227/73	Vanadium	0.835 ug/L	8.35	None	
CCB 436227/82	Vanadium	0.567 ug/L	5.67	None	
CCB	Vanadium	0.865 ug/L	8.65	116020-1, 4, 6, 8, 9, 12	
MB 435183	Calcium	219 ug/L	2190	See ADR output 116020-1, 4, 6, 8, 9, 12	all >10x
	Sodium	207 ug/L	2070		all >10x
MB 435184	Manganese	0.351 ug/L	3.51	116020-1, 4, 6, 8, 9, 12	all >10x

If additional space is required, use next page

Actions:

1. For blank results ≥ MDL but ≤ CRQL, qualify samples ≥ MDL but < CRQL as CRQL U.
   Use proffessional judgement to qualify sample results exceeding the CRQL.

2a. If blank results are > CRQL: For sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < 10 times the blank qualify results as unusable (R) or estimated (J). No action is taken for sample results ≥ 10 times the blank levels.

2b. If ICB/ CCB results are > CRQL; for sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < blank results, qualify results as not detected (U) at the level of the blank or unusable (R). Use professional judgement for sample results > blank results.

Remarks: _____

V. Blanks (continued)

The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected

V. Blanks (continued)

B. Frequency Requirements (Y/N)

1. Was a method (preparation) blank analyzed for each matrix? Y
2. Was a method blank processed for every analytical batch (20 samples)? Y
3. Was a calibration blank analyzed at 10% frequency or every two hours? Y

Deviations:

Element	Deviation	Samples Affected

Remarks:

C. Baseline Shift Evaluation

List the highest negative blank concentration for each analyte observed in laboratory or project blanks.

Deviations:

Blank ID	Element	Max. Neg Conc.	Action Level	Samples Affected

Actions:

1. If the absolute value of the maximum negative blank result is > the CRQL, qualify positive results as estimated (J) and non-detects as estimated (UJ).

Remarks:

VI. Laboratory Control Sample Evaluation

All LCS recovery criteria are set at 80-120%
An LCS must be analyzed for each matrix and for each digestion batch or set of twenty samples

Deviations:

Element	Date	%R	Matrix	Samples Affected

Actions:

1. If any element's LCS recovery is >120%, qualify positive results as (J).
2. If any element's LCS recovery is 50-79%, qualify positive results as (J) and non-detect results as (UJ)

3a. If any element's LCS recovery is <50%, qualify positive results as (J) and non-detect results as (R)
3b. If the LCS recovery is > 150%, qualify all results as unusable (R).

4. For soil LCS recovery > upper limit, qualify samples results ≥ MDL as estimated (J).
5. For soil LCS recovery < lower limit, qualify results ≥ MDL as esimated (J) and non-detected estimated (UJ).
6. Use professional judgement to qualify data if the LCS frequency criteria are not met.

Remarks: LCS %R results met control limits

VII. Matrix Spike Evaluation

All MS recovery criteria are set at 75-125%
An MS must be analyzed for each matrix and for each digestion batch or set of twenty samples
Verify that a field blank or PE sample was not used for spiked sample analysis
Verify that a post-digestion spike was analyzed for those anlytes where the pre-digestion spike recovery is outside control limits and the sample result is < 4 times the spike added.

Project Sample(s) Spiked: DA2mw-115-181001-GW

Deviations:

Element	Spiked Sample Result	Sample Result	Spike Amount	%R	Samples Affected

Actions:

1. If the sample concentration exceeds the spiking level by a factor of 4X or more, do not qualify the data
2. If the spike recovery is >125%, qualify all positive values as (J).
3. If the spike recovery is between 30-74%, qualify positive values as (J) and non-detect values as estimated (UJ)
4. If the spike recovery is <30%, qualify positive values as (J) and non-detects are qualified unusable (R)
if the post-digestion spike recovery is < 75% (or none was performed); non-detects are qualified as estimated (UJ)
If the post-digestion spike reocvery is ≥ 75%. There is no post-digestion spike performed for mercury.
5. Qualify all samples of similar matrix to the spiked sample in the same manner
6. Use professional judgement to qualify data if the MS frequency criteria are not met.
7. Use professional judgement for qualification of data for unspiked elements

Remarks: See ADR Output qualifiers applied to parent sample and its FD only

VIII. Laboratory Duplicate Evaluation

Duplicate relative percent difference (RPD) for water is 20% (both results > 5 times CDRL) or < CRDL difference (if either result is < 5 times CRDL) and RPD for soil is 35% (if both results are > 5 times CRDL or < 2 times CRDL if either result is < 5 times CRDL).
When duplicate sample values are both less than the reporting level they are considered acceptable
When dupicate sample values are within 5X the reporting level they are acceptable if their absolute difference is within 3X the reporting level
Verify that a field blank on PE sample was not used for duplicate analysis.

Deviations:

Element	Sample #	Duplicate #	RPD	Samples Affected

Actions:

1. If an element's RPD is >20% (water) / >35% (soil), qualify positive results as (J) and non-detect results as (UJ)
2. For low concentrations, if an element's duplicate absolute difference is > 3X the reporting level, qualify positive results as (J) and non-detect results as (UJ)
3. Use professional judgement to qualify data if the duplicate frequency criteria are not met.

Remarks: NA

IX. Inductively Coupled Plasma (ICP) Serial Dilution Analysis

Verify that a field blank or PE sample was not used for serial dilution.
Serial dilution of positive results are performed when values exceed 50X the IDL
Results from serial dilutions should agree within 10% of the original undiluted analysis

Deviations:

Element	Sample #	Sample Result	Serial Dilution	%D	Action

Actions:

1. If the serial dilution %D is >10 and the analyte results are >50X the IDL, qualify all positive results as estimated (J) and non-detects as estimated (UJ).

Remarks: Serial dilution met control limits

X. Furnace Atomic Absorption QC

A. Duplicate Precision (Y/N)

1. Were duplicate injections performed for all samples? _____
2. Were one point analytical spikes performed for all samples? _____
3. Did duplicate injections agree within ± 20%? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If duplicate injection results are outside ± 20%, qualify positive results as (J) and non-detect results as (UJ)

Remarks: NA

B. Post Digestion Spike Recoveries (Y/N)

1. Did post digestion spike recoveries meet an 85-115% recovery criteria? Y
2. If spike recoveries did not meet recovery criteria were samples analyzed by MSA? Y
3. If MSA was used to analyze samples, was its' correlation coefficient ≥ 0.995? Y

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If post digestion spike recoveries are >115%, qualify positive results as (J) and non-detect results as (U)
2. If post digestion spike recoveries are 11-84%, qualify positive results as (J) and non-detect results as (UJ)
3. If post digestion spike recoveries are <10%, qualify positive results as (R) and non-detect results as (R)
4. If MSA was used to quantitate values and the correlation coefficient was <0.995, qualify data as (J or UJ)
5. If MSA was used to quantitate values and the correlation coefficient was <0.95, qualify data as (R)

Remarks: PDS met control limits

XI. Inductively Coupled Plasma (ICP) Interference Check Sample Evaluation

Interference check samples should be analyzed at the beginning and end of each analysis run, or at a minimum of twice per 8 hour working shift.
Results for the ICS solution AB must fall within control limits of 20% for analytes included in the solution.
Evaluate the ICS A solution raw data for results with an absolute value ≥ MDL for analytes that are not present in the ICS A solution.

Deviations:

Element	Sample #	Sample Result	Interferent Result	Action

Actions:

1. If the ICS AB %R for an analyte is > 120%, qualify sample results ≥ MDL as estimated (J) and non-detects should not be qualified.
2. If the ICS AB %R for an analyte is 50-79%, qualify sample results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ).
3. If the ICS AB %R for an analyte is <50%, qualify all sample results that are ≥ MDL and all non-detects as as unusable (R).
4. If results ≥ MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents and with analyte concentration that approximate those levels in the ICS A, sample results ≥ MDL should be qualified as estimated (J) and non-detects should not be qualified.
5. If negative results with absolute values > MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents, affected sample results > MDL should be qualified as estimated (J) and non-detects (UJ).

Remarks: ICS results met control limits

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116020

Analysis: Cyanide, Sulfide, Nitrate, Nitrite, Sulfate, Alkalinity

Method: 9012, 9034, 9056, 2320

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: :Laboratory control limits used

Some results were qualified as estimated due to MS/MSD and/or duplicate discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/27/18

QA Reviewed by: Richmond Stark Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: MB and CCBs were free from contamination

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS %R results met control limits

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: See ADR Output for discrepancies only parent sample qualified

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: See ADR Output for discrepancies

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116020

Analysis: Hexa Chromium

Method: 7196

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: Laboratory limits

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/27/18

QA Reviewed by: Richman Stark Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: All calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: Blanks were free from contamination

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: NA

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: NA

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

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

Client Sample ID: DET-003-181001-GW
Lab Sample ID: 280-116020-1
Date Collected: 10/24/18 10:05
Matrix: Water
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H UJ A03	1.0	0.40	0.16	ug/L		11/14/18 01:31	1
1,1,2,2-Tetrachloroethane	0.80	U H	1.0	0.80	0.21	ug/L		11/14/18 01:31	1
1,1,2-Trichloroethane	0.80	U H	1.0	0.80	0.27	ug/L		11/14/18 01:31	1
1,1-Dichloroethane	0.80	U H	1.0	0.80	0.22	ug/L		11/14/18 01:31	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/14/18 01:31	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/14/18 01:31	1
1,2-Dichloroethane	0.40	U H	1.0	0.40	0.13	ug/L		11/14/18 01:31	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/14/18 01:31	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/14/18 01:31	1
2-Butanone (MEK)	4.0	U H	6.0	4.0	2.0	ug/L		11/14/18 01:31	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/14/18 01:31	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/14/18 01:31	1
Acetone	6.4	U H	10	6.4	1.9	ug/L		11/14/18 01:31	1
Benzene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 01:31	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 01:31	1
Bromochloromethane	0.20	U H	1.0	0.20	0.10	ug/L		11/14/18 01:31	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 01:31	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/14/18 01:31	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/14/18 01:31	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/14/18 01:31	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/14/18 01:31	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 01:31	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/14/18 01:31	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 01:31	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/14/18 01:31	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 01:31	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 01:31	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 01:31	1
Methylene Chloride	0.80	U H	5.0	0.80	0.32	ug/L		11/14/18 01:31	1
Styrene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 01:31	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/14/18 01:31	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 01:31	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/14/18 01:31	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 01:31	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/14/18 01:31	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/14/18 01:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*81 - 118*		*11/14/18 01:31*	*1*
4-Bromofluorobenzene (Surr)	*104*		*85 - 114*		*11/14/18 01:31*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 119*		*11/14/18 01:31*	*1*
Toluene-d8 (Surr)	*101*		*89 - 112*		*11/14/18 01:31*	*1*

Client Sample ID: DET-003-181002-GW
Lab Sample ID: 280-116020-2
Date Collected: 10/24/18 10:05
Matrix: Water
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H UJ A03	1.0	0.40	0.16	ug/L		11/14/18 02:32	1
1,1,2,2-Tetrachloroethane	0.80	U H UJ A03	1.0	0.80	0.21	ug/L		11/14/18 02:32	1
1,1,2-Trichloroethane	0.80	U H UJ A03	1.0	0.80	0.27	ug/L		11/14/18 02:32	1

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

Client Sample ID: DET-003-181002-GW **Lab Sample ID: 280-116020-2**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethane	0.80	U H	1.0	0.80	0.22	ug/L		11/14/18 02:32	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/14/18 02:32	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/14/18 02:32	1
1,2-Dichloroethane	0.40	U H	1.0	0.40	0.13	ug/L		11/14/18 02:32	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/14/18 02:32	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/14/18 02:32	1
2-Butanone (MEK)	4.0	U H	6.0	4.0	2.0	ug/L		11/14/18 02:32	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/14/18 02:32	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/14/18 02:32	1
Acetone	6.4	U H	10	6.4	1.9	ug/L		11/14/18 02:32	1
Benzene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 02:32	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 02:32	1
Bromochloromethane	0.20	U H	1.0	0.20	0.10	ug/L		11/14/18 02:32	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 02:32	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/14/18 02:32	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/14/18 02:32	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/14/18 02:32	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/14/18 02:32	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 02:32	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/14/18 02:32	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 02:32	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/14/18 02:32	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 02:32	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 02:32	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 02:32	1
Methylene Chloride	0.80	U H	5.0	0.80	0.32	ug/L		11/14/18 02:32	1
Styrene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 02:32	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/14/18 02:32	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 02:32	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/14/18 02:32	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 02:32	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/14/18 02:32	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/14/18 02:32	1

UJ A03

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*81 - 118*		*11/14/18 02:32*	*1*
4-Bromofluorobenzene (Surr)	*102*		*85 - 114*		*11/14/18 02:32*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 119*		*11/14/18 02:32*	*1*
Toluene-d8 (Surr)	*99*		*89 - 112*		*11/14/18 02:32*	*1*

Client Sample ID: FWGTB-181002-TB **Lab Sample ID: 280-116020-3**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 02:52	1
1,1,2,2-Tetrachloroethane	0.80	U H	1.0	0.80	0.21	ug/L		11/14/18 02:52	1
1,1,2-Trichloroethane	0.80	U H	1.0	0.80	0.27	ug/L		11/14/18 02:52	1
1,1-Dichloroethane	0.80	U H	1.0	0.80	0.22	ug/L		11/14/18 02:52	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/14/18 02:52	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/14/18 02:52	1

UJ A03

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

Client Sample ID: FWGTB-181002-TB **Lab Sample ID: 280-116020-3**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2-Dichloroethane	0.40	U H	1.0	0.40	0.13	ug/L		11/14/18 02:52	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/14/18 02:52	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/14/18 02:52	1
2-Butanone (MEK)	4.0	U H	6.0	4.0	2.0	ug/L		11/14/18 02:52	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/14/18 02:52	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/14/18 02:52	1
Acetone	6.4	U H	10	6.4	1.9	ug/L		11/14/18 02:52	1
Benzene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 02:52	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 02:52	1
Bromochloromethane	0.20	U H	1.0	0.20	0.10	ug/L		11/14/18 02:52	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 02:52	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/14/18 02:52	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/14/18 02:52	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/14/18 02:52	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/14/18 02:52	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 02:52	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/14/18 02:52	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 02:52	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/14/18 02:52	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 02:52	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 02:52	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 02:52	1
Methylene Chloride	0.80	U H	5.0	0.80	0.32	ug/L		11/14/18 02:52	1
Styrene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 02:52	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/14/18 02:52	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 02:52	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/14/18 02:52	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 02:52	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/14/18 02:52	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/14/18 02:52	1

UJ A03

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*81 - 118*		*11/14/18 02:52*	*1*
4-Bromofluorobenzene (Surr)	*101*		*85 - 114*		*11/14/18 02:52*	*1*
Dibromofluoromethane (Surr)	*89*		*80 - 119*		*11/14/18 02:52*	*1*
Toluene-d8 (Surr)	*99*		*89 - 112*		*11/14/18 02:52*	*1*

Client Sample ID: DET-004-181001-GW **Lab Sample ID: 280-116020-12**
Date Collected: 10/24/18 11:20 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 03:12	1
1,1,2,2-Tetrachloroethane	0.80	U H	1.0	0.80	0.21	ug/L		11/14/18 03:12	1
1,1,2-Trichloroethane	0.80	U H	1.0	0.80	0.27	ug/L		11/14/18 03:12	1
1,1-Dichloroethane	0.80	U H	1.0	0.80	0.22	ug/L		11/14/18 03:12	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/14/18 03:12	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/14/18 03:12	1
1,2-Dichloroethane	0.40	U H	1.0	0.40	0.13	ug/L		11/14/18 03:12	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/14/18 03:12	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/14/18 03:12	1

UJ A03

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

Client Sample ID: DET-004-181001-GW **Lab Sample ID: 280-116020-12**
Date Collected: 10/24/18 11:20 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Butanone (MEK)	4.0	U H UJ A03	6.0	4.0	2.0	ug/L		11/14/18 03:12	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/14/18 03:12	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/14/18 03:12	1
Acetone	6.4	U M H	10	6.4	1.9	ug/L		11/14/18 03:12	1
Benzene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 03:12	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 03:12	1
Bromochloromethane	0.20	U H	1.0	0.20	0.10	ug/L		11/14/18 03:12	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 03:12	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/14/18 03:12	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/14/18 03:12	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/14/18 03:12	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/14/18 03:12	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 03:12	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/14/18 03:12	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 03:12	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/14/18 03:12	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 03:12	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 03:12	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 03:12	1
Methylene Chloride	0.80	U H	5.0	0.80	0.32	ug/L		11/14/18 03:12	1
Styrene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 03:12	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/14/18 03:12	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/14/18 03:12	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/14/18 03:12	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/14/18 03:12	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/14/18 03:12	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/14/18 03:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*81 - 118*		*11/14/18 03:12*	*1*
4-Bromofluorobenzene (Surr)	*101*		*85 - 114*		*11/14/18 03:12*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*11/14/18 03:12*	*1*
Toluene-d8 (Surr)	*100*		*89 - 112*		*11/14/18 03:12*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: DET-003-181001-GW **Lab Sample ID: 280-116020-1**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.013	U	0.10	0.013	0.0062	ug/L		11/09/18 01:53	1
2-Methylnaphthalene	0.013	U	0.10	0.013	0.0063	ug/L		11/09/18 01:53	1
Acenaphthene	0.042	U M U	0.10	0.042	0.0044	ug/L		11/09/18 01:53	1
Acenaphthylene	0.042	U	0.10	0.042	0.0053	ug/L		11/09/18 01:53	1
Anthracene	0.042	U	0.10	0.042	0.0059	ug/L		11/09/18 01:53	1
Benzo[a]anthracene	0.013	U	0.10	0.013	0.0044	ug/L		11/09/18 01:53	1
Benzo[a]pyrene	0.013	U M U	0.10	0.013	0.0072	ug/L		11/09/18 01:53	1
Benzo[b]fluoranthene	0.013	U	0.10	0.013	0.0032	ug/L		11/09/18 01:53	1
Benzo[g,h,i]perylene	0.013	U	0.10	0.013	0.0065	ug/L		11/09/18 01:53	1
Benzo[k]fluoranthene	0.013	U M U	0.10	0.013	0.0066	ug/L		11/09/18 01:53	1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: DET-003-181001-GW **Lab Sample ID: 280-116020-1**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chrysene	0.013	U	0.10	0.013	0.0034	ug/L		11/09/18 01:53	1
Dibenz(a,h)anthracene	0.013	U	0.10	0.013	0.0043	ug/L		11/09/18 01:53	1
Fluoranthene	0.013	U	0.10	0.013	0.0050	ug/L		11/09/18 01:53	1
Fluorene	0.042	U	0.10	0.042	0.0057	ug/L		11/09/18 01:53	1
Indeno[1,2,3-cd]pyrene	0.042	U	0.10	0.042	0.0047	ug/L		11/09/18 01:53	1
Naphthalene	0.013	U	0.10	0.013	0.0084	ug/L		11/09/18 01:53	1
Phenanthrene	0.021	U	0.10	0.021	0.0097	ug/L		11/09/18 01:53	1
Pyrene	0.021	U	0.10	0.021	0.0064	ug/L		11/09/18 01:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*57*		*53 - 106*	*10/29/18 21:02*	*11/09/18 01:53*	*1*
Nitrobenzene-d5	*61*		*55 - 111*	*10/29/18 21:02*	*11/09/18 01:53*	*1*
Terphenyl-d14	*91*		*58 - 132*	*10/29/18 21:02*	*11/09/18 01:53*	*1*

Client Sample ID: DET-003-181002-GW **Lab Sample ID: 280-116020-2**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.012	U	0.10	0.012	0.0060	ug/L		11/02/18 01:28	1
2-Methylnaphthalene	0.012	U	0.10	0.012	0.0061	ug/L		11/02/18 01:28	1
Acenaphthene	0.041	U	0.10	0.041	0.0043	ug/L		11/02/18 01:28	1
Acenaphthylene	0.041	U	0.10	0.041	0.0052	ug/L		11/02/18 01:28	1
Anthracene	0.041	U	0.10	0.041	0.0057	ug/L		11/02/18 01:28	1
Benzo[a]anthracene	0.012	U	0.10	0.012	0.0043	ug/L		11/02/18 01:28	1
Benzo[a]pyrene	0.012	U	0.10	0.012	0.0071	ug/L		11/02/18 01:28	1
Benzo[b]fluoranthene	0.012	U	0.10	0.012	0.0032	ug/L		11/02/18 01:28	1
Benzo[g,h,i]perylene	0.012	U	0.10	0.012	0.0063	ug/L		11/02/18 01:28	1
Benzo[k]fluoranthene	0.012	U M U	0.10	0.012	0.0064	ug/L		11/02/18 01:28	1
Chrysene	0.012	U	0.10	0.012	0.0034	ug/L		11/02/18 01:28	1
Dibenz(a,h)anthracene	0.012	U	0.10	0.012	0.0042	ug/L		11/02/18 01:28	1
Fluoranthene	0.012	U	0.10	0.012	0.0049	ug/L		11/02/18 01:28	1
Fluorene	0.041	U	0.10	0.041	0.0056	ug/L		11/02/18 01:28	1
Indeno[1,2,3-cd]pyrene	0.041	U	0.10	0.041	0.0046	ug/L		11/02/18 01:28	1
Naphthalene	0.012	U	0.10	0.012	0.0082	ug/L		11/02/18 01:28	1
Phenanthrene	0.020	U	0.10	0.020	0.0095	ug/L		11/02/18 01:28	1
Pyrene	0.020	U	0.10	0.020	0.0062	ug/L		11/02/18 01:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*63*		*53 - 106*	*10/29/18 21:02*	*11/02/18 01:28*	*1*
Nitrobenzene-d5	*73*		*55 - 111*	*10/29/18 21:02*	*11/02/18 01:28*	*1*
Terphenyl-d14	*83*		*58 - 132*	*10/29/18 21:02*	*11/02/18 01:28*	*1*

Client Sample ID: DET-004-181001-GW **Lab Sample ID: 280-116020-12**
Date Collected: 10/24/18 11:20 **Matrix: Water**
Date Received: 10/24/18 17:47

ADR QUALIFIED RESULTS AS UJ DUE TO SURR; NO REVISIONS NEEDED

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.014	U Q UJ G02	0.11	0.014	0.0067	ug/L		11/02/18 01:58	1
2-Methylnaphthalene	0.014	U Q UJ G02	0.11	0.014	0.0068	ug/L		11/02/18 01:58	1
Acenaphthene	0.045	U Q UJ G02	0.11	0.045	0.0047	ug/L		11/02/18 01:58	1
Acenaphthylene	0.045	U Q UJ G02	0.11	0.045	0.0057	ug/L		11/02/18 01:58	1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: DET-004-181001-GW **Lab Sample ID: 280-116020-12**
Date Collected: 10/24/18 11:20 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Anthracene	0.045	U Q UJ G02	0.11	0.045	0.0063	ug/L		11/02/18 01:58	1
Benzo[a]anthracene	0.014	U	0.11	0.014	0.0047	ug/L		11/02/18 01:58	1
Benzo[a]pyrene	0.014	U	0.11	0.014	0.0078	ug/L		11/02/18 01:58	1
Benzo[b]fluoranthene	0.014	U	0.11	0.014	0.0035	ug/L		11/02/18 01:58	1
Benzo[g,h,i]perylene	0.014	U	0.11	0.014	0.0070	ug/L		11/02/18 01:58	1
Benzo[k]fluoranthene	0.014	U	0.11	0.014	0.0071	ug/L		11/02/18 01:58	1
Chrysene	0.014	U	0.11	0.014	0.0037	ug/L		11/02/18 01:58	1
Dibenz(a,h)anthracene	0.014	U	0.11	0.014	0.0046	ug/L		11/02/18 01:58	1
Fluoranthene	0.014	U Q	0.11	0.014	0.0054	ug/L		11/02/18 01:58	1
Fluorene	0.045	U Q	0.11	0.045	0.0062	ug/L		11/02/18 01:58	1
Indeno[1,2,3-cd]pyrene	0.045	U	0.11	0.045	0.0051	ug/L		11/02/18 01:58	1
Naphthalene	0.014	U Q	0.11	0.014	0.0090	ug/L		11/02/18 01:58	1
Phenanthrene	0.023	U Q	0.11	0.023	0.010	ug/L		11/02/18 01:58	1
Pyrene	0.023	U Q	0.11	0.023	0.0069	ug/L		11/02/18 01:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*47*	*Q*	*53 - 106*	*10/29/18 21:02*	*11/02/18 01:58*	*1*
Nitrobenzene-d5	*52*	*Q*	*55 - 111*	*10/29/18 21:02*	*11/02/18 01:58*	*1*
Terphenyl-d14	*78*		*58 - 132*	*10/29/18 21:02*	*11/02/18 01:58*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: DET-003-181001-GW **Lab Sample ID: 280-116020-1**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4,5-Trichlorophenol	0.99	U	20	0.99	0.44	ug/L		11/07/18 16:26	1
2,4,6-Trichlorophenol	0.99	U	20	0.99	0.29	ug/L		11/07/18 16:26	1
2,4-Dichlorophenol	2.0	U	9.9	2.0	0.63	ug/L		11/07/18 16:26	1
2,4-Dimethylphenol	2.0	U	9.9	2.0	0.57	ug/L		11/07/18 16:26	1
2,4-Dinitrophenol	30	U	79	30	9.9	ug/L		11/07/18 16:26	1
2,4-Dinitrotoluene	4.3	U	20	4.3	1.6	ug/L		11/07/18 16:26	1
2,6-Dinitrotoluene	4.3	U	20	4.3	1.9	ug/L		11/07/18 16:26	1
2-Chlorophenol	4.3	U J1 U	9.9	4.3	2.0	ug/L		11/07/18 16:26	1
2-Methylphenol	2.0	U J1 U	9.9	2.0	0.97	ug/L		11/07/18 16:26	1
2-Nitrophenol	0.99	U J1 U	20	0.99	0.38	ug/L		11/07/18 16:26	1
3 & 4 Methylphenol	0.49	U	20	0.49	0.25	ug/L		11/07/18 16:26	1
4,6-Dinitro-2-methylphenol	8.7	U	79	8.7	3.9	ug/L		11/07/18 16:26	1
4-Chloro-3-methylphenol	4.9	U	20	4.9	2.4	ug/L		11/07/18 16:26	1
4-Nitrophenol	3.9	U	49	3.9	1.2	ug/L		11/07/18 16:26	1
Bis(2-ethylhexyl) phthalate	2.0	U	9.9	2.0	0.55	ug/L		11/07/18 16:26	1
Butyl benzyl phthalate	2.0	U	20	2.0	0.99	ug/L		11/07/18 16:26	1
Diethyl phthalate	0.99	U	20	0.99	0.37	ug/L		11/07/18 16:26	1
Dimethyl phthalate	0.49	U	20	0.49	0.21	ug/L		11/07/18 16:26	1
Di-n-butyl phthalate	4.3	U	20	4.3	1.1	ug/L		11/07/18 16:26	1
Di-n-octyl phthalate	0.99	U	20	0.99	0.34	ug/L		11/07/18 16:26	1
Nitrobenzene	2.0	U J1 U	20	2.0	0.80	ug/L		11/07/18 16:26	1
Pentachlorophenol	59	U	79	59	20	ug/L		11/07/18 16:26	1
Phenol	4.3	U J1 U	9.9	4.3	2.0	ug/L		11/07/18 16:26	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol (Surr)	*83*		*43 - 140*	*10/29/18 12:36*	*11/07/18 16:26*	*1*
2-Fluorobiphenyl	*77*		*44 - 119*	*10/29/18 12:36*	*11/07/18 16:26*	*1*
2-Fluorophenol (Surr)	*83*		*19 - 119*	*10/29/18 12:36*	*11/07/18 16:26*	*1*
Nitrobenzene-d5 (Surr)	*79*		*44 - 120*	*10/29/18 12:36*	*11/07/18 16:26*	*1*
Phenol-d5 (Surr)	*82*		*10 - 115*	*10/29/18 12:36*	*11/07/18 16:26*	*1*
Terphenyl-d14 (Surr)	*76*		*50 - 134*	*10/29/18 12:36*	*11/07/18 16:26*	*1*

Client Sample ID: DET-003-181002-GW **Lab Sample ID: 280-116020-2**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.0	U	9.8	2.0	0.55	ug/L		11/07/18 17:53	1
Butyl benzyl phthalate	2.0	U	20	2.0	0.98	ug/L		11/07/18 17:53	1
Diethyl phthalate	0.98	U	20	0.98	0.37	ug/L		11/07/18 17:53	1
Dimethyl phthalate	0.49	U	20	0.49	0.21	ug/L		11/07/18 17:53	1
Di-n-butyl phthalate	4.3	U	20	4.3	1.1	ug/L		11/07/18 17:53	1
Di-n-octyl phthalate	0.98	U	20	0.98	0.34	ug/L		11/07/18 17:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol (Surr)	*78*		*43 - 140*	*10/29/18 12:36*	*11/07/18 17:53*	*1*
2-Fluorobiphenyl	*57*		*44 - 119*	*10/29/18 12:36*	*11/07/18 17:53*	*1*
2-Fluorophenol (Surr)	*56*		*19 - 119*	*10/29/18 12:36*	*11/07/18 17:53*	*1*
Nitrobenzene-d5 (Surr)	*54*		*44 - 120*	*10/29/18 12:36*	*11/07/18 17:53*	*1*
Phenol-d5 (Surr)	*59*		*10 - 115*	*10/29/18 12:36*	*11/07/18 17:53*	*1*
Terphenyl-d14 (Surr)	*80*		*50 - 134*	*10/29/18 12:36*	*11/07/18 17:53*	*1*

Client Sample ID: WBGmw-009-181001-GW **Lab Sample ID: 280-116020-4**
Date Collected: 10/23/18 14:35 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.2	U	11	2.2	0.61	ug/L		11/07/18 18:21	1
Butyl benzyl phthalate	2.2	U	22	2.2	1.1	ug/L		11/07/18 18:21	1
Diethyl phthalate	1.1	U	22	1.1	0.41	ug/L		11/07/18 18:21	1
Dimethyl phthalate	0.54	U	22	0.54	0.23	ug/L		11/07/18 18:21	1
Di-n-butyl phthalate	4.8	U	22	4.8	1.3	ug/L		11/07/18 18:21	1
Di-n-octyl phthalate	1.1	U	22	1.1	0.38	ug/L		11/07/18 18:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol (Surr)	*85*		*43 - 140*	*10/29/18 12:36*	*11/07/18 18:21*	*1*
2-Fluorobiphenyl	*77*		*44 - 119*	*10/29/18 12:36*	*11/07/18 18:21*	*1*
2-Fluorophenol (Surr)	*87*		*19 - 119*	*10/29/18 12:36*	*11/07/18 18:21*	*1*
Nitrobenzene-d5 (Surr)	*81*		*44 - 120*	*10/29/18 12:36*	*11/07/18 18:21*	*1*
Phenol-d5 (Surr)	*89*		*10 - 115*	*10/29/18 12:36*	*11/07/18 18:21*	*1*
Terphenyl-d14 (Surr)	*80*		*50 - 134*	*10/29/18 12:36*	*11/07/18 18:21*	*1*

Client Sample ID: LL1mw-083-181001-GW **Lab Sample ID: 280-116020-5**
Date Collected: 10/24/18 13:25 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.1	U	10	2.1	0.59	ug/L		11/07/18 18:50	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.0	ug/L		11/07/18 18:50	1
Diethyl phthalate	1.0	U	21	1.0	0.40	ug/L		11/07/18 18:50	1
Dimethyl phthalate	0.52	U	21	0.52	0.22	ug/L		11/07/18 18:50	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: LL1mw-083-181001-GW **Lab Sample ID: 280-116020-5**
Date Collected: 10/24/18 13:25 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Di-n-butyl phthalate	4.6	U	21	4.6	1.2	ug/L		11/07/18 18:50	1
Di-n-octyl phthalate	1.0	U	21	1.0	0.37	ug/L		11/07/18 18:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*80*		*43 - 140*	*10/29/18 12:36*	*11/07/18 18:50*	*1*
2-Fluorobiphenyl	*70*		*44 - 119*	*10/29/18 12:36*	*11/07/18 18:50*	*1*
2-Fluorophenol (Surr)	*77*		*19 - 119*	*10/29/18 12:36*	*11/07/18 18:50*	*1*
Nitrobenzene-d5 (Surr)	*73*		*44 - 120*	*10/29/18 12:36*	*11/07/18 18:50*	*1*
Phenol-d5 (Surr)	*78*		*10 - 115*	*10/29/18 12:36*	*11/07/18 18:50*	*1*
Terphenyl-d14 (Surr)	*76*		*50 - 134*	*10/29/18 12:36*	*11/07/18 18:50*	*1*

Client Sample ID: LL1mw-084-181001-GW **Lab Sample ID: 280-116020-6**
Date Collected: 10/24/18 09:30 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	1.9	U	9.5	1.9	0.53	ug/L		11/07/18 19:18	1
Butyl benzyl phthalate	1.9	U	19	1.9	0.95	ug/L		11/07/18 19:18	1
Diethyl phthalate	0.95	U	19	0.95	0.36	ug/L		11/07/18 19:18	1
Dimethyl phthalate	0.47	U	19	0.47	0.20	ug/L		11/07/18 19:18	1
Di-n-butyl phthalate	4.2	U	19	4.2	1.1	ug/L		11/07/18 19:18	1
Di-n-octyl phthalate	0.95	U	19	0.95	0.33	ug/L		11/07/18 19:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*87*		*43 - 140*	*10/29/18 12:36*	*11/07/18 19:18*	*1*
2-Fluorobiphenyl	*73*		*44 - 119*	*10/29/18 12:36*	*11/07/18 19:18*	*1*
2-Fluorophenol (Surr)	*76*		*19 - 119*	*10/29/18 12:36*	*11/07/18 19:18*	*1*
Nitrobenzene-d5 (Surr)	*72*		*44 - 120*	*10/29/18 12:36*	*11/07/18 19:18*	*1*
Phenol-d5 (Surr)	*77*		*10 - 115*	*10/29/18 12:36*	*11/07/18 19:18*	*1*
Terphenyl-d14 (Surr)	*79*		*50 - 134*	*10/29/18 12:36*	*11/07/18 19:18*	*1*

Client Sample ID: DA2mw-115-181001-GW **Lab Sample ID: 280-116020-8**
Date Collected: 10/24/18 12:45 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.1	U	10	2.1	0.58	ug/L		11/07/18 19:47	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.0	ug/L		11/07/18 19:47	1
Diethyl phthalate	1.0	U	21	1.0	0.39	ug/L		11/07/18 19:47	1
Dimethyl phthalate	0.52	U	21	0.52	0.22	ug/L		11/07/18 19:47	1
Di-n-butyl phthalate	4.5	U	21	4.5	1.2	ug/L		11/07/18 19:47	1
Di-n-octyl phthalate	1.0	U	21	1.0	0.36	ug/L		11/07/18 19:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*79*		*43 - 140*	*10/29/18 12:36*	*11/07/18 19:47*	*1*
2-Fluorobiphenyl	*62*		*44 - 119*	*10/29/18 12:36*	*11/07/18 19:47*	*1*
2-Fluorophenol (Surr)	*66*		*19 - 119*	*10/29/18 12:36*	*11/07/18 19:47*	*1*
Nitrobenzene-d5 (Surr)	*63*		*44 - 120*	*10/29/18 12:36*	*11/07/18 19:47*	*1*
Phenol-d5 (Surr)	*68*		*10 - 115*	*10/29/18 12:36*	*11/07/18 19:47*	*1*
Terphenyl-d14 (Surr)	*81*		*50 - 134*	*10/29/18 12:36*	*11/07/18 19:47*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: DET-004-181001-GW **Lab Sample ID: 280-116020-12**
Date Collected: 10/24/18 11:20 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4,5-Trichlorophenol	1.1	U	21	1.1	0.48	ug/L		11/07/18 20:16	1
2,4,6-Trichlorophenol	1.1	U	21	1.1	0.31	ug/L		11/07/18 20:16	1
2,4-Dichlorophenol	2.1	U	11	2.1	0.68	ug/L		11/07/18 20:16	1
2,4-Dimethylphenol	2.1	U	11	2.1	0.62	ug/L		11/07/18 20:16	1
2,4-Dinitrophenol	32	U	85	32	11	ug/L		11/07/18 20:16	1
2,4-Dinitrotoluene	4.7	U	21	4.7	1.8	ug/L		11/07/18 20:16	1
2,6-Dinitrotoluene	4.7	U	21	4.7	2.0	ug/L		11/07/18 20:16	1
2-Chlorophenol	4.7	U	11	4.7	2.1	ug/L		11/07/18 20:16	1
2-Methylphenol	2.1	U	11	2.1	1.0	ug/L		11/07/18 20:16	1
2-Nitrophenol	1.1	U	21	1.1	0.42	ug/L		11/07/18 20:16	1
3 & 4 Methylphenol	0.53	U	21	0.53	0.27	ug/L		11/07/18 20:16	1
4,6-Dinitro-2-methylphenol	9.4	U	85	9.4	4.3	ug/L		11/07/18 20:16	1
4-Chloro-3-methylphenol	5.3	U	21	5.3	2.6	ug/L		11/07/18 20:16	1
4-Nitrophenol	4.3	U	53	4.3	1.3	ug/L		11/07/18 20:16	1
Bis(2-ethylhexyl) phthalate	2.1	U	11	2.1	0.60	ug/L		11/07/18 20:16	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.1	ug/L		11/07/18 20:16	1
Diethyl phthalate	1.1	U	21	1.1	0.40	ug/L		11/07/18 20:16	1
Dimethyl phthalate	0.53	U	21	0.53	0.22	ug/L		11/07/18 20:16	1
Di-n-butyl phthalate	4.7	U	21	4.7	1.2	ug/L		11/07/18 20:16	1
Di-n-octyl phthalate	1.1	U	21	1.1	0.37	ug/L		11/07/18 20:16	1
Nitrobenzene	2.1	U	21	2.1	0.86	ug/L		11/07/18 20:16	1
Pentachlorophenol	64	U	85	64	21	ug/L		11/07/18 20:16	1
Phenol	4.7	U	11	4.7	2.1	ug/L		11/07/18 20:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*86*		*43 - 140*	*10/29/18 12:36*	*11/07/18 20:16*	*1*
2-Fluorobiphenyl	*76*		*44 - 119*	*10/29/18 12:36*	*11/07/18 20:16*	*1*
2-Fluorophenol (Surr)	*88*		*19 - 119*	*10/29/18 12:36*	*11/07/18 20:16*	*1*
Nitrobenzene-d5 (Surr)	*79*		*44 - 120*	*10/29/18 12:36*	*11/07/18 20:16*	*1*
Phenol-d5 (Surr)	*89*		*10 - 115*	*10/29/18 12:36*	*11/07/18 20:16*	*1*
Terphenyl-d14 (Surr)	*79*		*50 - 134*	*10/29/18 12:36*	*11/07/18 20:16*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Client Sample ID: DET-003-181001-GW **Lab Sample ID: 280-116020-1**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.020	U	0.051	0.020	0.0079	ug/L		12/03/18 15:32	1
4,4'-DDE	0.020	U	0.051	0.020	0.0077	ug/L		12/03/18 15:32	1
4,4'-DDT	0.051	U	0.051	0.051	0.015	ug/L		12/03/18 15:32	1
Aldrin	0.020	U	0.051	0.020	0.0060	ug/L		12/03/18 15:32	1
alpha-BHC	0.020	U	0.051	0.020	0.0054	ug/L		12/03/18 15:32	1
alpha-Chlordane	0.020	U	0.051	0.020	0.0054	ug/L		12/03/18 15:32	1
beta-BHC	0.020	U	0.051	0.020	0.0089	ug/L		12/03/18 15:32	1
delta-BHC	0.020	U	0.051	0.020	0.0059	ug/L		12/03/18 15:32	1
Dieldrin	0.020	U	0.051	0.020	0.0065	ug/L		12/03/18 15:32	1
Endosulfan I	0.020	U	0.051	0.020	0.0059	ug/L		12/03/18 15:32	1
Endosulfan II	0.020	U	0.051	0.020	0.0072	ug/L		12/03/18 15:32	1
Endosulfan sulfate	0.020	U Q U	0.051	0.020	0.0058	ug/L		12/03/18 15:32	1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: DET-003-181001-GW **Lab Sample ID: 280-116020-1**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Endrin	0.020	U	0.051	0.020	0.0081	ug/L		12/03/18 15:32	1
Endrin aldehyde	0.020	U	0.051	0.020	0.0090	ug/L		12/03/18 15:32	1
Endrin ketone	0.020	U	0.051	0.020	0.0072	ug/L		12/03/18 15:32	1
gamma-BHC (Lindane)	0.020	U	0.051	0.020	0.0071	ug/L		12/03/18 15:32	1
gamma-Chlordane	0.020	U	0.051	0.020	0.0093	ug/L		12/03/18 15:32	1
Heptachlor	0.020	U	0.051	0.020	0.0079	ug/L		12/03/18 15:32	1
Heptachlor epoxide	0.020	U	0.051	0.020	0.0077	ug/L		12/03/18 15:32	1
Methoxychlor	0.051	U Q U	0.051	0.051	0.013	ug/L		12/03/18 15:32	1
Toxaphene	0.82	U UJ C05	2.0	0.82	0.38	ug/L		12/03/18 15:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*82*		*34 - 122*	*10/30/18 20:52*	*12/03/18 15:32*	*1*
Tetrachloro-m-xylene	*63*	*M*	*44 - 124*	*10/30/18 20:52*	*12/03/18 15:32*	*1*

Client Sample ID: DET-003-181002-GW **Lab Sample ID: 280-116020-2**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.020	U	0.049	0.020	0.0076	ug/L		12/03/18 15:49	1
4,4'-DDE	0.020	U	0.049	0.020	0.0074	ug/L		12/03/18 15:49	1
4,4'-DDT	0.049	U	0.049	0.049	0.015	ug/L		12/03/18 15:49	1
Aldrin	0.020	U	0.049	0.020	0.0058	ug/L		12/03/18 15:49	1
alpha-BHC	0.020	U	0.049	0.020	0.0052	ug/L		12/03/18 15:49	1
alpha-Chlordane	0.020	U	0.049	0.020	0.0052	ug/L		12/03/18 15:49	1
beta-BHC	0.020	U	0.049	0.020	0.0086	ug/L		12/03/18 15:49	1
delta-BHC	0.020	U M U	0.049	0.020	0.0057	ug/L		12/03/18 15:49	1
Dieldrin	0.020	U	0.049	0.020	0.0062	ug/L		12/03/18 15:49	1
Endosulfan I	0.020	U	0.049	0.020	0.0057	ug/L		12/03/18 15:49	1
Endosulfan II	0.020	U	0.049	0.020	0.0069	ug/L		12/03/18 15:49	1
Endosulfan sulfate	0.020	U Q U	0.049	0.020	0.0056	ug/L		12/03/18 15:49	1
Endrin	0.020	U	0.049	0.020	0.0078	ug/L		12/03/18 15:49	1
Endrin aldehyde	0.020	U	0.049	0.020	0.0087	ug/L		12/03/18 15:49	1
Endrin ketone	0.020	U	0.049	0.020	0.0069	ug/L		12/03/18 15:49	1
gamma-BHC (Lindane)	0.020	U	0.049	0.020	0.0068	ug/L		12/03/18 15:49	1
gamma-Chlordane	0.020	U	0.049	0.020	0.0090	ug/L		12/03/18 15:49	1
Heptachlor	0.020	U	0.049	0.020	0.0076	ug/L		12/03/18 15:49	1
Heptachlor epoxide	0.020	U	0.049	0.020	0.0074	ug/L		12/03/18 15:49	1
Methoxychlor	0.049	U Q U	0.049	0.049	0.013	ug/L		12/03/18 15:49	1
Toxaphene	0.79	U UJ C05	2.0	0.79	0.36	ug/L		12/03/18 15:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*89*		*34 - 122*	*10/30/18 20:52*	*12/03/18 15:49*	*1*
Tetrachloro-m-xylene	*75*		*44 - 124*	*10/30/18 20:52*	*12/03/18 15:49*	*1*

Client Sample ID: LL1mw-083-181001-GW **Lab Sample ID: 280-116020-5**
Date Collected: 10/24/18 13:25 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.021	U	0.052	0.021	0.0079	ug/L		12/03/18 16:07	1
4,4'-DDE	0.021	U	0.052	0.021	0.0077	ug/L		12/03/18 16:07	1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: LL1mw-083-181001-GW **Lab Sample ID: 280-116020-5**
Date Collected: 10/24/18 13:25 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDT	0.052	U	0.052	0.052	0.015	ug/L		12/03/18 16:07	1
Aldrin	0.021	U	0.052	0.021	0.0061	ug/L		12/03/18 16:07	1
alpha-BHC	0.021	U	0.052	0.021	0.0055	ug/L		12/03/18 16:07	1
alpha-Chlordane	0.021	U	0.052	0.021	0.0055	ug/L		12/03/18 16:07	1
beta-BHC	0.021	U	0.052	0.021	0.0090	ug/L		12/03/18 16:07	1
delta-BHC	**0.0094**	**J**	0.052	0.021	0.0060	ug/L		12/03/18 16:07	1
Dieldrin	0.021	U	0.052	0.021	0.0065	ug/L		12/03/18 16:07	1
Endosulfan I	0.021	U	0.052	0.021	0.0060	ug/L		12/03/18 16:07	1
Endosulfan II	0.021	U	0.052	0.021	0.0072	ug/L		12/03/18 16:07	1
Endosulfan sulfate	0.021	U Q U	0.052	0.021	0.0059	ug/L		12/03/18 16:07	1
Endrin	0.021	U	0.052	0.021	0.0082	ug/L		12/03/18 16:07	1
Endrin aldehyde	0.021	U	0.052	0.021	0.0091	ug/L		12/03/18 16:07	1
Endrin ketone	0.021	U	0.052	0.021	0.0072	ug/L		12/03/18 16:07	1
gamma-BHC (Lindane)	0.021	U	0.052	0.021	0.0071	ug/L		12/03/18 16:07	1
gamma-Chlordane	0.021	U	0.052	0.021	0.0094	ug/L		12/03/18 16:07	1
Heptachlor	0.021	U	0.052	0.021	0.0079	ug/L		12/03/18 16:07	1
Heptachlor epoxide	0.021	U	0.052	0.021	0.0077	ug/L		12/03/18 16:07	1
Methoxychlor	0.052	U Q U	0.052	0.052	0.013	ug/L		12/03/18 16:07	1
Toxaphene	0.83	U UJ C05	2.1	0.83	0.38	ug/L		12/03/18 16:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*73*		*34 - 122*	*10/30/18 20:52*	*12/03/18 16:07*	*1*
Tetrachloro-m-xylene	*68*		*44 - 124*	*10/30/18 20:52*	*12/03/18 16:07*	*1*

Client Sample ID: LL1mw-084-181001-GW **Lab Sample ID: 280-116020-6**
Date Collected: 10/24/18 09:30 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.022	U	0.056	0.022	0.0086	ug/L		12/03/18 16:25	1
4,4'-DDE	0.022	U	0.056	0.022	0.0084	ug/L		12/03/18 16:25	1
4,4'-DDT	0.056	U	0.056	0.056	0.017	ug/L		12/03/18 16:25	1
Aldrin	0.022	U	0.056	0.022	0.0066	ug/L		12/03/18 16:25	1
alpha-BHC	0.022	U	0.056	0.022	0.0059	ug/L		12/03/18 16:25	1
alpha-Chlordane	0.022	U	0.056	0.022	0.0059	ug/L		12/03/18 16:25	1
beta-BHC	0.022	U	0.056	0.022	0.0097	ug/L		12/03/18 16:25	1
delta-BHC	0.022	U	0.056	0.022	0.0065	ug/L		12/03/18 16:25	1
Dieldrin	0.022	U	0.056	0.022	0.0071	ug/L		12/03/18 16:25	1
Endosulfan I	0.022	U	0.056	0.022	0.0065	ug/L		12/03/18 16:25	1
Endosulfan II	0.022	U	0.056	0.022	0.0078	ug/L		12/03/18 16:25	1
Endosulfan sulfate	0.022	U Q U	0.056	0.022	0.0064	ug/L		12/03/18 16:25	1
Endrin	0.022	U	0.056	0.022	0.0089	ug/L		12/03/18 16:25	1
Endrin aldehyde	0.022	U	0.056	0.022	0.0099	ug/L		12/03/18 16:25	1
Endrin ketone	0.022	U	0.056	0.022	0.0078	ug/L		12/03/18 16:25	1
gamma-BHC (Lindane)	0.022	U	0.056	0.022	0.0077	ug/L		12/03/18 16:25	1
gamma-Chlordane	0.022	U	0.056	0.022	0.010	ug/L		12/03/18 16:25	1
Heptachlor	0.022	U	0.056	0.022	0.0086	ug/L		12/03/18 16:25	1
Heptachlor epoxide	0.022	U	0.056	0.022	0.0084	ug/L		12/03/18 16:25	1
Methoxychlor	0.056	U Q U	0.056	0.056	0.015	ug/L		12/03/18 16:25	1
Toxaphene	0.90	U UJ C05	2.2	0.90	0.41	ug/L		12/03/18 16:25	1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	74		34 - 122	10/30/18 20:52	12/03/18 16:25	1
Tetrachloro-m-xylene	68		44 - 124	10/30/18 20:52	12/03/18 16:25	1

Client Sample ID: DET-004-181001-GW **Lab Sample ID: 280-116020-12**
Date Collected: 10/24/18 11:20 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.021	U	0.054	0.021	0.0083	ug/L		12/03/18 16:42	1
4,4'-DDE	0.021	U	0.054	0.021	0.0081	ug/L		12/03/18 16:42	1
4,4'-DDT	0.054	U	0.054	0.054	0.016	ug/L		12/03/18 16:42	1
Aldrin	0.021	U	0.054	0.021	0.0063	ug/L		12/03/18 16:42	1
alpha-BHC	0.021	U	0.054	0.021	0.0057	ug/L		12/03/18 16:42	1
alpha-Chlordane	0.021	U	0.054	0.021	0.0057	ug/L		12/03/18 16:42	1
beta-BHC	0.021	U	0.054	0.021	0.0093	ug/L		12/03/18 16:42	1
delta-BHC	0.021	U	0.054	0.021	0.0062	ug/L		12/03/18 16:42	1
Dieldrin	0.021	U	0.054	0.021	0.0068	ug/L		12/03/18 16:42	1
Endosulfan I	0.021	U	0.054	0.021	0.0062	ug/L		12/03/18 16:42	1
Endosulfan II	0.021	U	0.054	0.021	0.0075	ug/L		12/03/18 16:42	1
Endosulfan sulfate	0.021	U Q U	0.054	0.021	0.0061	ug/L		12/03/18 16:42	1
Endrin	0.021	U	0.054	0.021	0.0085	ug/L		12/03/18 16:42	1
Endrin aldehyde	0.021	U	0.054	0.021	0.0095	ug/L		12/03/18 16:42	1
Endrin ketone	0.021	U	0.054	0.021	0.0075	ug/L		12/03/18 16:42	1
gamma-BHC (Lindane)	0.021	U	0.054	0.021	0.0074	ug/L		12/03/18 16:42	1
gamma-Chlordane	0.021	U	0.054	0.021	0.0098	ug/L		12/03/18 16:42	1
Heptachlor	0.021	U	0.054	0.021	0.0083	ug/L		12/03/18 16:42	1
Heptachlor epoxide	0.021	U	0.054	0.021	0.0081	ug/L		12/03/18 16:42	1
Methoxychlor	0.054	U Q U	0.054	0.054	0.014	ug/L		12/03/18 16:42	1
Toxaphene	0.86	U UJ C05	2.1	0.86	0.39	ug/L		12/03/18 16:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	102		34 - 122	10/30/18 20:52	12/03/18 16:42	1
Tetrachloro-m-xylene	74		44 - 124	10/30/18 20:52	12/03/18 16:42	1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: DET-003-181001-GW **Lab Sample ID: 280-116020-1**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.41	U M U	1.0	0.41	0.13	ug/L		11/24/18 07:57	1
PCB-1221	0.26	U M U	1.0	0.26	0.22	ug/L		11/24/18 07:57	1
PCB-1232	0.61	U M U	1.0	0.61	0.17	ug/L		11/24/18 07:57	1
PCB-1242	0.31	U M U	1.0	0.31	0.11	ug/L		11/24/18 07:57	1
PCB-1248	0.31	U Q M U	1.0	0.31	0.094	ug/L		11/24/18 07:57	1
PCB-1254	0.26	U M U	1.0	0.26	0.12	ug/L		11/24/18 07:57	1
PCB-1260	0.41	U M U	1.0	0.41	0.16	ug/L		11/24/18 07:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	74		25 - 120	10/30/18 20:52	11/24/18 07:57	1
DCB Decachlorobiphenyl	84	Q	30 - 136	10/30/18 20:52	11/24/18 07:57	1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: DET-003-181002-GW **Lab Sample ID: 280-116020-2**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.39	U M	U	0.99	0.39	0.12	ug/L		11/24/18 08:18	1
PCB-1221	0.25	U M	U	0.99	0.25	0.21	ug/L		11/24/18 08:18	1
PCB-1232	0.59	U M	U	0.99	0.59	0.16	ug/L		11/24/18 08:18	1
PCB-1242	0.30	U M	U	0.99	0.30	0.10	ug/L		11/24/18 08:18	1
PCB-1248	0.30	U Q M	U	0.99	0.30	0.090	ug/L		11/24/18 08:18	1
PCB-1254	0.25	U M	U	0.99	0.25	0.11	ug/L		11/24/18 08:18	1
PCB-1260	0.39	U M	U	0.99	0.39	0.16	ug/L		11/24/18 08:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*84*		*25 - 120*	*10/30/18 20:52*	*11/24/18 08:18*	*1*
DCB Decachlorobiphenyl	*85*	*Q*	*30 - 136*	*10/30/18 20:52*	*11/24/18 08:18*	*1*

Client Sample ID: DET-004-181001-GW **Lab Sample ID: 280-116020-12**
Date Collected: 10/24/18 11:20 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.43	U M	U	1.1	0.43	0.13	ug/L		11/24/18 08:39	1
PCB-1221	0.27	U M	U	1.1	0.27	0.23	ug/L		11/24/18 08:39	1
PCB-1232	0.64	U M	U	1.1	0.64	0.18	ug/L		11/24/18 08:39	1
PCB-1242	0.32	U M	U	1.1	0.32	0.11	ug/L		11/24/18 08:39	1
PCB-1248	0.32	U Q M	U	1.1	0.32	0.098	ug/L		11/24/18 08:39	1
PCB-1254	0.27	U M	U	1.1	0.27	0.12	ug/L		11/24/18 08:39	1
PCB-1260	0.43	U M	U	1.1	0.43	0.17	ug/L		11/24/18 08:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*86*		*25 - 120*	*10/30/18 20:52*	*11/24/18 08:39*	*1*
DCB Decachlorobiphenyl	*108*	*Q*	*30 - 136*	*10/30/18 20:52*	*11/24/18 08:39*	*1*

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: DET-003-181001-GW **Lab Sample ID: 280-116020-1**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.43	U		1.1	0.43	0.21	ug/L		11/01/18 18:44	1
1,3-Dinitrobenzene	0.21	U		0.43	0.21	0.094	ug/L		11/01/18 18:44	1
2,4,6-Trinitrotoluene	0.21	U		0.43	0.21	0.077	ug/L		11/01/18 18:44	1
2,4-Dinitrotoluene	0.21	U		0.43	0.21	0.089	ug/L		11/01/18 18:44	1
2,6-Dinitrotoluene	0.21	U		0.21	0.21	0.069	ug/L		11/01/18 18:44	1
2-Amino-4,6-dinitrotoluene	0.13	U		0.21	0.13	0.054	ug/L		11/01/18 18:44	1
2-Nitrotoluene	0.21	U		0.43	0.21	0.091	ug/L		11/01/18 18:44	1
3-Nitrotoluene	0.21	U		0.43	0.21	0.089	ug/L		11/01/18 18:44	1
4-Amino-2,6-dinitrotoluene	0.13	U		0.21	0.13	0.061	ug/L		11/01/18 18:44	1
4-Nitrotoluene	0.43	U		1.1	0.43	0.21	ug/L		11/01/18 18:44	1
HMX	0.21	U M	U	0.43	0.21	0.093	ug/L		11/01/18 18:44	1
Nitrobenzene	0.21	U		0.43	0.21	0.097	ug/L		11/01/18 18:44	1
Nitroglycerin	2.1	U		3.2	2.1	0.98	ug/L		11/01/18 18:44	1
PETN	1.3	U		2.1	1.3	0.44	ug/L		11/01/18 18:44	1
RDX	0.13	U		0.21	0.13	0.056	ug/L		11/01/18 18:44	1
Tetryl	0.21	U		0.26	0.21	0.084	ug/L		11/01/18 18:44	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dinitrobenzene	*101*		*83 - 119*	*10/30/18 13:24*	*11/01/18 18:44*	*1*

Client Sample ID: WBGmw-009-181001-GW **Lab Sample ID: 280-116020-4**
Date Collected: 10/23/18 14:35 **Matrix: Water**
Date Received: 10/24/18 17:47

ADR QUALIFIED RESULTS AS J / UJ DUE TO SURR; AND DUE TO LCS AS NEEDED. NO REVISIONS NEEDED

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.40	U Q UJ G02	1.0	0.40	0.20	ug/L		10/30/18 16:44	1
1,3-Dinitrobenzene	0.20	U Q P02	0.40	0.20	0.088	ug/L		10/30/18 16:44	1
2,4,6-Trinitrotoluene	0.20	U Q	0.40	0.20	0.072	ug/L		10/30/18 16:44	1
2,4-Dinitrotoluene	0.20	U Q P02	0.40	0.20	0.083	ug/L		10/30/18 16:44	1
2,6-Dinitrotoluene	0.20	U Q P02	0.20	0.20	0.064	ug/L		10/30/18 16:44	1
2-Amino-4,6-dinitrotoluene	0.12	U Q P02	0.20	0.12	0.051	ug/L		10/30/18 16:44	1
2-Nitrotoluene	0.20	U Q P02	0.40	0.20	0.085	ug/L		10/30/18 16:44	1
3-Nitrotoluene	0.20	U Q P02	0.40	0.20	0.083	ug/L		10/30/18 16:44	1
4-Amino-2,6-dinitrotoluene	0.12	U Q P02	0.20	0.12	0.057	ug/L		10/30/18 16:44	1
4-Nitrotoluene	0.40	U Q M P02	1.0	0.40	0.20	ug/L		10/30/18 16:44	1
HMX	**0.94**	**Q M** J G02	0.40	0.20	0.087	ug/L		10/30/18 16:44	1
Nitrobenzene	0.20	U Q UJ G02	0.40	0.20	0.091	ug/L		10/30/18 16:44	1
Nitroglycerin	2.0	U Q UJ G02	3.0	2.0	0.92	ug/L		10/30/18 16:44	1
PETN	1.2	U Q UJ G02	2.0	1.2	0.41	ug/L		10/30/18 16:44	1
RDX	**2.8**	**Q M** J G02	0.20	0.12	0.052	ug/L		10/30/18 16:44	1
Tetryl	0.20	U Q UJ G02	0.24	0.20	0.079	ug/L		10/30/18 16:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dinitrobenzene	*71*	*Q*	*83 - 119*	*10/29/18 12:30*	*10/30/18 16:44*	*1*

Client Sample ID: LL1mw-083-181001-GW **Lab Sample ID: 280-116020-5**
Date Collected: 10/24/18 13:25 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	**7.2**	**M** =	1.2	0.47	0.24	ug/L		11/01/18 19:07	1
1,3-Dinitrobenzene	0.24	U M U	0.47	0.24	0.11	ug/L		11/02/18 23:00	1
2,4,6-Trinitrotoluene	**3.4**		0.47	0.24	0.086	ug/L		11/01/18 19:07	1
2,4-Dinitrotoluene	**5.6**	**M** =	0.47	0.24	0.099	ug/L		11/01/18 19:07	1
2,6-Dinitrotoluene	**3.6**	**M** =	0.24	0.24	0.076	ug/L		11/01/18 19:07	1
2-Amino-4,6-dinitrotoluene	**14**	**M** =	0.24	0.14	0.060	ug/L		11/01/18 19:07	1
2-Nitrotoluene	0.24	U	0.47	0.24	0.10	ug/L		11/01/18 19:07	1
3-Nitrotoluene	0.24	U	0.47	0.24	0.099	ug/L		11/01/18 19:07	1
4-Amino-2,6-dinitrotoluene	**17**		0.24	0.14	0.068	ug/L		11/01/18 19:07	1
4-Nitrotoluene	0.47	U	1.2	0.47	0.24	ug/L		11/01/18 19:07	1
HMX	**1.3**	**M J1** J M08	0.47	0.24	0.10	ug/L		11/01/18 19:07	1
HMX	**0.23**	**J J1** *	0.47	0.24	0.10	ug/L		11/02/18 23:00	1
Nitrobenzene	0.24	U	0.47	0.24	0.11	ug/L		11/02/18 23:00	1
Nitroglycerin	2.4	U	3.6	2.4	1.1	ug/L		11/01/18 19:07	1
PETN	1.4	U	2.4	1.4	0.49	ug/L		11/01/18 19:07	1
RDX	**2.1**	**J1** J M08	0.24	0.14	0.062	ug/L		11/01/18 19:07	1
RDX	**0.56**	**J1** *	0.24	0.14	0.062	ug/L		11/02/18 23:00	1
Tetryl	0.24	U	0.28	0.24	0.094	ug/L		11/02/18 23:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dinitrobenzene	*118*	*M*	*83 - 119*	*10/30/18 13:24*	*11/01/18 19:07*	*1*
1,2-Dinitrobenzene	*87*		*83 - 119*	*10/30/18 13:24*	*11/02/18 23:00*	*1*

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: LL1mw-084-181001-GW **Lab Sample ID: 280-116020-6**
Date Collected: 10/24/18 09:30 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	**2.0**	**M** =	1.1	0.42	0.21	ug/L		11/01/18 19:30	1
1,3-Dinitrobenzene	**1.2**	**M J1** J M08	0.42	0.21	0.093	ug/L		11/01/18 19:30	1
1,3-Dinitrobenzene	**0.53**	**J1** *	0.42	0.21	0.093	ug/L		11/02/18 23:35	1
2,4,6-Trinitrotoluene	**4.6**		0.42	0.21	0.076	ug/L		11/01/18 19:30	1
2,4-Dinitrotoluene	**1.8**		0.42	0.21	0.088	ug/L		11/01/18 19:30	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.068	ug/L		11/01/18 19:30	1
2-Amino-4,6-dinitrotoluene	**9.6**		0.21	0.13	0.053	ug/L		11/01/18 19:30	1
2-Nitrotoluene	0.21	U	0.42	0.21	0.090	ug/L		11/01/18 19:30	1
3-Nitrotoluene	0.21	U	0.42	0.21	0.088	ug/L		11/01/18 19:30	1
4-Amino-2,6-dinitrotoluene	**19**		0.21	0.13	0.061	ug/L		11/01/18 19:30	1
4-Nitrotoluene	0.42	U M U	1.1	0.42	0.21	ug/L		11/01/18 19:30	1
HMX	**2.4**	**M J1** J M08	0.42	0.21	0.092	ug/L		11/01/18 19:30	1
HMX	**0.62**	**J1** *	0.42	0.21	0.092	ug/L		11/02/18 23:35	1
Nitrobenzene	0.21	U	0.42	0.21	0.096	ug/L		11/01/18 19:30	1
Nitroglycerin	2.1	U	3.2	2.1	0.97	ug/L		11/01/18 19:30	1
PETN	1.3	U	2.1	1.3	0.44	ug/L		11/01/18 19:30	1
RDX	**5.2**	**M J1** J M08	0.21	0.13	0.055	ug/L		11/01/18 19:30	1
RDX	**1.1**	**J1** *	0.21	0.13	0.055	ug/L		11/02/18 23:35	1
Tetryl	0.21	U M U	0.25	0.21	0.083	ug/L		11/01/18 19:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*118*	*M*	*83 - 119*	*10/30/18 13:24*	*11/01/18 19:30*	*1*
1,2-Dinitrobenzene	*84*		*83 - 119*	*10/30/18 13:24*	*11/02/18 23:35*	*1*

Client Sample ID: DA2mw-115-181001-GW **Lab Sample ID: 280-116020-8**
Date Collected: 10/24/18 12:45 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.44	U M U	1.1	0.44	0.22	ug/L		11/01/18 20:39	1
1,3-Dinitrobenzene	0.22	U	0.44	0.22	0.098	ug/L		11/01/18 20:39	1
2,4,6-Trinitrotoluene	0.22	U	0.44	0.22	0.080	ug/L		11/01/18 20:39	1
2,4-Dinitrotoluene	0.22	U	0.44	0.22	0.093	ug/L		11/01/18 20:39	1
2,6-Dinitrotoluene	0.22	U	0.22	0.22	0.071	ug/L		11/01/18 20:39	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.22	0.13	0.056	ug/L		11/01/18 20:39	1
2-Nitrotoluene	0.22	U	0.44	0.22	0.094	ug/L		11/01/18 20:39	1
3-Nitrotoluene	0.22	U	0.44	0.22	0.092	ug/L		11/01/18 20:39	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.22	0.13	0.064	ug/L		11/01/18 20:39	1
4-Nitrotoluene	0.44	U	1.1	0.44	0.22	ug/L		11/01/18 20:39	1
HMX	0.22	U	0.44	0.22	0.097	ug/L		11/01/18 20:39	1
Nitrobenzene	0.22	U J1 UJ H02	0.44	0.22	0.10	ug/L		11/01/18 20:39	1
Nitroglycerin	2.2	U	3.3	2.2	1.0	ug/L		11/01/18 20:39	1
PETN	1.3	U	2.2	1.3	0.46	ug/L		11/01/18 20:39	1
RDX	0.13	U	0.22	0.13	0.058	ug/L		11/01/18 20:39	1
Tetryl	0.22	U	0.27	0.22	0.088	ug/L		11/01/18 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*104*		*83 - 119*	*10/30/18 13:24*	*11/01/18 20:39*	*1*

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: DA2mw-115-181002-GW **Lab Sample ID: 280-116020-9**
Date Collected: 10/24/18 12:45 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.44	U	1.1	0.44	0.22	ug/L		11/01/18 21:47	1
1,3-Dinitrobenzene	0.22	U	0.44	0.22	0.098	ug/L		11/01/18 21:47	1
2,4,6-Trinitrotoluene	0.22	U	0.44	0.22	0.080	ug/L		11/01/18 21:47	1
2,4-Dinitrotoluene	0.22	U	0.44	0.22	0.092	ug/L		11/01/18 21:47	1
2,6-Dinitrotoluene	0.22	U	0.22	0.22	0.071	ug/L		11/01/18 21:47	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.22	0.13	0.056	ug/L		11/01/18 21:47	1
2-Nitrotoluene	0.22	U	0.44	0.22	0.094	ug/L		11/01/18 21:47	1
3-Nitrotoluene	0.22	U	0.44	0.22	0.092	ug/L		11/01/18 21:47	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.22	0.13	0.064	ug/L		11/01/18 21:47	1
4-Nitrotoluene	0.44	U	1.1	0.44	0.22	ug/L		11/01/18 21:47	1
HMX	0.22	U	0.44	0.22	0.097	ug/L		11/01/18 21:47	1
Nitrobenzene	0.22	U	0.44	0.22	0.10	ug/L		11/01/18 21:47	1
Nitroglycerin	2.2	U	3.3	2.2	1.0	ug/L		11/01/18 21:47	1
PETN	1.3	U	2.2	1.3	0.46	ug/L		11/01/18 21:47	1
RDX	0.13	U	0.22	0.13	0.058	ug/L		11/01/18 21:47	1
Tetryl	0.22	U	0.26	0.22	0.087	ug/L		11/01/18 21:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*94*		*83 - 119*	*10/30/18 13:24*	*11/01/18 21:47*	*1*

Client Sample ID: DET-004-181001-GW **Lab Sample ID: 280-116020-12**
Date Collected: 10/24/18 11:20 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.45	U		1.1	0.45	0.22	ug/L		11/01/18 22:10	1
1,3-Dinitrobenzene	0.22	U		0.45	0.22	0.10	ug/L		11/01/18 22:10	1
2,4,6-Trinitrotoluene	0.22	U		0.45	0.22	0.081	ug/L		11/01/18 22:10	1
2,4-Dinitrotoluene	0.22	U		0.45	0.22	0.094	ug/L		11/01/18 22:10	1
2,6-Dinitrotoluene	0.22	U		0.22	0.22	0.072	ug/L		11/01/18 22:10	1
2-Amino-4,6-dinitrotoluene	0.13	U		0.22	0.13	0.057	ug/L		11/01/18 22:10	1
2-Nitrotoluene	0.22	U		0.45	0.22	0.096	ug/L		11/01/18 22:10	1
3-Nitrotoluene	0.22	U		0.45	0.22	0.094	ug/L		11/01/18 22:10	1
4-Amino-2,6-dinitrotoluene	0.13	U		0.22	0.13	0.065	ug/L		11/01/18 22:10	1
4-Nitrotoluene	0.45	U		1.1	0.45	0.22	ug/L		11/01/18 22:10	1
HMX	**2.1**	**M**	=	0.45	0.22	0.098	ug/L		11/01/18 22:10	1
Nitrobenzene	0.22	U		0.45	0.22	0.10	ug/L		11/01/18 22:10	1
Nitroglycerin	2.2	U		3.4	2.2	1.0	ug/L		11/01/18 22:10	1
PETN	1.3	U		2.2	1.3	0.47	ug/L		11/01/18 22:10	1
RDX	**0.67**	**M**	=	0.22	0.13	0.059	ug/L		11/01/18 22:10	1
Tetryl	0.22	U		0.27	0.22	0.089	ug/L		11/01/18 22:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*111*		*83 - 119*	*10/30/18 13:24*	*11/01/18 22:10*	*1*

Method: 8330B - Nitroaromatics and Nitramines (HPLC) - RE

Client Sample ID: WBGmw-009-181001-GW **Lab Sample ID: 280-116020-4**
Date Collected: 10/23/18 14:35 **Matrix: Water**
Date Received: 10/24/18 17:47

RE-EXTRACTION PAST HOLD TIME

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.56	U H * DO NOT USE	1.4	0.56	0.28	ug/L		11/05/18 22:33	1
1,3-Dinitrobenzene	0.28	U H	0.56	0.28	0.12	ug/L		11/05/18 22:33	1
2,4,6-Trinitrotoluene	0.28	U H	0.56	0.28	0.10	ug/L		11/05/18 22:33	1
2,4-Dinitrotoluene	0.28	U H	0.56	0.28	0.12	ug/L		11/05/18 22:33	1
2,6-Dinitrotoluene	0.28	U H	0.28	0.28	0.090	ug/L		11/05/18 22:33	1
2-Amino-4,6-dinitrotoluene	0.17	U H M	0.28	0.17	0.071	ug/L		11/05/18 22:33	1
2-Nitrotoluene	0.28	U H	0.56	0.28	0.12	ug/L		11/06/18 23:20	1
3-Nitrotoluene	0.28	U H	0.56	0.28	0.12	ug/L		11/05/18 22:33	1
4-Amino-2,6-dinitrotoluene	0.17	U H	0.28	0.17	0.081	ug/L		11/05/18 22:33	1
4-Nitrotoluene	0.56	U H	1.4	0.56	0.28	ug/L		11/05/18 22:33	1
HMX	**1.5**	**H M**	0.56	0.28	0.12	ug/L		11/05/18 22:33	1
Nitrobenzene	0.28	U H	0.56	0.28	0.13	ug/L		11/05/18 22:33	1
Nitroglycerin	2.8	U H	4.2	2.8	1.3	ug/L		11/05/18 22:33	1
PETN	1.7	U H	2.8	1.7	0.58	ug/L		11/05/18 22:33	1
RDX	**4.1**	**H M**	0.28	0.17	0.073	ug/L		11/05/18 22:33	1
Tetryl	0.28	U H	0.34	0.28	0.11	ug/L		11/05/18 22:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*103*		*83 - 119*	*11/02/18 12:09*	*11/05/18 22:33*	*1*
1,2-Dinitrobenzene	*89*		*83 - 119*	*11/02/18 12:09*	*11/06/18 23:20*	*1*

Method: 6010C - Metals (ICP)

Client Sample ID: DET-003-181001-GW **Lab Sample ID: 280-116020-1**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		10/29/18 12:38	1
Calcium	**95000**	**Q** J C05	1000	140	35	ug/L		10/29/18 12:38	1
Iron	**1900**		100	85	22	ug/L		10/29/18 12:38	1
Magnesium	**35000**		500	40	11	ug/L		10/29/18 12:38	1
Potassium	**2300**	**J**	3000	940	240	ug/L		10/29/18 12:38	1
Sodium	**13000**		5000	350	120	ug/L		10/29/18 12:38	1

Client Sample ID: WBGmw-009-181001-GW **Lab Sample ID: 280-116020-4**
Date Collected: 10/23/18 14:35 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		10/29/18 12:40	1
Calcium	**54000**	**Q** J C05	1000	140	35	ug/L		10/29/18 12:40	1
Iron	85	U	100	85	22	ug/L		10/29/18 12:40	1
Magnesium	**16000**		500	40	11	ug/L		10/29/18 12:40	1
Potassium	**620**	**J**	3000	940	240	ug/L		10/29/18 12:40	1
Sodium	**3600**	**J**	5000	350	120	ug/L		10/29/18 12:40	1

Client Sample ID: LL1mw-084-181001-GW **Lab Sample ID: 280-116020-6**
Date Collected: 10/24/18 09:30 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**500**	J C05	300	70	18	ug/L		10/29/18 12:43	1

Method: 6010C - Metals (ICP) (Continued)

Client Sample ID: LL1mw-084-181001-GW **Lab Sample ID: 280-116020-6**
Date Collected: 10/24/18 09:30 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Calcium	**51000**	**Q** J C05	1000	140	35	ug/L		10/29/18 12:43	1
Iron	85	U	100	85	22	ug/L		10/29/18 12:43	1
Magnesium	**3600**		500	40	11	ug/L		10/29/18 12:43	1
Potassium	**3600**		3000	940	240	ug/L		10/29/18 12:43	1
Sodium	**3700**	**J**	5000	350	120	ug/L		10/29/18 12:43	1

Client Sample ID: DA2mw-115-181001-GW **Lab Sample ID: 280-116020-8**
Date Collected: 10/24/18 12:45 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		10/29/18 12:45	1
Calcium	**120000**	**Q** J C05	1000	140	35	ug/L		10/29/18 12:45	1
Iron	**1000**		100	85	22	ug/L		10/29/18 12:45	1
Magnesium	**32000**		500	40	11	ug/L		10/29/18 12:45	1
Potassium	**3800**		3000	940	240	ug/L		10/29/18 12:45	1
Sodium	**12000**		5000	350	120	ug/L		10/29/18 12:45	1

Client Sample ID: DA2mw-115-181002-GW **Lab Sample ID: 280-116020-9**
Date Collected: 10/24/18 12:45 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**19**	**J** J C05	300	70	18	ug/L		10/29/18 12:52	1
Calcium	**120000**	**Q** J C05	1000	140	35	ug/L		10/29/18 12:52	1
Iron	**960**		100	85	22	ug/L		10/29/18 12:52	1
Magnesium	**32000**		500	40	11	ug/L		10/29/18 12:52	1
Potassium	**3900**		3000	940	240	ug/L		10/29/18 12:52	1
Sodium	**14000**		5000	350	120	ug/L		10/29/18 12:52	1

Client Sample ID: DET-004-181001-GW **Lab Sample ID: 280-116020-12**
Date Collected: 10/24/18 11:20 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		10/29/18 12:55	1
Calcium	**150000**	**Q** J C05	1000	140	35	ug/L		10/29/18 12:55	1
Iron	85	U	100	85	22	ug/L		10/29/18 12:55	1
Magnesium	**29000**		500	40	11	ug/L		10/29/18 12:55	1
Potassium	**1700**	**J**	3000	940	240	ug/L		10/29/18 12:55	1
Sodium	**2300**	**J**	5000	350	120	ug/L		10/29/18 12:55	1

Method: 6020A - Metals (ICP/MS)

SEE ADR REPORT FOR CHANGES TO ADR ASSIGNED QUALIFIERS FOR MANGANESE

Client Sample ID: DET-003-181001-GW **Lab Sample ID: 280-116020-1**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/02/18 21:33	1
Arsenic	**11**		5.0	1.0	0.33	ug/L		11/02/18 21:33	1
Barium	**49**	J C05	3.0	0.95	0.29	ug/L		11/02/18 21:33	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/02/18 21:33	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/02/18 21:33	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: DET-003-181001-GW **Lab Sample ID: 280-116020-1**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chromium	1.8	U	10	1.8	0.50	ug/L		11/02/18 21:33	1
Cobalt	**0.36**	**J**	1.0	0.20	0.054	ug/L		11/02/18 21:33	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/02/18 21:33	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/02/18 21:33	1
Manganese delete ADR qual	**260**		3.5	0.95	0.31	ug/L		11/02/18 21:33	1
Nickel	1.0	U	3.0	1.0	0.30	ug/L		11/02/18 21:33	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/02/18 21:33	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/02/18 21:33	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/02/18 21:33	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/02/18 21:33	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/02/18 21:33	1

Client Sample ID: WBGmw-009-181001-GW **Lab Sample ID: 280-116020-4**
Date Collected: 10/23/18 14:35 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/02/18 21:37	1
Arsenic	1.0	U	5.0	1.0	0.33	ug/L		11/02/18 21:37	1
Barium	**11**	J C05	3.0	0.95	0.29	ug/L		11/02/18 21:37	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/02/18 21:37	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/02/18 21:37	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/02/18 21:37	1
Cobalt	**0.16**	**J**	1.0	0.20	0.054	ug/L		11/02/18 21:37	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/02/18 21:37	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/02/18 21:37	1
Manganese delete ADR qual	**22**		3.5	0.95	0.31	ug/L		11/02/18 21:37	1
Nickel	**0.92**	**J**	3.0	1.0	0.30	ug/L		11/02/18 21:37	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/02/18 21:37	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/02/18 21:37	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/02/18 21:37	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/02/18 21:37	1
Zinc	**2.4**	**J**	20	8.0	2.0	ug/L		11/02/18 21:37	1

Client Sample ID: LL1mw-084-181001-GW **Lab Sample ID: 280-116020-6**
Date Collected: 10/24/18 09:30 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/02/18 21:41	1
Arsenic	1.0	U	5.0	1.0	0.33	ug/L		11/02/18 21:41	1
Barium	**16**	J C05	3.0	0.95	0.29	ug/L		11/02/18 21:41	1
Beryllium	**0.13**	**J**	1.0	0.30	0.080	ug/L		11/02/18 21:41	1
Cadmium	**1.7**		1.0	1.0	0.27	ug/L		11/02/18 21:41	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/02/18 21:41	1
Cobalt	**13**		1.0	0.20	0.054	ug/L		11/02/18 21:41	1
Copper	**5.3**		2.0	1.8	0.56	ug/L		11/02/18 21:41	1
Lead	**1.0**	**J**	3.0	0.70	0.18	ug/L		11/02/18 21:41	1
Manganese delete ADR qual	**140**		3.5	0.95	0.31	ug/L		11/02/18 21:41	1
Nickel	**34**		3.0	1.0	0.30	ug/L		11/02/18 21:41	1
Selenium	**1.5**	**J**	5.0	2.0	0.70	ug/L		11/02/18 21:41	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/02/18 21:41	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: LL1mw-084-181001-GW **Lab Sample ID: 280-116020-6**
Date Collected: 10/24/18 09:30 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Thallium	**0.46**	**J**	1.0	0.20	0.050	ug/L		11/02/18 21:41	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/02/18 21:41	1
Zinc	**67**		20	8.0	2.0	ug/L		11/02/18 21:41	1

Client Sample ID: DA2mw-115-181001-GW **Lab Sample ID: 280-116020-8**
Date Collected: 10/24/18 12:45 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/02/18 21:45	1
Arsenic	**1.6**	**J**	5.0	1.0	0.33	ug/L		11/02/18 21:45	1
Barium	**22**	J C05	3.0	0.95	0.29	ug/L		11/02/18 21:45	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/02/18 21:45	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/02/18 21:45	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/02/18 21:45	1
Cobalt	0.20	U	1.0	0.20	0.054	ug/L		11/02/18 21:45	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/02/18 21:45	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/02/18 21:45	1
Manganese	**110**	**J1** J H02	3.5	0.95	0.31	ug/L		11/02/18 21:45	1
Nickel	1.0	U	3.0	1.0	0.30	ug/L		11/02/18 21:45	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/02/18 21:45	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/02/18 21:45	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/02/18 21:45	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/02/18 21:45	1
Zinc	**2.2**	**J**	20	8.0	2.0	ug/L		11/02/18 21:45	1

Client Sample ID: DA2mw-115-181002-GW **Lab Sample ID: 280-116020-9**
Date Collected: 10/24/18 12:45 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/02/18 21:56	1
Arsenic	**1.5**	**J**	5.0	1.0	0.33	ug/L		11/02/18 21:56	1
Barium	**21**	J C05	3.0	0.95	0.29	ug/L		11/02/18 21:56	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/02/18 21:56	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/02/18 21:56	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/02/18 21:56	1
Cobalt	0.20	U	1.0	0.20	0.054	ug/L		11/02/18 21:56	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/02/18 21:56	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/02/18 21:56	1
Manganese since FD to parent, retain ADR qual	**100**	J H02	3.5	0.95	0.31	ug/L		11/02/18 21:56	1
Nickel	1.0	U	3.0	1.0	0.30	ug/L		11/02/18 21:56	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/02/18 21:56	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/02/18 21:56	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/02/18 21:56	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/02/18 21:56	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/02/18 21:56	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: DET-004-181001-GW **Lab Sample ID: 280-116020-12**
Date Collected: 10/24/18 11:20 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/02/18 22:00	1
Arsenic	1.0	U	5.0	1.0	0.33	ug/L		11/02/18 22:00	1
Barium	**72**	J C05	3.0	0.95	0.29	ug/L		11/02/18 22:00	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/02/18 22:00	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/02/18 22:00	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/02/18 22:00	1
Cobalt	0.20	U	1.0	0.20	0.054	ug/L		11/02/18 22:00	1
Copper	**1.3**	**J**	2.0	1.8	0.56	ug/L		11/02/18 22:00	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/02/18 22:00	1
Manganese delete ADR qual	**37**		3.5	0.95	0.31	ug/L		11/02/18 22:00	1
Nickel	**0.81**	**J**	3.0	1.0	0.30	ug/L		11/02/18 22:00	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/02/18 22:00	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/02/18 22:00	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/02/18 22:00	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/02/18 22:00	1
Zinc	**21**		20	8.0	2.0	ug/L		11/02/18 22:00	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: DET-003-181001-GW **Lab Sample ID: 280-116020-1**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 20:52	1

Client Sample ID: WBGmw-009-181001-GW **Lab Sample ID: 280-116020-4**
Date Collected: 10/23/18 14:35 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 20:54	1

Client Sample ID: LL1mw-084-181001-GW **Lab Sample ID: 280-116020-6**
Date Collected: 10/24/18 09:30 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 20:57	1

Client Sample ID: DA2mw-115-181001-GW **Lab Sample ID: 280-116020-8**
Date Collected: 10/24/18 12:45 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 21:03	1

Client Sample ID: DA2mw-115-181002-GW **Lab Sample ID: 280-116020-9**
Date Collected: 10/24/18 12:45 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 21:15	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: DET-004-181001-GW **Lab Sample ID: 280-116020-12**
Date Collected: 10/24/18 11:20 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 21:17	1

General Chemistry

Client Sample ID: DET-003-181001-GW **Lab Sample ID: 280-116020-1**
Date Collected: 10/24/18 10:05 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/06/18 18:28	1

Client Sample ID: LL1mw-083-181001-GW **Lab Sample ID: 280-116020-5**
Date Collected: 10/24/18 13:25 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Sulfide	1.9	U	4.0	1.9	0.79	mg/L		10/27/18 19:16	1
Nitrate as N	**0.29**	**J J1** J H01 J01	0.50	0.10	0.042	mg/L		10/25/18 18:06	1
Nitrite as N	0.10	U	0.50	0.10	0.049	mg/L		10/25/18 18:06	1
Sulfate	**160**	**J1** J H02	5.0	0.50	0.23	mg/L		10/25/18 18:06	1
Alkalinity	5.0	U	5.0	5.0	1.1	mg/L		11/01/18 23:43	1

Client Sample ID: LL1mw-084-181001-GW **Lab Sample ID: 280-116020-6**
Date Collected: 10/24/18 09:30 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/06/18 18:30	1
Sulfide	1.9	U	4.0	1.9	0.79	mg/L		10/27/18 19:16	1
Nitrate as N delete ADR reason code	**0.31**	**J**	0.50	0.10	0.042	mg/L		10/25/18 19:20	1
Nitrite as N	0.10	U	0.50	0.10	0.049	mg/L		10/25/18 19:20	1
Sulfate	**130**		5.0	0.50	0.23	mg/L		10/25/18 19:20	1
Alkalinity delete ADR qual	**17**		5.0	5.0	1.1	mg/L		11/01/18 23:38	1

Client Sample ID: FWGmw-013-181001-GW **Lab Sample ID: 280-116020-7**
Date Collected: 10/24/18 13:55 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/06/18 18:31	1

Client Sample ID: DA2mw-115-181001-GW **Lab Sample ID: 280-116020-8**
Date Collected: 10/24/18 12:45 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/06/18 18:33	1

Client Sample ID: DA2mw-115-181002-GW **Lab Sample ID: 280-116020-9**
Date Collected: 10/24/18 12:45 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/06/18 20:39	1

General Chemistry

Client Sample ID: DET-004-181001-GW **Lab Sample ID: 280-116020-12**
Date Collected: 10/24/18 11:20 **Matrix: Water**
Date Received: 10/24/18 17:47

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/06/18 20:40	1

Client Sample ID: LL1mw-083-181001-GW — Lab Sample ID: 280-116020-5

Date Collected: 10/24/18 13:25 **Matrix: Water**
Date Received: 10/24/18 17:47

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexavalent chromium	ND	U	0.020	0.0030	mg/L			10/24/18 19:37	1

Client Sample ID: LL1mw-084-181001-GW — Lab Sample ID: 280-116020-6

Date Collected: 10/24/18 09:30 **Matrix: Water**
Date Received: 10/24/18 17:47

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexavalent chromium	ND	U	0.020	0.0030	mg/L			10/24/18 19:36	1

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116020-1						
Method: 2320B						
LL1mw-083-181001-GW	280-116020-5	AQ	N	METHOD	10/24/2018 1:25:00 PM	S2AVE
LL1mw-084-181001-GW	280-116020-6	AQ	N	METHOD	10/24/2018 9:30:00 AM	S2AVE
Method: 6010C						
DA2mw-115-181001-GW	280-116020-8	AQ	N	3010A	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181001-GWMS	280-116020-8MS	AQ	MS	3010A	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181001-GWMSD	280-116020-8MSD	AQ	MSD	3010A	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181002-GW	280-116020-9	AQ	FD	3010A	10/24/2018 12:45:00 PM	S2AVE
DET-003-181001-GW	280-116020-1	AQ	N	3010A	10/24/2018 10:05:00 AM	S2AVE
DET-004-181001-GW	280-116020-12	AQ	N	3010A	10/24/2018 11:20:00 AM	S2AVE
LL1mw-084-181001-GW	280-116020-6	AQ	N	3010A	10/24/2018 9:30:00 AM	S2AVE
WBGmw-009-181001-GW	280-116020-4	AQ	N	3010A	10/23/2018 2:35:00 PM	S2AVE
Method: 6010C-KNA						
DA2mw-115-181001-GW	280-116020-8	AQ	N	3010A	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181001-GWMS	280-116020-8MS	AQ	MS	3010A	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181001-GWMSD	280-116020-8MSD	AQ	MSD	3010A	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181002-GW	280-116020-9	AQ	FD	3010A	10/24/2018 12:45:00 PM	S2AVE
DET-003-181001-GW	280-116020-1	AQ	N	3010A	10/24/2018 10:05:00 AM	S2AVE
DET-004-181001-GW	280-116020-12	AQ	N	3010A	10/24/2018 11:20:00 AM	S2AVE
LL1mw-084-181001-GW	280-116020-6	AQ	N	3010A	10/24/2018 9:30:00 AM	S2AVE
WBGmw-009-181001-GW	280-116020-4	AQ	N	3010A	10/23/2018 2:35:00 PM	S2AVE
Method: 6020A						
DA2mw-115-181001-GW	280-116020-8	AQ	N	3020A	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181001-GWMS	280-116020-8MS	AQ	MS	3020A	10/24/2018 12:45:00 PM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 6020A						
DA2mw-115-181001-GWMSD	280-116020-8MSD	AQ	MSD	3020A	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181002-GW	280-116020-9	AQ	FD	3020A	10/24/2018 12:45:00 PM	S2AVE
DET-003-181001-GW	280-116020-1	AQ	N	3020A	10/24/2018 10:05:00 AM	S2AVE
DET-004-181001-GW	280-116020-12	AQ	N	3020A	10/24/2018 11:20:00 AM	S2AVE
LL1mw-084-181001-GW	280-116020-6	AQ	N	3020A	10/24/2018 9:30:00 AM	S2AVE
WBGmw-009-181001-GW	280-116020-4	AQ	N	3020A	10/23/2018 2:35:00 PM	S2AVE
Method: 7470A						
DA2mw-115-181001-GW	280-116020-8	AQ	N	7470A	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181001-GWMS	280-116020-8MS	AQ	MS	7470A	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181001-GWMSD	280-116020-8MSD	AQ	MSD	7470A	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181002-GW	280-116020-9	AQ	FD	7470A	10/24/2018 12:45:00 PM	S2AVE
DET-003-181001-GW	280-116020-1	AQ	N	7470A	10/24/2018 10:05:00 AM	S2AVE
DET-004-181001-GW	280-116020-12	AQ	N	7470A	10/24/2018 11:20:00 AM	S2AVE
LL1mw-084-181001-GW	280-116020-6	AQ	N	7470A	10/24/2018 9:30:00 AM	S2AVE
WBGmw-009-181001-GW	280-116020-4	AQ	N	7470A	10/23/2018 2:35:00 PM	S2AVE
Method: 8081B						
DET-003-181001-GW	280-116020-1	AQ	N	3510C	10/24/2018 10:05:00 AM	S2AVE
DET-003-181002-GW	280-116020-2	AQ	FD	3510C	10/24/2018 10:05:00 AM	S2AVE
DET-004-181001-GW	280-116020-12	AQ	N	3510C	10/24/2018 11:20:00 AM	S2AVE
LL1mw-083-181001-GW	280-116020-5	AQ	N	3510C	10/24/2018 1:25:00 PM	S2AVE
LL1mw-084-181001-GW	280-116020-6	AQ	N	3510C	10/24/2018 9:30:00 AM	S2AVE
Method: 8082A						
DET-003-181001-GW	280-116020-1	AQ	N	3510C	10/24/2018 10:05:00 AM	S2AVE
DET-003-181002-GW	280-116020-2	AQ	FD	3510C	10/24/2018 10:05:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 8082A						
DET-004-181001-GW	280-116020-12	AQ	N	3510C	10/24/2018 11:20:00 AM	S2AVE
Method: 8260B						
DET-003-181001-GW	280-116020-1	AQ	N	METHOD	10/24/2018 10:05:00 AM	S2AVE
DET-003-181001-GWMS	280-116020-1MS	AQ	MS	METHOD	10/24/2018 10:05:00 AM	S2AVE
DET-003-181001-GWMSD	280-116020-1MSD	AQ	MSD	METHOD	10/24/2018 10:05:00 AM	S2AVE
DET-003-181002-GW	280-116020-2	AQ	FD	METHOD	10/24/2018 10:05:00 AM	S2AVE
DET-004-181001-GW	280-116020-12	AQ	N	METHOD	10/24/2018 11:20:00 AM	S2AVE
FWGTB-181002-TB	280-116020-3	AQ	TB	METHOD	10/24/2018 10:05:00 AM	S2AVE
Method: 8270D						
DA2mw-115-181001-GW	280-116020-8	AQ	N	3520C	10/24/2018 12:45:00 PM	S2AVE
DET-003-181001-GW	280-116020-1	AQ	N	3520C	10/24/2018 10:05:00 AM	S2AVE
DET-003-181001-GWMS	280-116020-1MS	AQ	MS	3520C	10/24/2018 10:05:00 AM	S2AVE
DET-003-181001-GWMSD	280-116020-1MSD	AQ	MSD	3520C	10/24/2018 10:05:00 AM	S2AVE
DET-003-181002-GW	280-116020-2	AQ	FD	3520C	10/24/2018 10:05:00 AM	S2AVE
DET-004-181001-GW	280-116020-12	AQ	N	3520C	10/24/2018 11:20:00 AM	S2AVE
LL1mw-083-181001-GW	280-116020-5	AQ	N	3520C	10/24/2018 1:25:00 PM	S2AVE
LL1mw-084-181001-GW	280-116020-6	AQ	N	3520C	10/24/2018 9:30:00 AM	S2AVE
WBGmw-009-181001-GW	280-116020-4	AQ	N	3520C	10/23/2018 2:35:00 PM	S2AVE
Method: 8270D-SIM						
DET-003-181001-GW	280-116020-1	AQ	N	3510C	10/24/2018 10:05:00 AM	S2AVE
DET-003-181001-GWMS	280-116020-1MS	AQ	MS	3510C	10/24/2018 10:05:00 AM	S2AVE
DET-003-181001-GWMSD	280-116020-1MSD	AQ	MSD	3510C	10/24/2018 10:05:00 AM	S2AVE
DET-003-181002-GW	280-116020-2	AQ	FD	3510C	10/24/2018 10:05:00 AM	S2AVE
DET-004-181001-GW	280-116020-12	AQ	N	3510C	10/24/2018 11:20:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method		Collection Date	Validation Code
Method: 8330B							
DA2mw-115-181001-GW	280-116020-8	AQ	N		3535	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181001-GWMS	280-116020-8MS	AQ	MS		3535	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181001-GWMSD	280-116020-8MSD	AQ	MSD		3535	10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181002-GW	280-116020-9	AQ	FD		3535	10/24/2018 12:45:00 PM	S2AVE
DET-003-181001-GW	280-116020-1	AQ	N		3535	10/24/2018 10:05:00 AM	S2AVE
DET-004-181001-GW	280-116020-12	AQ	N		3535	10/24/2018 11:20:00 AM	S2AVE
LL1mw-083-181001-GW	280-116020-5	AQ	N		3535	10/24/2018 1:25:00 PM	S2AVE
LL1mw-084-181001-GW	280-116020-6	AQ	N		3535	10/24/2018 9:30:00 AM	S2AVE
WBGmw-009-181001-GW	280-116020-4	AQ	N		3535	10/23/2018 2:35:00 PM	S2AVE
Method: 9012B							
DA2mw-115-181001-GW	280-116020-8	AQ	N	Gen Prep		10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181001-GWMS	280-116020-8MS	AQ	MS	Gen Prep		10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181001-GWMSD	280-116020-8MSD	AQ	MSD	Gen Prep		10/24/2018 12:45:00 PM	S2AVE
DA2mw-115-181002-GW	280-116020-9	AQ	FD	Gen Prep		10/24/2018 12:45:00 PM	S2AVE
DET-003-181001-GW	280-116020-1	AQ	N	Gen Prep		10/24/2018 10:05:00 AM	S2AVE
DET-004-181001-GW	280-116020-12	AQ	N	Gen Prep		10/24/2018 11:20:00 AM	S2AVE
FWGmw-013-181001-GW	280-116020-7	AQ	N	Gen Prep		10/24/2018 1:55:00 PM	S2AVE
LL1mw-084-181001-GW	280-116020-6	AQ	N	Gen Prep		10/24/2018 9:30:00 AM	S2AVE
Method: 9034							
LL1mw-083-181001-GW	280-116020-5	AQ	N	Gen Prep		10/24/2018 1:25:00 PM	S2AVE
LL1mw-084-181001-GW	280-116020-6	AQ	N	Gen Prep		10/24/2018 9:30:00 AM	S2AVE
Method: 9056A							
LL1mw-083-181001-GW	280-116020-5	AQ	N	METHOD		10/24/2018 1:25:00 PM	S2AVE
LL1mw-083-181001-GWDUP	280-116020-5DUP	AQ	DUP	METHOD		10/24/2018 1:25:00 PM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 9056A						
LL1mw-083-181001-GWMS	280-116020-5MS	AQ	MS	METHOD	10/24/2018 1:25:00 PM	S2AVE
LL1mw-083-181001-GWMSD	280-116020-5MSD	AQ	MSD	METHOD	10/24/2018 1:25:00 PM	S2AVE
LL1mw-084-181001-GW	280-116020-6	AQ	N	METHOD	10/24/2018 9:30:00 AM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116020-1
EDD Filename: 280-116020-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area		*Note*
Technical Holding Times	VOCs missed hold times, not picked up by ADR, manually qualified	~~A~~
Temperature		A
Initial Calibration		N
Continuing Calibration/Initial Calibration Verification		N
Method Blanks		SR
Surrogate/Tracer Spikes		SR
Matrix Spike/Matrix Spike Duplicates		SR
Laboratory Duplicates		SR
Laboratory Replicates		N
Laboratory Control Samples		SR
Compound Quantitation		SR
Field Duplicates		A
Field Triplicates		N
Field Blanks		A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-435183/1-A	10/29/2018 11:44:00 AM	CALCIUM	219 ug/L	DA2mw-115-181001-GW DA2mw-115-181002-GW DET-003-181001-GW DET-004-181001-GW LL1mw-084-181001-GW WBGmw-009-181001-GW

*Confirmed, CCB contamination was not listed

Method: 6010C-KNA
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-435183/1-A	10/29/2018 11:44:00 AM	SODIUM	207 ug/L	DA2mw-115-181001-GW DA2mw-115-181002-GW DET-003-181001-GW DET-004-181001-GW LL1mw-084-181001-GW WBGmw-009-181001-GW

*Confirmed

Method: 6020A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-435184/1-A	11/2/2018 8:25:00 PM	MANGANESE	0.351 ug/L	DA2mw-115-181001-GW DA2mw-115-181002-GW DET-003-181001-GW DET-004-181001-GW LL1mw-084-181001-GW WBGmw-009-181001-GW

*Confirmed

Method: 8270D-SIM
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-435408/1-A	11/1/2018 11:01:00 PM	PHENANTHRENE	0.0181 ug/L	DET-003-181001-GW DET-003-181002-GW DET-004-181001-GW

*Confirmed

Method: 8330B
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436019/1-A	11/5/2018 5:34:00 PM	2-NITROTOLUENE	0.345 ug/L	WBGmw-009-181001-GW

*CONFIRMED

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 8330B
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

Surrogate Outlier Report

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8270D-SIM
Matrix: AQ

Sample ID (Analysis Type)	Surrogate	Sample % Recovery	% Recovery Limits	Affected Compounds	Flag
DET-004-181001-GW	2-FLUOROBIPHENYL Nitrobenzene-d5	47 52	53.00-106.00 55.00-111.00	All Base/Neutral Target Analytes	J (all detects) UJ (all non-detects)

Method: 8330B
Matrix: AQ

*Confirmed

Sample ID (Analysis Type)	Surrogate	Sample % Recovery	% Recovery Limits	Affected Compounds	Flag
WBGmw-009-181001-GW	1,2-DINITROBENZENE	71	83.00-119.00	All Target Analytes	J(all detects) UJ(all non-detects)

*Confirmed

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 9056A
Matrix: AQ

ONLY QUALIFY THE PARENT SAMPLE

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LL1mw-083-181001-GWMS (LL1mw-083-181001-GW LL1mw-084-181001-GW)	Nitrate as N	113	-	88.00-111.00	-	Nitrate as N	J (all detects)
LL1mw-083-181001-GWMSD (LL1mw-083-181001-GW LL1mw-084-181001-GW)	SULFATE	-	51	87.00-112.00	-	SULFATE	J(all detects) UJ(all non-detects)

Method: 6020A
Matrix: AQ

*CONFIRMED

ONLY QUALIFY THE PARENT SAMPLE and FD

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
DA2mw-115-181001-GWMS (TOT) (DA2mw-115-181001-GW DA2mw-115-181002-GW DET-003-181001-GW DET-004-181001-GW LL1mw-084-181001-GW WBGmw-009-181001-GW)	MANGANESE	86	-	87.00-115.00	-	MANGANESE	J(all detects) UJ(all non-detects)

Method: 8270D
Matrix: AQ

*Confirmed

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
DET-003-181001-GWMSD (DET-003-181001-GW)	2-CHLOROPHENOL	-	-	38.00-117.00	44 (20.00)	2-CHLOROPHENOL	
	2-Methylphenol (o-Cresol)	-	-	30.00-117.00	27 (20.00)	2-Methylphenol (o-Cresol)	
	2-NITROPHENOL	-	-	47.00-123.00	27 (20.00)	2-NITROPHENOL	J(all detects)
	NITROBENZENE	-	-	45.00-121.00	32 (20.00)	NITROBENZENE	
	PHENOL	-	-	61.00-120.00	35 (20.00)	PHENOL	

All ND, no qual

Method: 8330B
Matrix: AQ

*Confirmed

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
DA2mw-115-181001-GWMSD (DA2mw-115-181001-GW)	NITROBENZENE	-	40	65.00-134.00	73 (30.00)	NITROBENZENE	J(all detects) UJ(all non-detects)

*Confirmed

Lab Duplicate Outlier Report

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 9056A
Matrix: AQ

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	ONLY QUALIFY THE PARENT SAMPLE Flag
LL1mw-083-181001-GWDUP (LL1mw-083-181001-GW LL1mw-084-181001-GW)	Nitrate as N	15	10.00	J (all detects) UJ (all non-detects)

*CONFIRMED

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8330B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCS 280-435346/2-A (WBGmw-009-181001-GW)	1,3-DINITROBENZENE	77	-	78.00-120.00	-	1,3-DINITROBENZENE	
	2,4-DINITROTOLUENE	70	-	78.00-120.00	-	2,4-DINITROTOLUENE	
	2,6-DINITROTOLUENE	71	-	77.00-127.00	-	2,6-DINITROTOLUENE	
	2-AMINO-4,6-DINITROTOLUENE	65	-	79.00-120.00	-	2-AMINO-4,6-DINITROTOLUENE	J (all detects)
	2-NITROTOLUENE	61	-	70.00-127.00	-	2-NITROTOLUENE	UJ (all non-detects)
	3-NITROTOLUENE	55	-	73.00-125.00	-	3-NITROTOLUENE	
	4-AMINO-2,6-DINITROTOLUENE	61	-	76.00-125.00	-	4-AMINO-2,6-DINITROTOLUENE	
	4-NITROTOLUENE	69	-	71.00-127.00	-	4-NITROTOLUENE	

*Confirmed

Method: 8081B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCSD 280-435616/3-A (DET-003-181001-GW DET-003-181002-GW DET-004-181001-GW LL1mw-083-181001-GW LL1mw-084-181001-GW)	ENDOSULFAN SULFATE	-	135	62.00-133.00	-	ENDOSULFAN SULFATE	J(all detects) All ND

*Confirmed

Explosives column comparison not qualified by ADR

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
DA2mw-115-181002-GW	ALUMINUM	J	19	300	LOQ	ug/L	J (all detects)

Method: 6010C-KNA
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
DET-003-181001-GW	POTASSIUM	J	2300	3000	LOQ	ug/L	J (all detects)
DET-004-181001-GW	POTASSIUM	J	1700	3000	LOQ	ug/L	J (all detects)
	SODIUM	J	2300	5000	LOQ	ug/L	
LL1mw-084-181001-GW	SODIUM	J	3700	5000	LOQ	ug/L	J (all detects)
WBGmw-009-181001-GW	POTASSIUM	J	620	3000	LOQ	ug/L	J (all detects)
	SODIUM	J	3600	5000	LOQ	ug/L	

Method: 6020A
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
DA2mw-115-181001-GW	ARSENIC	J	1.6	5.0	LOQ	ug/L	J (all detects)
	ZINC	J	2.2	20	LOQ	ug/L	
DA2mw-115-181002-GW	ARSENIC	J	1.5	5.0	LOQ	ug/L	J (all detects)
DET-003-181001-GW	COBALT	J	0.36	1.0	LOQ	ug/L	J (all detects)
DET-004-181001-GW	COPPER	J	1.3	2.0	LOQ	ug/L	J (all detects)
	NICKEL	J	0.81	3.0	LOQ	ug/L	
LL1mw-084-181001-GW	BERYLLIUM	J	0.13	1.0	LOQ	ug/L	J (all detects)
	LEAD	J	1.0	3.0	LOQ	ug/L	
	SELENIUM	J	1.5	5.0	LOQ	ug/L	
	THALLIUM	J	0.46	1.0	LOQ	ug/L	
WBGmw-009-181001-GW	COBALT	J	0.16	1.0	LOQ	ug/L	J (all detects)
	NICKEL	J	0.92	3.0	LOQ	ug/L	
	ZINC	J	2.4	20	LOQ	ug/L	

Method: 8081B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL1mw-083-181001-GW	DELTA-BHC	J	0.0094	0.052	LOQ	ug/L	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 8330B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL1mw-083-181001-GW	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	J J1	0.23	0.47	LOQ	ug/L	J (all detects)

Method: 9056A
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL1mw-083-181001-GW	Nitrate as N	J J1	0.29	0.50	LOQ	mg/L	J (all detects)
LL1mw-084-181001-GW	Nitrate as N	J	0.31	0.50	LOQ	mg/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 6010C
Matrix: AQ

Analyte	Concentration (ug/L) DA2mw-115-181001-GW (TOT)	Concentration (ug/L) DA2mw-115-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
ALUMINUM	300 U	19	200	50.00	No Qualifiers Applied
CALCIUM	120000	120000	0	50.00	
IRON	1000	960	4	50.00	
MAGNESIUM	32000	32000	0	50.00	

Method: 6010C-KNA
Matrix: AQ

Analyte	Concentration (ug/L) DA2mw-115-181001-GW (TOT)	Concentration (ug/L) DA2mw-115-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
POTASSIUM	3800	3900	3	50.00	No Qualifiers Applied
SODIUM	12000	14000	15	50.00	

Method: 6020A
Matrix: AQ

Analyte	Concentration (ug/L) DA2mw-115-181001-GW (TOT)	Concentration (ug/L) DA2mw-115-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
ARSENIC	1.6	1.5	6	50.00	No Qualifiers Applied
BARIUM	22	21	5	50.00	
MANGANESE	110	100	10	50.00	
ZINC	2.2	20 U	200	50.00	

Data Qualifier Summary

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: GENCHEM

Method: 9056A **Matrix:** AQ

Sample ID: LL1mw-083-181001-GW **Collected:** 10/24/2018 1:25:00 PM **Analysis Type:** RE2/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SULFATE	160	J1	0.50	LOD	5.0	LOQ	mg/L	J	Ms

Sample ID: LL1mw-083-181001-GW **Collected:** 10/24/2018 1:25:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate as N	0.29	J J1	0.10	LOD	0.50	LOQ	mg/L	J	RI, Ms, Ld

Sample ID: LL1mw-084-181001-GW **Collected:** 10/24/2018 9:30:00 AM **Analysis Type:** RE2/TOT **Dilution:** 1

ONLY QUALIFY THE PARENT SAMPLE - No QUAL

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SULFATE	130		0.50	LOD	5.0	LOQ	mg/L	~~J~~	~~Ms~~

Sample ID: LL1mw-084-181001-GW **Collected:** 10/24/2018 9:30:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

ONLY QUALIFY THE PARENT SAMPLE - No QUAL

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate as N	0.31	J	0.10	LOD	0.50	LOQ	mg/L	J	~~RI, Ms, Ld~~

lab qual for value < RL, OK

Method Category: METALS

Method: 6010C **Matrix:** AQ

Sample ID: DA2mw-115-181002-GW **Collected:** 10/24/2018 12:45:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	19	J	70	LOD	300	LOQ	ug/L	J	RI

Method Category: METALS

Method: 6010C-KNA **Matrix:** AQ

Sample ID: DET-003-181001-GW **Collected:** 10/24/2018 10:05:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	2300	J	940	LOD	3000	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6010C-KNA **Matrix:** AQ

Sample ID: DET-004-181001-GW **Collected:** 10/24/2018 11:20:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1700	J	940	LOD	3000	LOQ	ug/L	J	RI
SODIUM	2300	J	350	LOD	5000	LOQ	ug/L	J	RI

Sample ID: LL1mw-084-181001-GW **Collected:** 10/24/2018 9:30:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SODIUM	3700	J	350	LOD	5000	LOQ	ug/L	J	RI

Sample ID: WBGmw-009-181001-GW **Collected:** 10/23/2018 2:35:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	620	J	940	LOD	3000	LOQ	ug/L	J	RI
SODIUM	3600	J	350	LOD	5000	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: DA2mw-115-181001-GW **Collected:** 10/24/2018 12:45:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	1.6	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
MANGANESE	110	J1	0.95	LOD	3.5	LOQ	ug/L	J	Ms ok
ZINC	2.2	J	8.0	LOD	20	LOQ	ug/L	J	RI

Sample ID: DA2mw-115-181002-GW **Collected:** 10/24/2018 12:45:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	1.5	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
MANGANESE	100		0.95	LOD	3.5	LOQ	ug/L	J	Ms ok

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 6020A **Matrix:** AQ

Sample ID: DET-003-181001-GW **Collected:** 10/24/2018 10:05:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
COBALT	0.36	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
MANGANESE	260		0.95	LOD	3.5	LOQ	ug/L	~~J~~	~~Ms~~

Sample ID: DET-004-181001-GW **Collected:** 10/24/2018 11:20:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
COPPER	1.3	J	1.8	LOD	2.0	LOQ	ug/L	J	RI
MANGANESE	37		0.95	LOD	3.5	LOQ	ug/L	~~J~~	~~Ms~~
NICKEL	0.81	J	1.0	LOD	3.0	LOQ	ug/L	J	RI

Sample ID: LL1mw-084-181001-GW **Collected:** 10/24/2018 9:30:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.13	J	0.30	LOD	1.0	LOQ	ug/L	J	RI
LEAD	1.0	J	0.70	LOD	3.0	LOQ	ug/L	J	RI
MANGANESE	140		0.95	LOD	3.5	LOQ	ug/L	~~J~~	~~Ms~~
SELENIUM	1.5	J	2.0	LOD	5.0	LOQ	ug/L	J	RI
THALLIUM	0.46	J	0.20	LOD	1.0	LOQ	ug/L	J	RI

Sample ID: WBGmw-009-181001-GW **Collected:** 10/23/2018 2:35:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
COBALT	0.16	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
MANGANESE	22		0.95	LOD	3.5	LOQ	ug/L	~~J~~	~~Ms~~
NICKEL	0.92	J	1.0	LOD	3.0	LOQ	ug/L	J	RI
ZINC	2.4	J	8.0	LOD	20	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: SVOA
Method: 8081B **Matrix:** AQ

Sample ID: LL1mw-083-181001-GW **Collected:** 10/24/2018 1:25:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DELTA-BHC	0.0094	J	0.021	LOD	0.052	LOQ	ug/L	J	RI

Method Category: SVOA
Method: 8270D-SIM **Matrix:** AQ

Sample ID: DET-004-181001-GW **Collected:** 10/24/2018 11:20:00 AM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	0.014	U Q	0.014	LOD	0.11	LOQ	ug/L	UJ	Surr
2-METHYLNAPHTHALENE	0.014	U Q	0.014	LOD	0.11	LOQ	ug/L	UJ	Surr
ACENAPHTHENE	0.045	U Q	0.045	LOD	0.11	LOQ	ug/L	UJ	Surr
ACENAPHTHYLENE	0.045	U Q	0.045	LOD	0.11	LOQ	ug/L	UJ	Surr
ANTHRACENE	0.045	U Q	0.045	LOD	0.11	LOQ	ug/L	UJ	Surr
BENZO(A)ANTHRACENE	0.014	U	0.014	LOD	0.11	LOQ	ug/L	UJ	Surr
BENZO(A)PYRENE	0.014	U	0.014	LOD	0.11	LOQ	ug/L	UJ	Surr
BENZO(B)FLUORANTHENE	0.014	U	0.014	LOD	0.11	LOQ	ug/L	UJ	Surr
BENZO(G,H,I)PERYLENE	0.014	U	0.014	LOD	0.11	LOQ	ug/L	UJ	Surr
BENZO(K)FLUORANTHENE	0.014	U	0.014	LOD	0.11	LOQ	ug/L	UJ	Surr
CHRYSENE	0.014	U	0.014	LOD	0.11	LOQ	ug/L	UJ	Surr
DIBENZO(A,H)ANTHRACENE	0.014	U	0.014	LOD	0.11	LOQ	ug/L	UJ	Surr
FLUORANTHENE	0.014	U Q	0.014	LOD	0.11	LOQ	ug/L	UJ	Surr
FLUORENE	0.045	U Q	0.045	LOD	0.11	LOQ	ug/L	UJ	Surr
INDENO(1,2,3-CD)PYRENE	0.045	U	0.045	LOD	0.11	LOQ	ug/L	UJ	Surr
NAPHTHALENE	0.014	U Q	0.014	LOD	0.11	LOQ	ug/L	UJ	Surr
PHENANTHRENE	0.023	U Q	0.023	LOD	0.11	LOQ	ug/L	UJ	Surr
PYRENE	0.023	U Q	0.023	LOD	0.11	LOQ	ug/L	UJ	Surr

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: SVOA

Method: 8330B **Matrix:** AQ

Sample ID: DA2mw-115-181001-GW **Collected:** 10/24/2018 12:45:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NITROBENZENE	0.22	U J1	0.22	LOD	0.44	LOQ	ug/L	UJ	Ms

Sample ID: WBGmw-009-181001-GW **Collected:** 10/23/2018 2:35:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3,5-TRINITROBENZENE	0.40	U Q	0.40	LOD	1.0	LOQ	ug/L	UJ	Surr
1,3-DINITROBENZENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
2,4,6-TRINITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Surr
2,4-DINITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
2,6-DINITROTOLUENE	0.20	U Q	0.20	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
2-AMINO-4,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
2-NITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
3-NITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
4-AMINO-2,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
4-NITROTOLUENE	0.40	U Q M	0.40	LOD	1.0	LOQ	ug/L	UJ	Lcs, Surr
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	2.8	Q M	0.12	LOD	0.20	LOQ	ug/L	J	Surr
NITROBENZENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Surr
NITROGLYCERINE	2.0	U Q	2.0	LOD	3.0	LOQ	ug/L	UJ	Surr
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.94	Q M	0.20	LOD	0.40	LOQ	ug/L	J	Surr
PETN	1.2	U Q	1.2	LOD	2.0	LOQ	ug/L	UJ	Surr
Tetryl	0.20	U Q	0.20	LOD	0.24	LOQ	ug/L	UJ	Surr

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116020-1 **Laboratory: TA DEN**

EDD Filename: 280-116020-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
Lcs	Laboratory Control Spike Lower Estimation
Lcs	Laboratory Control Spike Upper Estimation
Ld	Laboratory Duplicate Precision
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
RI	Reporting Limit Trace Value
Surr	Surrogate/Tracer Recovery Lower Estimation

* denotes a non-reportable result

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA CAN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116020-2						
Method: 7196A						
LL1mw-083-181001-GW	280-116020-5	AQ	N	METHOD	10/24/2018 1:25:00 PM	S2AVE
LL1mw-084-181001-GW	280-116020-6	AQ	N	METHOD	10/24/2018 9:30:00 AM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116020-2
EDD Filename: 280-116020-2

Laboratory: TA CAN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	A
Surrogate/Tracer Spikes	N
Matrix Spike/Matrix Spike Duplicates	N
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	A
Field Duplicates	N
Field Triplicates	N
Field Blanks	N

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers

LEIDOS
Laboratory Data Verification Checklist

Project: RVAAP

SDG No: J116053

Analyte Group: SVOC, Explosives, Metals, Wet Chem
Sample Matrix: Water
EDD (Y/N):

Disposition of Data Package:
NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)		Y
Check for LCS results (e.g., org. form III, inorg. form XII)		Y
Check for method blank results (e.g., org. form IV, inorg. form III)		Y
Check for MS/MSD results (e.g., inorg. form V)		Y
Check for laboratory duplicate results (e.g., inorg. form VI)		NA
Check for Method Calibration and Run Documentation		
organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	method linear range	Y
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	Y
other:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	sample run sequence	Y

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Brooke Francis Date: 1/3/19

QA Review By: Date: 01/08/2019

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: J116053

Analyte Group: SVOC, Explosives, Metals, Wet Chem

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:

Comments:

Sample Summary

Client: Leidos, Inc. TestAmerica Job ID: 280-116053-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-116053-1	FWGMW-011-181001-GW	Water	10/23/18 10:45	10/24/18 09:45
280-116053-2	FWGMW-010-181001-GW	Water	10/22/18 15:35	10/24/18 09:45
280-116053-3	LL1MW-086-181001-GW	Water	10/22/18 15:35	10/24/18 09:45
280-116053-4	FWGMW-012-181001-GW	Water	10/23/18 12:40	10/24/18 09:45
280-116053-5	LL1MW-065-181001-GW	Water	10/23/18 15:00	10/24/18 09:45
280-116053-6	WBGMW-020-181001-GW	Water	10/23/18 12:55	10/24/18 09:45
280-116053-7	FWGMW-004-181001-GW	Water	10/22/18 15:00	10/24/18 09:45
280-116053-8	WBGMW-006-181001-GW	Water	10/23/18 09:10	10/24/18 09:45
280-116053-9	WBGMW-021-181001-GW	Water	10/23/18 10:50	10/24/18 09:45

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116053

Analysis: SVOC

Method: 8270

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/3/19

QA Reviewed by: Richman Stark Date: 01/08/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: Holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No discrepancies, ADR confirmed

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: No discrepancies, ~~ADR confirmed~~ ISTD results verified through manual validation procedures

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: No contamination, confirmed with ADR

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration:
VOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: 10/22/18
SVOC - Date(s) of continuing calibration: 11/2/18
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: Calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS/D 280-435052

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J116053 **Analysis:** Explosives

Method: 8330B

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DoD QSM

Some results were qualified due to surrogate, LCS, and column comparison discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/3/19

QA Reviewed by: Date: 01/08/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks:

WBGMW-020-181001-GW RDX RPD is 56% and qualified (J)

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: Some results were reanalyzed due to low surrogate recoveries outside of holding time. Only original analyses were reported

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes:
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: Reanalyses were analyzed outside of holding time and not noted in ADR. Results were not reported, only original analyses were reported

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be ≥ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be ≤ 20%
Continuing calibration %D must be within ± 15%

Deviations:

Compound	Correlation Coefficient	% RSD	%D	Samples Affected
Tetryl			21.1	CCV 280-435517/12 All ND, no qual
Tetryl			21.7	CCV 280-435517/24
Tetryl			22.0	CCV 280-435517/34

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks:

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks: ADR Qualified for outside surrogates, see ADR OUTPUT

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: See ADR Output for MB contamination

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-435346, LCS 280-435841, LCS 280-436019

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: See ADR for discrepancies and qualification

LEIDOS
Metals Data Review Checklist

Project: RVAAP

SDG No: J116053

Analysis: Metals

Method: 6010/6020/7470

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on an examination of the following:

Case Narrative	MS/MSD Recoveries and Differences
Analytical Holding Times	Duplicate Relative Percent Differences
Sample Preservation	ICP Serial Dilution
Method Calibration	Furnace Atomic Absorption QC
Method and Project Blanks	Re-analysis and Secondary Dilution
LCS Recoveries	Internal Standard Performance (if applicable)

Project specific QA/QC or contract requirements may take priority over validation criteria in this proceudre.

Overall remarks: DoD QSM

Some results were qualified as non-detect due to blank contamination

One result was qualified as estimated due to calibration discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/4/19

QA Reviewed by: Date: 01/08/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No sample results were reanalyzed or diluted

III. Holding Times

Metals - Waters - preserved to pH<2, 180 days from sample collection
Metals - Soils - 180 days from sample collection
Mercury - Waters - preserved to pH<2, 28 days from sample collection
Mercury - Soils - 28 days from sample collection

Deviations:

Sample #	Metals				Mercury			
	Date Collected	Date Analyzed	Days >HT	pH Check	Date Collected	Date Analyzed	Days >HT	pH Check

Actions:

1. If preserved samples exceed holding time, qualify all associated results as estimated (J/UJ).
2. If unpreserved samples exceed holding time, qualify all associated results as unusable (R).
3. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
4. If water samples are not acidified, use professional judgement. Minimally, qualify data as estimated (J) and non-detects unusable (R).
5. If soil samples exceed holding time, use professional judgement to qualify data.

Remarks: All holding times were met

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.)

Initial calibration linearity criteria is r ≥ 0.995
ICV and CCV criteria are ± 10% recovery, low level check standard allowed ± 30%
ICP inter-element check standard criteria ± 20%

Deviations:

Element	Date	Intial Calib.	ICV/ CCV	%R	Samples Affected	
Barium	10/31		CCVL	79	435658/142	None
Vanadium	10/31		CCVL	121	435658/166	116053-1, 3, 4, 5, 6, 7, 8, 9

Actions:

1. If any elements initial claibration linearity is <0.995, qualify the data as estimated (J/UJ)
2. If any elements initial claibration linearity is <0.95, qualify the data as unusable (R)

3a. If any elements ICV or CCV recovery is <90%, qualify the data as estimated (J/UJ)

3b. If any elements ICV or CCV recovery is > 110%, qualify results ≥ MDL as estimated (J). Do not qualify non-detects.

4a. If any elements ICV or CCV recovery is <75%, qualify the data as unusable (R)

4b. If any elements ICV or CCV recovery is > 125% qualify positive results as estimated (J) or non-detects as unusable (R).

4c. If any element ICV or CCV recovery is ≥ 160%, qualify positive results ≥ MDL as unusable (R). Do not qualify non-detects.

5a. If any elements CRI recovery is 50 - 69% (30 - 49% for Sb, Pb, Tb), qualify results ≥ MDL (but < 2 times CRQL) as estimated (J/UJ) and results > 2 times CRQL are not qualified.

5b. If any elements CRI recovery is < 50% (<30% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) and non-detects as unusable (R). Results > 2 times CRQL are estimated (J).

5c. If any elements CRI recovery is > 130% but < 180% (>150% but ≤ 200% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) as esimated (J). And non-detects and results ≥ 2x CRQL are not qualified.

5d. If CRI or (R) > 180% (> 200% for Sb, Pb, Ti), qualify results that are ≥ MDL as unusable (R).

Remarks: ADR did not qualify for calibration discrepancies, see Form 1's

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.) (continued)

Analytical Sequence and MS Tune	(Y/N)
1. Were the appropriate number of ICP standards used?	Y
2. Were the appropriate number of AA standards used?	Y
3. Was calibration performed and documented at the beginning of each run?	Y
4. Were calibration check standards run at 10% frequency or every two hours?	Y
5. Were low level standard checks analyzed at approximately 2X the PQL?	Y
6. Was ICP-MS mass calibration within 0.1 AMU?	Y
7. Was ICP-MS % RSD of the aboslute signals for all analytes < 5%?	Y

Deviations:

Element	Deviation	Samples Affected

Actions:

1. If instrument calibration is questionable, use professional judgement, qualify the data as estimated (J/UJ)
2. If instrument calibration documentation can not be obtained or is inadequate, qualify the data as unusable (R)
3. If mass calibration for ICP-MS was not within 0.1 AMU qualify analyte results as estimated (J/UJ)
4. If % RSD for ICP-MS was > 5% for any analyte in the tuning solution, qualify associated results as estimated (J/UJ).

Results:

V. Blanks (ICB, CCB, Method Blank, Equipment Rinsate Blank)

A. Blank Results

If the blank level is > CRQL for any analyte, check that the analyte's concentration in the samples is > 10 times the blank value. The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account when applying the action level.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
ICB 435658/6	Antimony	0.552	5.52	None
	Vanadium	1.84	18.4	
CCB 435658/141	Copper	1.1	11	None
	Vanadium	1.06	10.6	
CCB 435658/153	Antimony	0.553	5.53	116053-1, 3, 4, 5, 6, 7, 8, 9
	Copper	1.11	11.1	
CCB 435658/165	Copper	1.20	12.0	116053-1, 3, 4, 5, 6, 7, 8, 9
	Vanadium	1.43	14.3	

If additional space is required, use next page

Actions:

1. For blank results ≥ MDL but ≤ CRQL, qualify samples ≥ MDL but < CRQL as CRQL U.
   Use proffessional judgement to qualify sample results exceeding the CRQL.

2a. If blank results are > CRQL: For sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < 10 times the blank qualify results as unusable (R) or estimated (J). No action is taken for sample results ≥ 10 times the blank levels.

2b. If ICB/ CCB results are > CRQL; for sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < blank results, qualify results as not detected (U) at the level of the blank or unusable (R). Use professional judgement for sample results > blank results.

Remarks: MB Contamination included in the ADR output

CCBs were not qualified based on contamination, see Form 1's

V. Blanks (continued)

The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected

V. Blanks (continued)

B. Frequency Requirements (Y/N)

1. Was a method (preparation) blank analyzed for each matrix? Y
2. Was a method blank processed for every analytical batch (20 samples)? Y
3. Was a calibration blank analyzed at 10% frequency or every two hours? Y

Deviations:

Element	Deviation	Samples Affected

Remarks:

C. Baseline Shift Evaluation

List the highest negative blank concentration for each analyte observed in laboratory or project blanks.

Deviations:

Blank ID	Element	Max. Neg Conc.	Action Level	Samples Affected

Actions:

1. If the absolute value of the maximum negative blank result is > the CRQL, qualify positive results as estimated (J) and non-detects as estimated (UJ).

Remarks:

VI. Laboratory Control Sample Evaluation

All LCS recovery criteria are set at 80-120%
An LCS must be analyzed for each matrix and for each digestion batch or set of twenty samples

Deviations:

Element	Date	%R	Matrix	Samples Affected

Actions:

1. If any element's LCS recovery is >120%, qualify positive results as (J).
2. If any element's LCS recovery is 50-79%, qualify positive results as (J) and non-detect results as (UJ)

3a. If any element's LCS recovery is <50%, qualify positive results as (J) and non-detect results as (R)
3b. If the LCS recovery is > 150%, qualify all results as unusable (R).

4. For soil LCS recovery > upper limit, qualify samples results ≥ MDL as estimated (J).
5. For soil LCS recovery < lower limit, qualify results ≥ MDL as esimated (J) and non-detected estimated (UJ).
6. Use professional judgement to qualify data if the LCS frequency criteria are not met.

Remarks: No discrepancies, ADR Confirmed

VII. Matrix Spike Evaluation

All MS recovery criteria are set at 75-125%
An MS must be analyzed for each matrix and for each digestion batch or set of twenty samples
Verify that a field blank or PE sample was not used for spiked sample analysis
Verify that a post-digestion spike was analyzed for those anlytes where the pre-digestion spike recovery is outside control limits and the sample result is < 4 times the spike added.
Project Sample(s) Spiked: _____

Deviations:

Element	Spiked Sample Result	Sample Result	Spike Amount	%R	Samples Affected

Actions:

1. If the sample concentration exceeds the spiking level by a factor of 4X or more, do not qualify the data
2. If the spike recovery is >125%, qualify all positive values as (J).
3. If the spike recovery is between 30-74%, qualify positive values as (J) and non-detect values as estimated (UJ)
4. If the spike recovery is <30%, qualify positive values as (J) and non-detects are qualified unusable (R)
if the post-digestion spike recovery is < 75% (or none was performed); non-detects are qualified as estimated (UJ)
If the post-digestion spike reocvery is ≥ 75%. There is no post-digestion spike performed for mercury.
5. Qualify all samples of similar matrix to the spiked sample in the same manner
6. Use professional judgement to qualify data if the MS frequency criteria are not met.
7. Use professional judgement for qualification of data for unspiked elements

Remarks: NA

VIII. Laboratory Duplicate Evaluation

Duplicate relative percent difference (RPD) for water is 20% (both results > 5 times CDRL) or < CRDL difference (if either result is < 5 times CRDL) and RPD for soil is 35% (if both results are > 5 times CRDL or < 2 times CRDL if either result is < 5 times CRDL).
When duplicate sample values are both less than the reporting level they are considered acceptable
When dupicate sample values are within 5X the reporting level they are acceptable if their absolute difference is within 3X the reporting level
Verify that a field blank on PE sample was not used for duplicate analysis.

Deviations:

Element	Sample #	Duplicate #	RPD	Samples Affected

Actions:

1. If an element's RPD is >20% (water) / >35% (soil), qualify positive results as (J) and non-detect results as (UJ)
2. For low concentrations, if an element's duplicate absolute difference is > 3X the reporting level, qualify positive results as (J) and non-detect results as (UJ)
3. Use professional judgement to qualify data if the duplicate frequency criteria are not met.

Remarks: NA

IX. Inductively Coupled Plasma (ICP) Serial Dilution Analysis

Verify that a field blank or PE sample was not used for serial dilution.
Serial dilution of positive results are performed when values exceed 50X the IDL
Results from serial dilutions should agree within 10% of the original undiluted analysis

Deviations:

Element	Sample #	Sample Result	Serial Dilution	%D	Action

Actions:

1. If the serial dilution %D is >10 and the analyte results are >50X the IDL, qualify all positive results as estimated (J) and non-detects as estimated (UJ).

Remarks: NA

X. Furnace Atomic Absorption QC

A. Duplicate Precision (Y/N)

1. Were duplicate injections performed for all samples? _____
2. Were one point analytical spikes performed for all samples? _____
3. Did duplicate injections agree within ± 20%? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If duplicate injection results are outside ± 20%, qualify positive results as (J) and non-detect results as (UJ)

Remarks: NA

B. Post Digestion Spike Recoveries (Y/N)

1. Did post digestion spike recoveries meet an 85-115% recovery criteria? _____
2. If spike recoveries did not meet recovery criteria were samples analyzed by MSA? _____
3. If MSA was used to analyze samples, was its' correlation coefficient ≥ 0.995? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If post digestion spike recoveries are >115%, qualify positive results as (J) and non-detect results as (U)
2. If post digestion spike recoveries are 11-84%, qualify positive results as (J) and non-detect results as (UJ)
3. If post digestion spike recoveries are <10%, qualify positive results as (R) and non-detect results as (R)
4. If MSA was used to quantitate values and the correlation coefficient was <0.995, qualify data as (J or UJ)
5. If MSA was used to quantitate values and the correlation coefficient was <0.95, qualify data as (R)

Remarks: NA

XI. Inductively Coupled Plasma (ICP) Interference Check Sample Evaluation

Interference check samples should be analyzed at the beginning and end of each analysis run, or at a minimum of twice per 8 hour working shift.
Results for the ICS solution AB must fall within control limits of 20% for analytes included in the solution.
Evaluate the ICS A solution raw data for results with an absolute value ≥ MDL for analytes that are not present in the ICS A solution.

Deviations:

Element	Sample #	Sample Result	Interferent Result	Action

Actions:

1. If the ICS AB %R for an analyte is > 120%, qualify sample results ≥ MDL as estimated (J) and non-detects should not be qualified.
2. If the ICS AB %R for an analyte is 50-79%, qualify sample results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ).
3. If the ICS AB %R for an analyte is <50%, qualify all sample results that are ≥ MDL and all non-detects as as unusable (R).
4. If results ≥ MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents and with analyte concentration that approximate those levels in the ICS A, sample results ≥ MDL should be qualified as estimated (J) and non-detects should not be qualified.
5. If negative results with absolute values > MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents, affected sample results > MDL should be qualified as estimated (J) and non-detects (UJ).

Remarks: ICS results met control limits

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116053 **Analysis:** Cyanide, Alkalinity

Method: 9012, 2320

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/4/19

QA Reviewed by: Date: 01/08/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: Holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: No discrepancies, ADR confirmed

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: NA

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: FWGMW-011-181001-GW **Lab Sample ID: 280-116053-1**
Date Collected: 10/23/18 10:45 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.2	U	11	2.2	0.62	ug/L		11/02/18 19:53	1
Butyl benzyl phthalate	2.2	U	22	2.2	1.1	ug/L		11/02/18 19:53	1
Diethyl phthalate	1.1	U	22	1.1	0.42	ug/L		11/02/18 19:53	1
Dimethyl phthalate	0.55	U	22	0.55	0.23	ug/L		11/02/18 19:53	1
Di-n-butyl phthalate	4.9	U	22	4.9	1.3	ug/L		11/02/18 19:53	1
Di-n-octyl phthalate	1.1	U	22	1.1	0.39	ug/L		11/02/18 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*84*		*43 - 140*	*10/26/18 10:30*	*11/02/18 19:53*	*1*
2-Fluorobiphenyl	*84*		*44 - 119*	*10/26/18 10:30*	*11/02/18 19:53*	*1*
2-Fluorophenol (Surr)	*83*		*19 - 119*	*10/26/18 10:30*	*11/02/18 19:53*	*1*
Nitrobenzene-d5 (Surr)	*83*		*44 - 120*	*10/26/18 10:30*	*11/02/18 19:53*	*1*
Phenol-d5 (Surr)	*87*		*10 - 115*	*10/26/18 10:30*	*11/02/18 19:53*	*1*
Terphenyl-d14 (Surr)	*93*		*50 - 134*	*10/26/18 10:30*	*11/02/18 19:53*	*1*

Client Sample ID: LL1MW-086-181001-GW **Lab Sample ID: 280-116053-3**
Date Collected: 10/22/18 15:35 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.1	U	10	2.1	0.58	ug/L		11/02/18 20:23	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.0	ug/L		11/02/18 20:23	1
Diethyl phthalate	1.0	U	21	1.0	0.39	ug/L		11/02/18 20:23	1
Dimethyl phthalate	0.52	U	21	0.52	0.22	ug/L		11/02/18 20:23	1
Di-n-butyl phthalate	4.5	U	21	4.5	1.2	ug/L		11/02/18 20:23	1
Di-n-octyl phthalate	1.0	U	21	1.0	0.36	ug/L		11/02/18 20:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*90*		*43 - 140*	*10/26/18 10:30*	*11/02/18 20:23*	*1*
2-Fluorobiphenyl	*90*		*44 - 119*	*10/26/18 10:30*	*11/02/18 20:23*	*1*
2-Fluorophenol (Surr)	*91*		*19 - 119*	*10/26/18 10:30*	*11/02/18 20:23*	*1*
Nitrobenzene-d5 (Surr)	*91*		*44 - 120*	*10/26/18 10:30*	*11/02/18 20:23*	*1*
Phenol-d5 (Surr)	*94*		*10 - 115*	*10/26/18 10:30*	*11/02/18 20:23*	*1*
Terphenyl-d14 (Surr)	*103*		*50 - 134*	*10/26/18 10:30*	*11/02/18 20:23*	*1*

Client Sample ID: FWGMW-012-181001-GW **Lab Sample ID: 280-116053-4**
Date Collected: 10/23/18 12:40 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.2	U	11	2.2	0.61	ug/L		11/02/18 20:52	1
Butyl benzyl phthalate	2.2	U	22	2.2	1.1	ug/L		11/02/18 20:52	1
Diethyl phthalate	1.1	U	22	1.1	0.41	ug/L		11/02/18 20:52	1
Dimethyl phthalate	0.55	U	22	0.55	0.23	ug/L		11/02/18 20:52	1
Di-n-butyl phthalate	4.8	U	22	4.8	1.3	ug/L		11/02/18 20:52	1
Di-n-octyl phthalate	1.1	U	22	1.1	0.38	ug/L		11/02/18 20:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*86*		*43 - 140*	*10/26/18 10:30*	*11/02/18 20:52*	*1*
2-Fluorobiphenyl	*88*		*44 - 119*	*10/26/18 10:30*	*11/02/18 20:52*	*1*
2-Fluorophenol (Surr)	*90*		*19 - 119*	*10/26/18 10:30*	*11/02/18 20:52*	*1*
Nitrobenzene-d5 (Surr)	*90*		*44 - 120*	*10/26/18 10:30*	*11/02/18 20:52*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: FWGMW-012-181001-GW **Lab Sample ID: 280-116053-4**
Date Collected: 10/23/18 12:40 **Matrix: Water**
Date Received: 10/24/18 09:45

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Phenol-d5 (Surr)	*95*		*10 - 115*	*10/26/18 10:30*	*11/02/18 20:52*	*1*
Terphenyl-d14 (Surr)	*101*		*50 - 134*	*10/26/18 10:30*	*11/02/18 20:52*	*1*

Client Sample ID: LL1MW-065-181001-GW **Lab Sample ID: 280-116053-5**
Date Collected: 10/23/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.2	U	11	2.2	0.62	ug/L		11/02/18 21:21	1
Butyl benzyl phthalate	2.2	U	22	2.2	1.1	ug/L		11/02/18 21:21	1
Diethyl phthalate	1.1	U	22	1.1	0.42	ug/L		11/02/18 21:21	1
Dimethyl phthalate	0.55	U	22	0.55	0.23	ug/L		11/02/18 21:21	1
Di-n-butyl phthalate	4.8	U	22	4.8	1.3	ug/L		11/02/18 21:21	1
Di-n-octyl phthalate	1.1	U	22	1.1	0.38	ug/L		11/02/18 21:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*85*		*43 - 140*	*10/26/18 10:30*	*11/02/18 21:21*	*1*
2-Fluorobiphenyl	*89*		*44 - 119*	*10/26/18 10:30*	*11/02/18 21:21*	*1*
2-Fluorophenol (Surr)	*87*		*19 - 119*	*10/26/18 10:30*	*11/02/18 21:21*	*1*
Nitrobenzene-d5 (Surr)	*88*		*44 - 120*	*10/26/18 10:30*	*11/02/18 21:21*	*1*
Phenol-d5 (Surr)	*90*		*10 - 115*	*10/26/18 10:30*	*11/02/18 21:21*	*1*
Terphenyl-d14 (Surr)	*102*		*50 - 134*	*10/26/18 10:30*	*11/02/18 21:21*	*1*

Client Sample ID: WBGMW-020-181001-GW **Lab Sample ID: 280-116053-6**
Date Collected: 10/23/18 12:55 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.0	U	10	2.0	0.56	ug/L		11/02/18 21:50	1
Butyl benzyl phthalate	2.0	U	20	2.0	1.0	ug/L		11/02/18 21:50	1
Diethyl phthalate	1.0	U	20	1.0	0.38	ug/L		11/02/18 21:50	1
Dimethyl phthalate	0.50	U	20	0.50	0.21	ug/L		11/02/18 21:50	1
Di-n-butyl phthalate	4.4	U	20	4.4	1.2	ug/L		11/02/18 21:50	1
Di-n-octyl phthalate	1.0	U	20	1.0	0.35	ug/L		11/02/18 21:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*88*		*43 - 140*	*10/26/18 10:30*	*11/02/18 21:50*	*1*
2-Fluorobiphenyl	*91*		*44 - 119*	*10/26/18 10:30*	*11/02/18 21:50*	*1*
2-Fluorophenol (Surr)	*92*		*19 - 119*	*10/26/18 10:30*	*11/02/18 21:50*	*1*
Nitrobenzene-d5 (Surr)	*89*		*44 - 120*	*10/26/18 10:30*	*11/02/18 21:50*	*1*
Phenol-d5 (Surr)	*94*		*10 - 115*	*10/26/18 10:30*	*11/02/18 21:50*	*1*
Terphenyl-d14 (Surr)	*103*		*50 - 134*	*10/26/18 10:30*	*11/02/18 21:50*	*1*

Client Sample ID: FWGMW-004-181001-GW **Lab Sample ID: 280-116053-7**
Date Collected: 10/22/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.1	U	11	2.1	0.59	ug/L		11/02/18 22:19	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.1	ug/L		11/02/18 22:19	1
Diethyl phthalate	1.1	U	21	1.1	0.40	ug/L		11/02/18 22:19	1
Dimethyl phthalate	0.53	U	21	0.53	0.22	ug/L		11/02/18 22:19	1
Di-n-butyl phthalate	4.7	U	21	4.7	1.2	ug/L		11/02/18 22:19	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: FWGMW-004-181001-GW **Lab Sample ID: 280-116053-7**
Date Collected: 10/22/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Di-n-octyl phthalate	1.1	U	21	1.1	0.37	ug/L		11/02/18 22:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*86*		*43 - 140*	*10/26/18 10:30*	*11/02/18 22:19*	*1*
2-Fluorobiphenyl	*89*		*44 - 119*	*10/26/18 10:30*	*11/02/18 22:19*	*1*
2-Fluorophenol (Surr)	*89*		*19 - 119*	*10/26/18 10:30*	*11/02/18 22:19*	*1*
Nitrobenzene-d5 (Surr)	*87*		*44 - 120*	*10/26/18 10:30*	*11/02/18 22:19*	*1*
Phenol-d5 (Surr)	*91*		*10 - 115*	*10/26/18 10:30*	*11/02/18 22:19*	*1*
Terphenyl-d14 (Surr)	*100*		*50 - 134*	*10/26/18 10:30*	*11/02/18 22:19*	*1*

Client Sample ID: WBGMW-006-181001-GW **Lab Sample ID: 280-116053-8**
Date Collected: 10/23/18 09:10 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.0	U	10	2.0	0.57	ug/L		11/02/18 22:48	1
Butyl benzyl phthalate	2.0	U	20	2.0	1.0	ug/L		11/02/18 22:48	1
Diethyl phthalate	1.0	U	20	1.0	0.39	ug/L		11/02/18 22:48	1
Dimethyl phthalate	0.51	U	20	0.51	0.21	ug/L		11/02/18 22:48	1
Di-n-butyl phthalate	4.5	U	20	4.5	1.2	ug/L		11/02/18 22:48	1
Di-n-octyl phthalate	1.0	U	20	1.0	0.36	ug/L		11/02/18 22:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*87*		*43 - 140*	*10/26/18 10:30*	*11/02/18 22:48*	*1*
2-Fluorobiphenyl	*89*		*44 - 119*	*10/26/18 10:30*	*11/02/18 22:48*	*1*
2-Fluorophenol (Surr)	*88*		*19 - 119*	*10/26/18 10:30*	*11/02/18 22:48*	*1*
Nitrobenzene-d5 (Surr)	*90*		*44 - 120*	*10/26/18 10:30*	*11/02/18 22:48*	*1*
Phenol-d5 (Surr)	*89*		*10 - 115*	*10/26/18 10:30*	*11/02/18 22:48*	*1*
Terphenyl-d14 (Surr)	*101*		*50 - 134*	*10/26/18 10:30*	*11/02/18 22:48*	*1*

Client Sample ID: WBGMW-021-181001-GW **Lab Sample ID: 280-116053-9**
Date Collected: 10/23/18 10:50 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.1	U	10	2.1	0.58	ug/L		11/02/18 23:17	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.0	ug/L		11/02/18 23:17	1
Diethyl phthalate	1.0	U	21	1.0	0.40	ug/L		11/02/18 23:17	1
Dimethyl phthalate	0.52	U	21	0.52	0.22	ug/L		11/02/18 23:17	1
Di-n-butyl phthalate	4.6	U	21	4.6	1.2	ug/L		11/02/18 23:17	1
Di-n-octyl phthalate	1.0	U	21	1.0	0.36	ug/L		11/02/18 23:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*88*		*43 - 140*	*10/26/18 10:30*	*11/02/18 23:17*	*1*
2-Fluorobiphenyl	*91*		*44 - 119*	*10/26/18 10:30*	*11/02/18 23:17*	*1*
2-Fluorophenol (Surr)	*89*		*19 - 119*	*10/26/18 10:30*	*11/02/18 23:17*	*1*
Nitrobenzene-d5 (Surr)	*90*		*44 - 120*	*10/26/18 10:30*	*11/02/18 23:17*	*1*
Phenol-d5 (Surr)	*89*		*10 - 115*	*10/26/18 10:30*	*11/02/18 23:17*	*1*
Terphenyl-d14 (Surr)	*107*		*50 - 134*	*10/26/18 10:30*	*11/02/18 23:17*	*1*

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: FWGMW-011-181001-GW **Lab Sample ID: 280-116053-1**
Date Collected: 10/23/18 10:45 **Matrix: Water**
Date Received: 10/24/18 09:45

The ADR appropriately qualified the sample results for all explosives samples; the qualifiers below were already applied to results with the ADR.net reason codes (Lcs,Surr) as needed

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.39	U Q UJ G02	0.98	0.39	0.20	ug/L		10/30/18 19:25	1
1,3-Dinitrobenzene	0.20	U Q P02	0.39	0.20	0.087	ug/L		10/30/18 19:25	1
2,4,6-Trinitrotoluene	0.20	U Q	0.39	0.20	0.071	ug/L		10/30/18 19:25	1
2,4-Dinitrotoluene	0.20	U Q P02	0.39	0.20	0.082	ug/L		10/30/18 19:25	1
2,6-Dinitrotoluene	0.20	U Q P02	0.20	0.20	0.063	ug/L		10/30/18 19:25	1
2-Amino-4,6-dinitrotoluene	0.12	U Q P02	0.20	0.12	0.050	ug/L		10/30/18 19:25	1
2-Nitrotoluene	0.20	U Q P02	0.39	0.20	0.084	ug/L		10/30/18 19:25	1
3-Nitrotoluene	0.20	U Q M P02	0.39	0.20	0.082	ug/L		10/30/18 19:25	1
4-Amino-2,6-dinitrotoluene	0.12	U Q P02	0.20	0.12	0.056	ug/L		10/30/18 19:25	1
4-Nitrotoluene	0.39	U Q M P02	0.98	0.39	0.20	ug/L		10/30/18 19:25	1
HMX	0.20	U Q	0.39	0.20	0.086	ug/L		10/30/18 19:25	1
Nitrobenzene	0.20	U Q	0.39	0.20	0.089	ug/L		10/30/18 19:25	1
Nitroglycerin	2.0	U Q	2.9	2.0	0.90	ug/L		10/30/18 19:25	1
PETN	1.2	U Q	2.0	1.2	0.41	ug/L		10/30/18 19:25	1
RDX	0.12	U Q	0.20	0.12	0.051	ug/L		10/30/18 19:25	1
Tetryl	0.20	U Q	0.23	0.20	0.078	ug/L		10/30/18 19:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*59*	*Q*	*83 - 119*	*10/29/18 12:30*	*10/30/18 19:25*	*1*

Client Sample ID: LL1MW-086-181001-GW **Lab Sample ID: 280-116053-3**
Date Collected: 10/22/18 15:35 **Matrix: Water**
Date Received: 10/24/18 09:45

The ADR appropriately qualified the sample results for all explosives samples; the qualifiers below were already applied to results with the ADR.net reason codes (Lcs,Surr) as needed

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.43	U Q UJ G02	1.1	0.43	0.21	ug/L		10/30/18 15:58	1
1,3-Dinitrobenzene	0.21	U Q P02	0.43	0.21	0.094	ug/L		10/30/18 15:58	1
2,4,6-Trinitrotoluene	0.21	U Q	0.43	0.21	0.077	ug/L		10/30/18 15:58	1
2,4-Dinitrotoluene	0.21	U Q P02	0.43	0.21	0.089	ug/L		10/30/18 15:58	1
2,6-Dinitrotoluene	0.21	U Q P02	0.21	0.21	0.069	ug/L		10/30/18 15:58	1
2-Amino-4,6-dinitrotoluene	0.13	U Q P02	0.21	0.13	0.054	ug/L		10/30/18 15:58	1
2-Nitrotoluene	0.21	U Q P02	0.43	0.21	0.091	ug/L		10/30/18 15:58	1
3-Nitrotoluene	0.21	U Q P02	0.43	0.21	0.089	ug/L		10/30/18 15:58	1
4-Amino-2,6-dinitrotoluene	0.13	U Q P02	0.21	0.13	0.061	ug/L		10/30/18 15:58	1
4-Nitrotoluene	0.43	U Q M P02	1.1	0.43	0.21	ug/L		10/30/18 15:58	1
HMX	0.21	U Q M	0.43	0.21	0.093	ug/L		10/30/18 15:58	1
Nitrobenzene	0.21	U Q	0.43	0.21	0.097	ug/L		10/30/18 15:58	1
Nitroglycerin	2.1	U Q	3.2	2.1	0.98	ug/L		10/30/18 15:58	1
PETN	1.3	U Q	2.1	1.3	0.44	ug/L		10/30/18 15:58	1
RDX	0.13	U Q	0.21	0.13	0.056	ug/L		10/30/18 15:58	1
Tetryl	0.21	U Q	0.26	0.21	0.084	ug/L		10/30/18 15:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*66*	*Q*	*83 - 119*	*10/29/18 12:30*	*10/30/18 15:58*	*1*

Client Sample ID: FWGMW-012-181001-GW **Lab Sample ID: 280-116053-4**
Date Collected: 10/23/18 12:40 **Matrix: Water**
Date Received: 10/24/18 09:45

The ADR appropriately qualified the sample results for all explosives samples; the qualifiers below were already applied to results with the ADR.net reason codes (Lcs,Surr) as needed

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.40	U Q UJ G02	1.0	0.40	0.20	ug/L		10/30/18 19:48	1
1,3-Dinitrobenzene	0.20	U Q UJ G02 P02	0.40	0.20	0.089	ug/L		10/30/18 19:48	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: FWGMW-012-181001-GW **Lab Sample ID: 280-116053-4**
Date Collected: 10/23/18 12:40 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4,6-Trinitrotoluene	0.20	U Q UJ G02	0.40	0.20	0.072	ug/L		10/30/18 19:48	1
2,4-Dinitrotoluene	0.20	U Q P02	0.40	0.20	0.084	ug/L		10/30/18 19:48	1
2,6-Dinitrotoluene	0.20	U Q P02	0.20	0.20	0.065	ug/L		10/30/18 19:48	1
2-Amino-4,6-dinitrotoluene	0.12	U Q P02	0.20	0.12	0.051	ug/L		10/30/18 19:48	1
2-Nitrotoluene	0.20	U Q P02	0.40	0.20	0.086	ug/L		10/30/18 19:48	1
3-Nitrotoluene	0.20	U Q M P02	0.40	0.20	0.083	ug/L		10/30/18 19:48	1
4-Amino-2,6-dinitrotoluene	0.12	U Q P02	0.20	0.12	0.058	ug/L		10/30/18 19:48	1
4-Nitrotoluene	0.40	U Q M P02	1.0	0.40	0.20	ug/L		10/30/18 19:48	1
HMX	0.20	U Q M	0.40	0.20	0.088	ug/L		10/30/18 19:48	1
Nitrobenzene	0.20	U Q	0.40	0.20	0.091	ug/L		10/30/18 19:48	1
Nitroglycerin	2.0	U Q	3.0	2.0	0.92	ug/L		10/30/18 19:48	1
PETN	1.2	U Q	2.0	1.2	0.42	ug/L		10/30/18 19:48	1
RDX	0.12	U Q	0.20	0.12	0.052	ug/L		10/31/18 23:55	1
Tetryl	0.20	U Q	0.24	0.20	0.079	ug/L		10/30/18 19:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*61*	*Q*	*83 - 119*	*10/29/18 12:30*	*10/30/18 19:48*	*1*
1,2-Dinitrobenzene	*54*	*Q*	*83 - 119*	*10/29/18 12:30*	*10/31/18 23:55*	*1*

Client Sample ID: LL1MW-065-181001-GW **Lab Sample ID: 280-116053-5**
Date Collected: 10/23/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

The ADR appropriately qualified the sample results for all explosives samples; the qualifiers below were already applied to results with the ADR.net reason codes (Lcs,Surr) as needed

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.39	U Q UJ G02	0.97	0.39	0.19	ug/L		10/30/18 20:11	1
1,3-Dinitrobenzene	0.19	U Q P02	0.39	0.19	0.086	ug/L		10/30/18 20:11	1
2,4,6-Trinitrotoluene	0.19	U Q	0.39	0.19	0.070	ug/L		10/30/18 20:11	1
2,4-Dinitrotoluene	0.19	U Q P02	0.39	0.19	0.082	ug/L		10/30/18 20:11	1
2,6-Dinitrotoluene	0.19	U Q P02	0.19	0.19	0.063	ug/L		10/30/18 20:11	1
2-Amino-4,6-dinitrotoluene	0.12	U Q P02	0.19	0.12	0.049	ug/L		10/30/18 20:11	1
2-Nitrotoluene	0.19	U Q M P02	0.39	0.19	0.083	ug/L		10/30/18 20:11	1
3-Nitrotoluene	0.19	U Q P02	0.39	0.19	0.081	ug/L		10/30/18 20:11	1
4-Amino-2,6-dinitrotoluene	0.12	U Q P02	0.19	0.12	0.056	ug/L		10/30/18 20:11	1
4-Nitrotoluene	0.39	U Q M P02	0.97	0.39	0.19	ug/L		10/30/18 20:11	1
HMX	0.19	U Q M	0.39	0.19	0.085	ug/L		10/30/18 20:11	1
Nitrobenzene	0.19	U Q	0.39	0.19	0.089	ug/L		10/30/18 20:11	1
Nitroglycerin	1.9	U Q	2.9	1.9	0.90	ug/L		10/30/18 20:11	1
PETN	1.2	U Q	1.9	1.2	0.41	ug/L		10/30/18 20:11	1
RDX	0.12	U Q	0.19	0.12	0.051	ug/L		10/30/18 20:11	1
Tetryl	0.19	U Q	0.23	0.19	0.077	ug/L		10/30/18 20:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*64*	*Q*	*83 - 119*	*10/29/18 12:30*	*10/30/18 20:11*	*1*

Client Sample ID: WBGMW-020-181001-GW **Lab Sample ID: 280-116053-6**
Date Collected: 10/23/18 12:55 **Matrix: Water**
Date Received: 10/24/18 09:45

The ADR appropriately qualified the sample results for all explosives samples; the qualifiers below were already applied to results with the ADR.net reason codes (Lcs,Surr) as needed

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.40	U Q UJ G02	0.99	0.40	0.20	ug/L		10/30/18 20:34	1
1,3-Dinitrobenzene	0.20	U Q UJ G02 P02	0.40	0.20	0.088	ug/L		10/30/18 20:34	1
2,4,6-Trinitrotoluene	0.20	U Q UJ G02	0.40	0.20	0.072	ug/L		10/30/18 20:34	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: WBGMW-020-181001-GW **Lab Sample ID: 280-116053-6**
Date Collected: 10/23/18 12:55 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4-Dinitrotoluene	0.20	U Q UJ G02 P02	0.40	0.20	0.083	ug/L		10/30/18 20:34	1
2,6-Dinitrotoluene	0.20	U Q P02	0.20	0.20	0.064	ug/L		10/30/18 20:34	1
2-Amino-4,6-dinitrotoluene	0.12	U Q P02	0.20	0.12	0.050	ug/L		10/30/18 20:34	1
2-Nitrotoluene	0.20	U Q P02	0.40	0.20	0.085	ug/L		10/30/18 20:34	1
3-Nitrotoluene	0.20	U Q M P02	0.40	0.20	0.083	ug/L		10/30/18 20:34	1
4-Amino-2,6-dinitrotoluene	0.12	U Q P02	0.20	0.12	0.057	ug/L		10/30/18 20:34	1
4-Nitrotoluene	0.40	U Q M P02	0.99	0.40	0.20	ug/L		10/30/18 20:34	1
HMX	0.20	U Q	0.40	0.20	0.087	ug/L		10/30/18 20:34	1
Nitrobenzene	0.20	U Q	0.40	0.20	0.090	ug/L		10/30/18 20:34	1
Nitroglycerin	2.0	U Q	3.0	2.0	0.92	ug/L		10/30/18 20:34	1
PETN	1.2	U Q	2.0	1.2	0.41	ug/L		10/30/18 20:34	1
RDX	**0.10**	**J Q** J G02 M08	0.20	0.12	0.052	ug/L		10/30/18 20:34	1
Tetryl	0.20	U Q UJ G02	0.24	0.20	0.079	ug/L		11/01/18 00:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*67*	*Q*	*83 - 119*	*10/29/18 12:30*	*10/30/18 20:34*	*1*
1,2-Dinitrobenzene	*58*	*Q*	*83 - 119*	*10/29/18 12:30*	*11/01/18 00:30*	*1*

Client Sample ID: FWGMW-004-181001-GW **Lab Sample ID: 280-116053-7**
Date Collected: 10/22/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

The ADR appropriately qualified the sample results for all explosives samples; the qualifiers below were already applied to results with the ADR.net reason codes (Lcs,Surr) as needed

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.40	U Q UJ G02	0.99	0.40	0.20	ug/L		10/30/18 16:21	1
1,3-Dinitrobenzene	0.20	U Q P02	0.40	0.20	0.088	ug/L		10/30/18 16:21	1
2,4,6-Trinitrotoluene	0.20	U Q	0.40	0.20	0.072	ug/L		10/30/18 16:21	1
2,4-Dinitrotoluene	0.20	U Q P02	0.40	0.20	0.083	ug/L		10/30/18 16:21	1
2,6-Dinitrotoluene	0.20	U Q P02	0.20	0.20	0.064	ug/L		10/30/18 16:21	1
2-Amino-4,6-dinitrotoluene	0.12	U Q P02	0.20	0.12	0.050	ug/L		10/30/18 16:21	1
2-Nitrotoluene	0.20	U Q P02	0.40	0.20	0.085	ug/L		10/30/18 16:21	1
3-Nitrotoluene	0.20	U Q P02	0.40	0.20	0.083	ug/L		10/30/18 16:21	1
4-Amino-2,6-dinitrotoluene	0.12	U Q P02	0.20	0.12	0.057	ug/L		10/30/18 16:21	1
4-Nitrotoluene	0.40	U Q M P02	0.99	0.40	0.20	ug/L		10/30/18 16:21	1
HMX	0.20	U Q	0.40	0.20	0.087	ug/L		10/30/18 16:21	1
Nitrobenzene	0.20	U Q	0.40	0.20	0.090	ug/L		10/30/18 16:21	1
Nitroglycerin	2.0	U Q	3.0	2.0	0.91	ug/L		10/30/18 16:21	1
PETN	1.2	U Q	2.0	1.2	0.41	ug/L		10/30/18 16:21	1
RDX	0.12	U Q	0.20	0.12	0.052	ug/L		10/30/18 16:21	1
Tetryl	0.20	U Q	0.24	0.20	0.079	ug/L		10/30/18 16:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*71*	*Q*	*83 - 119*	*10/29/18 12:30*	*10/30/18 16:21*	*1*

Client Sample ID: WBGMW-006-181001-GW **Lab Sample ID: 280-116053-8**
Date Collected: 10/23/18 09:10 **Matrix: Water**
Date Received: 10/24/18 09:45

The ADR appropriately qualified the sample results for all explosives samples; the qualifiers below were already applied to results with the ADR.net reason codes (Lcs,Surr) as needed

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.41	U Q UJ G02	1.0	0.41	0.21	ug/L		10/30/18 20:57	1
1,3-Dinitrobenzene	0.21	U Q UJ G02 P02	0.41	0.21	0.091	ug/L		10/30/18 20:57	1
2,4,6-Trinitrotoluene	0.21	U Q UJ G02	0.41	0.21	0.075	ug/L		10/30/18 20:57	1
2,4-Dinitrotoluene	0.21	U Q UJ G02 P02	0.41	0.21	0.086	ug/L		10/30/18 20:57	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: WBGMW-006-181001-GW **Lab Sample ID: 280-116053-8**
Date Collected: 10/23/18 09:10 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,6-Dinitrotoluene	0.21	U Q UJ G02 P02	0.21	0.21	0.066	ug/L		10/30/18 20:57	1
2-Amino-4,6-dinitrotoluene	0.12	U Q P02	0.21	0.12	0.052	ug/L		10/30/18 20:57	1
2-Nitrotoluene	0.21	U Q P02	0.41	0.21	0.088	ug/L		10/30/18 20:57	1
3-Nitrotoluene	0.21	U Q P02	0.41	0.21	0.086	ug/L		10/30/18 20:57	1
4-Amino-2,6-dinitrotoluene	0.12	U Q P02	0.21	0.12	0.059	ug/L		10/30/18 20:57	1
4-Nitrotoluene	0.41	U Q P02	1.0	0.41	0.21	ug/L		10/30/18 20:57	1
HMX	**2.1**	**Q M** J G02		0.41	0.090	ug/L		10/30/18 20:57	1
Nitrobenzene	0.21	U Q UJ G02		0.41	0.094	ug/L		10/30/18 20:57	1
Nitroglycerin	2.1	U Q UJ G02		3.1	2.1	0.95	ug/L	10/30/18 20:57	1
PETN	1.2	U Q UJ G02		2.1	1.2	0.43	ug/L	10/30/18 20:57	1
RDX	**7.4**	**Q** J G02		0.21	0.12	0.054	ug/L	10/30/18 20:57	1
Tetryl	0.21	U Q UJ G02		0.25	0.21	0.082	ug/L	10/30/18 20:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*55*	*Q*	*83 - 119*	*10/29/18 12:30*	*10/30/18 20:57*	*1*

Client Sample ID: WBGMW-021-181001-GW **Lab Sample ID: 280-116053-9**
Date Collected: 10/23/18 10:50 **Matrix: Water**
Date Received: 10/24/18 09:45

The ADR appropriately qualified the sample results for all explosives samples; the qualifiers below were already applied to results with the ADR.net reason codes (Lcs,Surr) as needed

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.42	U Q UJ G02	1.0	0.42	0.21	ug/L		10/30/18 21:20	1
1,3-Dinitrobenzene	0.21	U Q P02	0.42	0.21	0.093	ug/L		10/30/18 21:20	1
2,4,6-Trinitrotoluene	0.21	U Q P02	0.42	0.21	0.076	ug/L		10/30/18 21:20	1
2,4-Dinitrotoluene	0.21	U Q P02	0.42	0.21	0.088	ug/L		10/30/18 21:20	1
2,6-Dinitrotoluene	0.21	U Q P02	0.21	0.21	0.068	ug/L		10/30/18 21:20	1
2-Amino-4,6-dinitrotoluene	0.13	U Q P02	0.21	0.13	0.053	ug/L		10/30/18 21:20	1
2-Nitrotoluene	0.21	U Q P02	0.42	0.21	0.090	ug/L		10/30/18 21:20	1
3-Nitrotoluene	0.21	U Q P02	0.42	0.21	0.088	ug/L		10/30/18 21:20	1
4-Amino-2,6-dinitrotoluene	0.13	U Q P02	0.21	0.13	0.061	ug/L		10/30/18 21:20	1
4-Nitrotoluene	0.42	U Q M P02	1.0	0.42	0.21	ug/L		10/30/18 21:20	1
HMX	0.21	U Q	0.42	0.21	0.092	ug/L		10/30/18 21:20	1
Nitrobenzene	0.21	U Q	0.42	0.21	0.096	ug/L		10/30/18 21:20	1
Nitroglycerin	2.1	U Q	3.1	2.1	0.97	ug/L		10/30/18 21:20	1
PETN	1.3	U Q	2.1	1.3	0.44	ug/L		10/30/18 21:20	1
RDX	0.13	U Q	0.21	0.13	0.055	ug/L		10/30/18 21:20	1
Tetryl	0.21	U Q	0.25	0.21	0.083	ug/L		10/30/18 21:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*50*	*Q*	*83 - 119*	*10/29/18 12:30*	*10/30/18 21:20*	*1*

Method: 8330B - Nitroaromatics and Nitramines (HPLC) - RE

Client Sample ID: FWGMW-011-181001-GW **Lab Sample ID: 280-116053-1**
Date Collected: 10/23/18 10:45 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.39	U H	0.98	0.39	0.20	ug/L		11/05/18 22:56	1
1,3-Dinitrobenzene	0.20	U H	0.39	0.20	0.087	ug/L		11/05/18 22:56	1
2,4,6-Trinitrotoluene	0.20	U H	0.39	0.20	0.071	ug/L		11/05/18 22:56	1
2,4-Dinitrotoluene	0.20	U H	0.39	0.20	0.082	ug/L		11/05/18 22:56	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) - RE (Continued)

Client Sample ID: FWGMW-011-181001-GW **Lab Sample ID: 280-116053-1**
Date Collected: 10/23/18 10:45 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,6-Dinitrotoluene	0.20	U H	0.20	0.20	0.063	ug/L		11/05/18 22:56	1
2-Amino-4,6-dinitrotoluene	0.12	U H	0.20	0.12	0.050	ug/L		11/05/18 22:56	1
2-Nitrotoluene	0.20	U H	0.39	0.20	0.084	ug/L		11/06/18 23:55	1
3-Nitrotoluene	0.20	U H	0.39	0.20	0.082	ug/L		11/05/18 22:56	1
4-Amino-2,6-dinitrotoluene	0.12	U H	0.20	0.12	0.056	ug/L		11/05/18 22:56	1
4-Nitrotoluene	0.39	U H	0.98	0.39	0.20	ug/L		11/05/18 22:56	1
HMX	0.20	U H M	0.39	0.20	0.086	ug/L		11/05/18 22:56	1
Nitrobenzene	0.20	U H	0.39	0.20	0.089	ug/L		11/05/18 22:56	1
Nitroglycerin	2.0	U H	2.9	2.0	0.90	ug/L		11/05/18 22:56	1
PETN	1.2	U H	2.0	1.2	0.41	ug/L		11/05/18 22:56	1
RDX	0.12	U H	0.20	0.12	0.051	ug/L		11/05/18 22:56	1
Tetryl	0.20	U H	0.23	0.20	0.078	ug/L		11/05/18 22:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*97*		*83 - 119*	*11/02/18 12:09*	*11/05/18 22:56*	*1*
1,2-Dinitrobenzene	*85*		*83 - 119*	*11/02/18 12:09*	*11/06/18 23:55*	*1*

Client Sample ID: LL1MW-086-181001-GW **Lab Sample ID: 280-116053-3**
Date Collected: 10/22/18 15:35 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.41	U H M	1.0	0.41	0.20	ug/L		11/05/18 22:10	1
1,3-Dinitrobenzene	0.20	U H	0.41	0.20	0.090	ug/L		11/05/18 22:10	1
2,4,6-Trinitrotoluene	0.20	U H	0.41	0.20	0.073	ug/L		11/05/18 22:10	1
2,4-Dinitrotoluene	0.20	U H	0.41	0.20	0.085	ug/L		11/05/18 22:10	1
2,6-Dinitrotoluene	0.20	U H	0.20	0.20	0.065	ug/L		11/05/18 22:10	1
2-Amino-4,6-dinitrotoluene	0.12	U H	0.20	0.12	0.051	ug/L		11/05/18 22:10	1
2-Nitrotoluene	0.20	U H	0.41	0.20	0.087	ug/L		11/06/18 22:10	1
3-Nitrotoluene	0.20	U H M	0.41	0.20	0.085	ug/L		11/05/18 22:10	1
4-Amino-2,6-dinitrotoluene	0.12	U H	0.20	0.12	0.058	ug/L		11/05/18 22:10	1
4-Nitrotoluene	0.41	U H	1.0	0.41	0.20	ug/L		11/05/18 22:10	1
HMX	0.20	U H M	0.41	0.20	0.089	ug/L		11/05/18 22:10	1
Nitrobenzene	0.20	U H	0.41	0.20	0.092	ug/L		11/05/18 22:10	1
Nitroglycerin	2.0	U H	3.0	2.0	0.93	ug/L		11/05/18 22:10	1
PETN	1.2	U H	2.0	1.2	0.42	ug/L		11/05/18 22:10	1
RDX	0.12	U H	0.20	0.12	0.053	ug/L		11/05/18 22:10	1
Tetryl	0.20	U H M	0.24	0.20	0.080	ug/L		11/05/18 22:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*100*		*83 - 119*	*11/02/18 12:09*	*11/05/18 22:10*	*1*
1,2-Dinitrobenzene	*87*		*83 - 119*	*11/02/18 12:09*	*11/06/18 22:10*	*1*

Client Sample ID: FWGMW-012-181001-GW **Lab Sample ID: 280-116053-4**
Date Collected: 10/23/18 12:40 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.40	U H	1.0	0.40	0.20	ug/L		11/05/18 23:19	1
1,3-Dinitrobenzene	0.20	U H	0.40	0.20	0.089	ug/L		11/05/18 23:19	1
2,4,6-Trinitrotoluene	0.20	U H	0.40	0.20	0.072	ug/L		11/05/18 23:19	1
2,4-Dinitrotoluene	0.20	U H	0.40	0.20	0.084	ug/L		11/05/18 23:19	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) - RE (Continued)

Client Sample ID: FWGMW-012-181001-GW **Lab Sample ID: 280-116053-4**
Date Collected: 10/23/18 12:40 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,6-Dinitrotoluene	0.20	U H	0.20	0.20	0.065	ug/L		11/05/18 23:19	1
2-Amino-4,6-dinitrotoluene	0.12	U H	0.20	0.12	0.051	ug/L		11/05/18 23:19	1
2-Nitrotoluene	0.20	U H	0.40	0.20	0.086	ug/L		11/07/18 00:30	1
3-Nitrotoluene	0.20	U H	0.40	0.20	0.083	ug/L		11/05/18 23:19	1
4-Amino-2,6-dinitrotoluene	0.12	U H	0.20	0.12	0.058	ug/L		11/05/18 23:19	1
4-Nitrotoluene	0.40	U H M	1.0	0.40	0.20	ug/L		11/05/18 23:19	1
HMX	0.20	U H M	0.40	0.20	0.088	ug/L		11/05/18 23:19	1
Nitrobenzene	0.20	U H	0.40	0.20	0.091	ug/L		11/05/18 23:19	1
Nitroglycerin	2.0	U H	3.0	2.0	0.92	ug/L		11/05/18 23:19	1
PETN	1.2	U H	2.0	1.2	0.42	ug/L		11/05/18 23:19	1
RDX	**0.090**	**J H**	0.20	0.12	0.052	ug/L		11/05/18 23:19	1
Tetryl	0.20	U H	0.24	0.20	0.079	ug/L		11/05/18 23:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*99*		*83 - 119*	*11/02/18 12:09*	*11/05/18 23:19*	*1*
1,2-Dinitrobenzene	*87*		*83 - 119*	*11/02/18 12:09*	*11/07/18 00:30*	*1*

Client Sample ID: LL1MW-065-181001-GW **Lab Sample ID: 280-116053-5**
Date Collected: 10/23/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.48	U H	1.2	0.48	0.24	ug/L		11/06/18 20:02	1
1,3-Dinitrobenzene	0.24	U H	0.48	0.24	0.11	ug/L		11/06/18 20:02	1
2,4,6-Trinitrotoluene	0.24	U H	0.48	0.24	0.087	ug/L		11/06/18 20:02	1
2,4-Dinitrotoluene	0.24	U H	0.48	0.24	0.10	ug/L		11/06/18 20:02	1
2,6-Dinitrotoluene	0.24	U H	0.24	0.24	0.077	ug/L		11/06/18 20:02	1
2-Amino-4,6-dinitrotoluene	0.14	U H	0.24	0.14	0.061	ug/L		11/06/18 20:02	1
2-Nitrotoluene	0.24	U H	0.48	0.24	0.10	ug/L		11/07/18 23:33	1
3-Nitrotoluene	0.24	U H	0.48	0.24	0.10	ug/L		11/06/18 20:02	1
4-Amino-2,6-dinitrotoluene	0.14	U H	0.24	0.14	0.069	ug/L		11/06/18 20:02	1
4-Nitrotoluene	0.48	U H	1.2	0.48	0.24	ug/L		11/06/18 20:02	1
HMX	0.24	U M H	0.48	0.24	0.11	ug/L		11/06/18 20:02	1
Nitrobenzene	0.24	U H	0.48	0.24	0.11	ug/L		11/06/18 20:02	1
Nitroglycerin	2.4	U H	3.6	2.4	1.1	ug/L		11/06/18 20:02	1
PETN	1.4	U H	2.4	1.4	0.50	ug/L		11/06/18 20:02	1
RDX	0.14	U H	0.24	0.14	0.063	ug/L		11/06/18 20:02	1
Tetryl	0.24	U H	0.29	0.24	0.095	ug/L		11/06/18 20:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*100*		*83 - 119*	*11/01/18 12:42*	*11/06/18 20:02*	*1*
1,2-Dinitrobenzene	*89*		*83 - 119*	*11/01/18 12:42*	*11/07/18 23:33*	*1*

Client Sample ID: WBGMW-020-181001-GW **Lab Sample ID: 280-116053-6**
Date Collected: 10/23/18 12:55 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.41	U H	1.0	0.41	0.20	ug/L		11/06/18 21:11	1
1,3-Dinitrobenzene	0.20	U H	0.41	0.20	0.090	ug/L		11/06/18 21:11	1
2,4,6-Trinitrotoluene	0.20	U H	0.41	0.20	0.074	ug/L		11/06/18 21:11	1
2,4-Dinitrotoluene	0.20	U H	0.41	0.20	0.085	ug/L		11/06/18 21:11	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) - RE (Continued)

Client Sample ID: WBGMW-020-181001-GW **Lab Sample ID: 280-116053-6**
Date Collected: 10/23/18 12:55 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,6-Dinitrotoluene	0.20	U H	0.20	0.20	0.066	ug/L		11/06/18 21:11	1
2-Amino-4,6-dinitrotoluene	0.12	U H	0.20	0.12	0.052	ug/L		11/06/18 21:11	1
2-Nitrotoluene	0.20	U H	0.41	0.20	0.087	ug/L		11/08/18 00:08	1
3-Nitrotoluene	0.20	U H	0.41	0.20	0.085	ug/L		11/06/18 21:11	1
4-Amino-2,6-dinitrotoluene	0.12	U H	0.20	0.12	0.059	ug/L		11/06/18 21:11	1
4-Nitrotoluene	0.41	U H	1.0	0.41	0.20	ug/L		11/06/18 21:11	1
HMX	0.20	U M H	0.41	0.20	0.089	ug/L		11/06/18 21:11	1
Nitrobenzene	0.20	U H	0.41	0.20	0.092	ug/L		11/06/18 21:11	1
Nitroglycerin	2.0	U H	3.0	2.0	0.94	ug/L		11/06/18 21:11	1
PETN	1.2	U H	2.0	1.2	0.42	ug/L		11/06/18 21:11	1
RDX	0.12	U H	0.20	0.12	0.053	ug/L		11/06/18 21:11	1
Tetryl	0.20	U H	0.24	0.20	0.081	ug/L		11/06/18 21:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*96*		*83 - 119*	*11/01/18 12:42*	*11/06/18 21:11*	*1*
1,2-Dinitrobenzene	*89*		*83 - 119*	*11/01/18 12:42*	*11/08/18 00:08*	*1*

Client Sample ID: FWGMW-004-181001-GW **Lab Sample ID: 280-116053-7**
Date Collected: 10/22/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.39	U H	0.98	0.39	0.20	ug/L		11/06/18 21:34	1
1,3-Dinitrobenzene	0.20	U H	0.39	0.20	0.087	ug/L		11/06/18 21:34	1
2,4,6-Trinitrotoluene	0.20	U H	0.39	0.20	0.071	ug/L		11/06/18 21:34	1
2,4-Dinitrotoluene	0.20	U H	0.39	0.20	0.082	ug/L		11/06/18 21:34	1
2,6-Dinitrotoluene	0.20	U H	0.20	0.20	0.063	ug/L		11/06/18 21:34	1
2-Amino-4,6-dinitrotoluene	0.12	U H	0.20	0.12	0.050	ug/L		11/06/18 21:34	1
2-Nitrotoluene	0.20	U H Q	0.39	0.20	0.084	ug/L		11/08/18 00:43	1
3-Nitrotoluene	0.20	U H	0.39	0.20	0.081	ug/L		11/06/18 21:34	1
4-Amino-2,6-dinitrotoluene	0.12	U H	0.20	0.12	0.056	ug/L		11/06/18 21:34	1
4-Nitrotoluene	0.39	U H	0.98	0.39	0.20	ug/L		11/06/18 21:34	1
HMX	0.20	U M H	0.39	0.20	0.086	ug/L		11/06/18 21:34	1
Nitrobenzene	0.20	U H	0.39	0.20	0.089	ug/L		11/06/18 21:34	1
Nitroglycerin	2.0	U H	2.9	2.0	0.90	ug/L		11/06/18 21:34	1
PETN	1.2	U H	2.0	1.2	0.41	ug/L		11/06/18 21:34	1
RDX	0.12	U H	0.20	0.12	0.051	ug/L		11/06/18 21:34	1
Tetryl	0.20	U H	0.23	0.20	0.077	ug/L		11/06/18 21:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*99*		*83 - 119*	*11/01/18 12:42*	*11/06/18 21:34*	*1*
1,2-Dinitrobenzene	*81*	*Q*	*83 - 119*	*11/01/18 12:42*	*11/08/18 00:43*	*1*

Client Sample ID: WBGMW-006-181001-GW **Lab Sample ID: 280-116053-8**
Date Collected: 10/23/18 09:10 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.45	U H	1.1	0.45	0.23	ug/L		11/06/18 21:57	1
1,3-Dinitrobenzene	0.23	U M H	0.45	0.23	0.10	ug/L		11/06/18 21:57	1
2,4,6-Trinitrotoluene	0.23	U H	0.45	0.23	0.082	ug/L		11/06/18 21:57	1
2,4-Dinitrotoluene	0.23	U H	0.45	0.23	0.095	ug/L		11/06/18 21:57	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) - RE (Continued)

Client Sample ID: WBGMW-006-181001-GW **Lab Sample ID: 280-116053-8**
Date Collected: 10/23/18 09:10 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,6-Dinitrotoluene	0.23	U H	0.23	0.23	0.073	ug/L		11/06/18 21:57	1
2-Amino-4,6-dinitrotoluene	0.14	U H	0.23	0.14	0.058	ug/L		11/06/18 21:57	1
2-Nitrotoluene	0.23	U H Q	0.45	0.23	0.097	ug/L		11/08/18 01:18	1
3-Nitrotoluene	0.23	U H	0.45	0.23	0.095	ug/L		11/06/18 21:57	1
4-Amino-2,6-dinitrotoluene	0.14	U H	0.23	0.14	0.066	ug/L		11/06/18 21:57	1
4-Nitrotoluene	0.45	U H	1.1	0.45	0.23	ug/L		11/06/18 21:57	1
HMX	**4.2**	**M H**	0.45	0.23	0.10	ug/L		11/06/18 21:57	1
Nitrobenzene	0.23	U H	0.45	0.23	0.10	ug/L		11/06/18 21:57	1
Nitroglycerin	2.3	U H	3.4	2.3	1.0	ug/L		11/06/18 21:57	1
PETN	1.4	U H	2.3	1.4	0.47	ug/L		11/06/18 21:57	1
RDX	**14**	**H**	0.23	0.14	0.059	ug/L		11/06/18 21:57	1
Tetryl	0.23	U H	0.27	0.23	0.090	ug/L		11/06/18 21:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*96*		*83 - 119*	*11/01/18 12:42*	*11/06/18 21:57*	*1*
1,2-Dinitrobenzene	*80*	*Q*	*83 - 119*	*11/01/18 12:42*	*11/08/18 01:18*	*1*

Client Sample ID: WBGMW-021-181001-GW **Lab Sample ID: 280-116053-9**
Date Collected: 10/23/18 10:50 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.44	U H	1.1	0.44	0.22	ug/L		11/06/18 22:20	1
1,3-Dinitrobenzene	0.22	U H	0.44	0.22	0.097	ug/L		11/06/18 22:20	1
2,4,6-Trinitrotoluene	0.22	U H	0.44	0.22	0.080	ug/L		11/06/18 22:20	1
2,4-Dinitrotoluene	0.22	U H	0.44	0.22	0.092	ug/L		11/06/18 22:20	1
2,6-Dinitrotoluene	0.22	U H	0.22	0.22	0.071	ug/L		11/06/18 22:20	1
2-Amino-4,6-dinitrotoluene	0.13	U H	0.22	0.13	0.056	ug/L		11/06/18 22:20	1
2-Nitrotoluene	0.22	U H Q	0.44	0.22	0.094	ug/L		11/08/18 01:53	1
3-Nitrotoluene	0.22	U H	0.44	0.22	0.092	ug/L		11/06/18 22:20	1
4-Amino-2,6-dinitrotoluene	0.13	U H	0.22	0.13	0.063	ug/L		11/06/18 22:20	1
4-Nitrotoluene	0.44	U H	1.1	0.44	0.22	ug/L		11/06/18 22:20	1
HMX	0.22	U M H	0.44	0.22	0.096	ug/L		11/06/18 22:20	1
Nitrobenzene	0.22	U H	0.44	0.22	0.10	ug/L		11/06/18 22:20	1
Nitroglycerin	2.2	U H	3.3	2.2	1.0	ug/L		11/06/18 22:20	1
PETN	1.3	U H	2.2	1.3	0.46	ug/L		11/06/18 22:20	1
RDX	0.13	U H	0.22	0.13	0.057	ug/L		11/06/18 22:20	1
Tetryl	0.22	U H	0.26	0.22	0.087	ug/L		11/06/18 22:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*96*		*83 - 119*	*11/01/18 12:42*	*11/06/18 22:20*	*1*
1,2-Dinitrobenzene	*82*	*Q*	*83 - 119*	*11/01/18 12:42*	*11/08/18 01:53*	*1*

Method: 6010C - Metals (ICP)

Client Sample ID: FWGMW-011-181001-GW **Lab Sample ID: 280-116053-1**
Date Collected: 10/23/18 10:45 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**180**	**J**	300	70	18	ug/L		10/30/18 01:27	1
Calcium	**49000**		1000	140	35	ug/L		10/30/18 01:27	1

Method: 6010C - Metals (ICP) (Continued)

Client Sample ID: FWGMW-011-181001-GW **Lab Sample ID: 280-116053-1**
Date Collected: 10/23/18 10:45 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	6600		100	85	22	ug/L		10/30/18 01:27	1
Magnesium	10000		500	40	11	ug/L		10/30/18 01:27	1
Potassium	1800	J	3000	940	240	ug/L		10/30/18 01:27	1
Sodium	5300		5000	350	120	ug/L		10/30/18 01:27	1

Client Sample ID: LL1MW-086-181001-GW **Lab Sample ID: 280-116053-3**
Date Collected: 10/22/18 15:35 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	2800		300	70	18	ug/L		10/30/18 01:30	1
Calcium	83000		1000	140	35	ug/L		10/30/18 01:30	1
Iron	10000		100	85	22	ug/L		10/30/18 01:30	1
Magnesium	50000		500	40	11	ug/L		10/30/18 01:30	1
Potassium	8500		3000	940	240	ug/L		10/30/18 01:30	1
Sodium	7100		5000	350	120	ug/L		10/30/18 01:30	1

Client Sample ID: FWGMW-012-181001-GW **Lab Sample ID: 280-116053-4**
Date Collected: 10/23/18 12:40 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		10/30/18 01:34	1
Calcium	23000		1000	140	35	ug/L		10/30/18 01:34	1
Iron	3000		100	85	22	ug/L		10/30/18 01:34	1
Magnesium	4800		500	40	11	ug/L		10/30/18 01:34	1
Potassium	1100	J	3000	940	240	ug/L		10/30/18 01:34	1
Sodium	5500		5000	350	120	ug/L		10/30/18 01:34	1

Client Sample ID: LL1MW-065-181001-GW **Lab Sample ID: 280-116053-5**
Date Collected: 10/23/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		10/30/18 01:37	1
Calcium	85000		1000	140	35	ug/L		10/30/18 01:37	1
Iron	31	J	100	85	22	ug/L		10/30/18 01:37	1
Magnesium	19000		500	40	11	ug/L		10/30/18 01:37	1
Potassium	1300	J	3000	940	240	ug/L		10/30/18 01:37	1
Sodium	11000		5000	350	120	ug/L		10/30/18 01:37	1

Client Sample ID: WBGMW-020-181001-GW **Lab Sample ID: 280-116053-6**
Date Collected: 10/23/18 12:55 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		10/30/18 14:44	1
Calcium	32000		1000	140	35	ug/L		10/30/18 14:44	1
Iron	3800		100	85	22	ug/L		10/30/18 14:44	1
Magnesium	10000		500	40	11	ug/L		10/30/18 01:54	1
Potassium	890	J	3000	940	240	ug/L		10/30/18 01:54	1
Sodium	3900	J	5000	350	120	ug/L		10/30/18 01:54	1

Method: 6010C - Metals (ICP)

Client Sample ID: FWGMW-004-181001-GW **Lab Sample ID: 280-116053-7**
Date Collected: 10/22/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**35**	**J**	300	70	18	ug/L		10/30/18 01:57	1
Calcium	**95000**		1000	140	35	ug/L		10/30/18 01:57	1
Iron	**72**	**J**	100	85	22	ug/L		10/30/18 01:57	1
Magnesium	**36000**		500	40	11	ug/L		10/30/18 01:57	1
Potassium	**1100**	**J**	3000	940	240	ug/L		10/30/18 01:57	1
Sodium	**4100**	**J**	5000	350	120	ug/L		10/30/18 01:57	1

Client Sample ID: WBGMW-006-181001-GW **Lab Sample ID: 280-116053-8**
Date Collected: 10/23/18 09:10 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		10/30/18 14:51	1
Calcium	**76000**		1000	140	35	ug/L		10/30/18 14:51	1
Iron	**42**	**J**	100	85	22	ug/L		10/30/18 14:51	1
Magnesium	**24000**		500	40	11	ug/L		10/30/18 02:01	1
Potassium	**1100**	**J**	3000	940	240	ug/L		10/30/18 02:01	1
Sodium	**5500**		5000	350	120	ug/L		10/30/18 02:01	1

Client Sample ID: WBGMW-021-181001-GW **Lab Sample ID: 280-116053-9**
Date Collected: 10/23/18 10:50 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		10/30/18 02:04	1
Calcium	**78000**		1000	140	35	ug/L		10/30/18 02:04	1
Iron	**800**		100	85	22	ug/L		10/30/18 02:04	1
Magnesium	**18000**		500	40	11	ug/L		10/30/18 02:04	1
Potassium	**1500**	**J**	3000	940	240	ug/L		10/30/18 02:04	1
Sodium	**4700**	**J**	5000	350	120	ug/L		10/30/18 02:04	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: FWGMW-011-181001-GW **Lab Sample ID: 280-116053-1**
Date Collected: 10/23/18 10:45 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		10/31/18 04:38	1
Arsenic	**4.3**	**J**	5.0	1.0	0.33	ug/L		10/31/18 04:38	1
Barium	**27**		3.0	0.95	0.29	ug/L		10/31/18 04:38	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		10/31/18 04:38	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		10/31/18 04:38	1
Chromium	1.8	U	10	1.8	0.50	ug/L		10/31/18 04:38	1
Cobalt	**1.3**		1.0	0.20	0.054	ug/L		10/31/18 04:38	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		10/31/18 04:38	1
Lead	**0.18**	**J**	3.0	0.70	0.18	ug/L		10/31/18 04:38	1
Manganese	**280**		3.5	0.95	0.31	ug/L		10/31/18 04:38	1
Nickel	**1.3**	**J**	3.0	1.0	0.30	ug/L		10/31/18 04:38	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		10/31/18 04:38	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		10/31/18 04:38	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		10/31/18 04:38	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		10/31/18 04:38	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: FWGMW-011-181001-GW **Lab Sample ID: 280-116053-1**
Date Collected: 10/23/18 10:45 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Zinc	**2.4**	**J**	20	8.0	2.0	ug/L		10/31/18 04:38	1

Client Sample ID: LL1MW-086-181001-GW **Lab Sample ID: 280-116053-3**
Date Collected: 10/22/18 15:35 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0 **0.40**	**J** U F06	6.0	1.0	0.40	ug/L		10/31/18 04:42	1
Arsenic	**8.5**		5.0	1.0	0.33	ug/L		10/31/18 04:42	1
Barium	**210**		3.0	0.95	0.29	ug/L		10/31/18 04:42	1
Beryllium	**0.28**	**J**	1.0	0.30	0.080	ug/L		10/31/18 04:42	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		10/31/18 04:42	1
Chromium	**6.7**	**J**	10	1.8	0.50	ug/L		10/31/18 04:42	1
Cobalt	**4.5**		1.0	0.20	0.054	ug/L		10/31/18 04:42	1
Copper	**9.1**		2.0	1.8	0.56	ug/L		10/31/18 04:42	1
Lead	**5.2**		3.0	0.70	0.18	ug/L		10/31/18 04:42	1
Manganese	**550**		3.5	0.95	0.31	ug/L		10/31/18 04:42	1
Nickel	**11**		3.0	1.0	0.30	ug/L		10/31/18 04:42	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		10/31/18 04:42	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		10/31/18 04:42	1
Thallium	**0.079**	**J**	1.0	0.20	0.050	ug/L		10/31/18 04:42	1
Vanadium	**6.2**	UJ D05 F07	6.0	2.0	0.50	ug/L		10/31/18 04:42	1
Zinc	**24**		20	8.0	2.0	ug/L		10/31/18 04:42	1

Client Sample ID: FWGMW-012-181001-GW **Lab Sample ID: 280-116053-4**
Date Collected: 10/23/18 12:40 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		10/31/18 04:46	1
Arsenic	**1.4**	**J**	5.0	1.0	0.33	ug/L		10/31/18 04:46	1
Barium	**21**		3.0	0.95	0.29	ug/L		10/31/18 04:46	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		10/31/18 04:46	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		10/31/18 04:46	1
Chromium	1.8	U	10	1.8	0.50	ug/L		10/31/18 04:46	1
Cobalt	**1.5**		1.0	0.20	0.054	ug/L		10/31/18 04:46	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		10/31/18 04:46	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		10/31/18 04:46	1
Manganese	**89**		3.5	0.95	0.31	ug/L		10/31/18 04:46	1
Nickel	**0.98**	**J**	3.0	1.0	0.30	ug/L		10/31/18 04:46	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		10/31/18 04:46	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		10/31/18 04:46	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		10/31/18 04:46	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		10/31/18 04:46	1
Zinc	8.0	U	20	8.0	2.0	ug/L		10/31/18 04:46	1

Client Sample ID: LL1MW-065-181001-GW **Lab Sample ID: 280-116053-5**
Date Collected: 10/23/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		10/31/18 04:50	1
Arsenic	1.0	U	5.0	1.0	0.33	ug/L		10/31/18 04:50	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: LL1MW-065-181001-GW **Lab Sample ID: 280-116053-5**
Date Collected: 10/23/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**47**		3.0	0.95	0.29	ug/L		10/31/18 04:50	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		10/31/18 04:50	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		10/31/18 04:50	1
Chromium	1.8	U	10	1.8	0.50	ug/L		10/31/18 04:50	1
Cobalt	**0.17**	**J**	1.0	0.20	0.054	ug/L		10/31/18 04:50	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		10/31/18 04:50	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		10/31/18 04:50	1
Manganese	**100**		3.5	0.95	0.31	ug/L		10/31/18 04:50	1
Nickel	1.0	U	3.0	1.0	0.30	ug/L		10/31/18 04:50	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		10/31/18 04:50	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		10/31/18 04:50	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		10/31/18 04:50	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		10/31/18 04:50	1
Zinc	8.0	U	20	8.0	2.0	ug/L		10/31/18 04:50	1

Client Sample ID: WBGMW-020-181001-GW **Lab Sample ID: 280-116053-6**
Date Collected: 10/23/18 12:55 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		10/31/18 04:54	1
Arsenic	**1.2**	**J**	5.0	1.0	0.33	ug/L		10/31/18 04:54	1
Barium	**15**		3.0	0.95	0.29	ug/L		10/31/18 04:54	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		10/31/18 04:54	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		10/31/18 04:54	1
Chromium	1.8	U	10	1.8	0.50	ug/L		10/31/18 04:54	1
Cobalt	**0.48**	**J**	1.0	0.20	0.054	ug/L		10/31/18 04:54	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		10/31/18 04:54	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		10/31/18 04:54	1
Manganese	**290**		3.5	0.95	0.31	ug/L		10/31/18 04:54	1
Nickel	**2.7**	**J**	3.0	1.0	0.30	ug/L		10/31/18 04:54	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		10/31/18 04:54	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		10/31/18 04:54	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		10/31/18 04:54	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		10/31/18 04:54	1
Zinc	8.0	U	20	8.0	2.0	ug/L		10/31/18 04:54	1

Client Sample ID: FWGMW-004-181001-GW **Lab Sample ID: 280-116053-7**
Date Collected: 10/22/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		10/31/18 04:57	1
Arsenic	1.0	U	5.0	1.0	0.33	ug/L		10/31/18 04:57	1
Barium	**21**		3.0	0.95	0.29	ug/L		10/31/18 04:57	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		10/31/18 04:57	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		10/31/18 04:57	1
Chromium	1.8	U	10	1.8	0.50	ug/L		10/31/18 04:57	1
Cobalt	0.20	U	1.0	0.20	0.054	ug/L		10/31/18 04:57	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		10/31/18 04:57	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		10/31/18 04:57	1
Manganese	**3.1**	**J**	3.5	0.95	0.31	ug/L		10/31/18 04:57	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: FWGMW-004-181001-GW **Lab Sample ID: 280-116053-7**
Date Collected: 10/22/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nickel	**0.30**	**J**	3.0	1.0	0.30	ug/L		10/31/18 04:57	1
Selenium	**0.94**	**J**	5.0	2.0	0.70	ug/L		10/31/18 04:57	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		10/31/18 04:57	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		10/31/18 04:57	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		10/31/18 04:57	1
Zinc	8.0	U	20	8.0	2.0	ug/L		10/31/18 04:57	1

Client Sample ID: WBGMW-006-181001-GW **Lab Sample ID: 280-116053-8**
Date Collected: 10/23/18 09:10 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		10/31/18 05:01	1
Arsenic	1.0	U	5.0	1.0	0.33	ug/L		10/31/18 05:01	1
Barium	**23**		3.0	0.95	0.29	ug/L		10/31/18 05:01	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		10/31/18 05:01	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		10/31/18 05:01	1
Chromium	1.8	U	10	1.8	0.50	ug/L		10/31/18 05:01	1
Cobalt	**0.34**	**J**	1.0	0.20	0.054	ug/L		10/31/18 05:01	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		10/31/18 05:01	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		10/31/18 05:01	1
Manganese	**150**		3.5	0.95	0.31	ug/L		10/31/18 05:01	1
Nickel	1.0	U	3.0	1.0	0.30	ug/L		10/31/18 05:01	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		10/31/18 05:01	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		10/31/18 05:01	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		10/31/18 05:01	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		10/31/18 05:01	1
Zinc	8.0	U	20	8.0	2.0	ug/L		10/31/18 05:01	1

Client Sample ID: WBGMW-021-181001-GW **Lab Sample ID: 280-116053-9**
Date Collected: 10/23/18 10:50 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		10/31/18 05:05	1
Arsenic	**6.2**		5.0	1.0	0.33	ug/L		10/31/18 05:05	1
Barium	**52**		3.0	0.95	0.29	ug/L		10/31/18 05:05	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		10/31/18 05:05	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		10/31/18 05:05	1
Chromium	1.8	U	10	1.8	0.50	ug/L		10/31/18 05:05	1
Cobalt	**0.23**	**J**	1.0	0.20	0.054	ug/L		10/31/18 05:05	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		10/31/18 05:05	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		10/31/18 05:05	1
Manganese	**280**		3.5	0.95	0.31	ug/L		10/31/18 05:05	1
Nickel	1.0	U	3.0	1.0	0.30	ug/L		10/31/18 05:05	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		10/31/18 05:05	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		10/31/18 05:05	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		10/31/18 05:05	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		10/31/18 05:05	1
Zinc	8.0	U	20	8.0	2.0	ug/L		10/31/18 05:05	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: FWGMW-011-181001-GW **Lab Sample ID: 280-116053-1**
Date Collected: 10/23/18 10:45 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 19:25	1

Client Sample ID: LL1MW-086-181001-GW **Lab Sample ID: 280-116053-3**
Date Collected: 10/22/18 15:35 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 19:27	1

Client Sample ID: FWGMW-012-181001-GW **Lab Sample ID: 280-116053-4**
Date Collected: 10/23/18 12:40 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 19:30	1

Client Sample ID: LL1MW-065-181001-GW **Lab Sample ID: 280-116053-5**
Date Collected: 10/23/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 19:32	1

Client Sample ID: WBGMW-020-181001-GW **Lab Sample ID: 280-116053-6**
Date Collected: 10/23/18 12:55 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 19:34	1

Client Sample ID: FWGMW-004-181001-GW **Lab Sample ID: 280-116053-7**
Date Collected: 10/22/18 15:00 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 19:36	1

Client Sample ID: WBGMW-006-181001-GW **Lab Sample ID: 280-116053-8**
Date Collected: 10/23/18 09:10 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 19:43	1

Client Sample ID: WBGMW-021-181001-GW **Lab Sample ID: 280-116053-9**
Date Collected: 10/23/18 10:50 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/06/18 19:45	1

General Chemistry

Client Sample ID: FWGMW-010-181001-GW **Lab Sample ID: 280-116053-2**
Date Collected: 10/22/18 15:35 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/05/18 17:29	1

Client: Leidos, Inc. TestAmerica Job ID: 280-116053-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

General Chemistry

Client Sample ID: LL1MW-086-181001-GW **Lab Sample ID: 280-116053-3**
Date Collected: 10/22/18 15:35 **Matrix: Water**
Date Received: 10/24/18 09:45

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	150		5.0	5.0	1.1	mg/L		10/27/18 00:53	1

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116053-1						
Method: 2320B						
LL1MW-086-181001-GW	280-116053-3	AQ	N	METHOD	10/22/2018 3:35:00 PM	S2AVE
Method: 6010C						
FWGMW-004-181001-GW	280-116053-7	AQ	N	3010A	10/22/2018 3:00:00 PM	S2AVE
FWGMW-011-181001-GW	280-116053-1	AQ	N	3010A	10/23/2018 10:45:00 AM	S2AVE
FWGMW-012-181001-GW	280-116053-4	AQ	N	3010A	10/23/2018 12:40:00 PM	S2AVE
LL1MW-065-181001-GW	280-116053-5	AQ	N	3010A	10/23/2018 3:00:00 PM	S2AVE
LL1MW-086-181001-GW	280-116053-3	AQ	N	3010A	10/22/2018 3:35:00 PM	S2AVE
WBGMW-006-181001-GW	280-116053-8	AQ	N	3010A	10/23/2018 9:10:00 AM	S2AVE
WBGMW-020-181001-GW	280-116053-6	AQ	N	3010A	10/23/2018 12:55:00 PM	S2AVE
WBGMW-021-181001-GW	280-116053-9	AQ	N	3010A	10/23/2018 10:50:00 AM	S2AVE
Method: 6010C-KNA						
FWGMW-004-181001-GW	280-116053-7	AQ	N	3010A	10/22/2018 3:00:00 PM	S2AVE
FWGMW-011-181001-GW	280-116053-1	AQ	N	3010A	10/23/2018 10:45:00 AM	S2AVE
FWGMW-012-181001-GW	280-116053-4	AQ	N	3010A	10/23/2018 12:40:00 PM	S2AVE
LL1MW-065-181001-GW	280-116053-5	AQ	N	3010A	10/23/2018 3:00:00 PM	S2AVE
LL1MW-086-181001-GW	280-116053-3	AQ	N	3010A	10/22/2018 3:35:00 PM	S2AVE
WBGMW-006-181001-GW	280-116053-8	AQ	N	3010A	10/23/2018 9:10:00 AM	S2AVE
WBGMW-020-181001-GW	280-116053-6	AQ	N	3010A	10/23/2018 12:55:00 PM	S2AVE
WBGMW-021-181001-GW	280-116053-9	AQ	N	3010A	10/23/2018 10:50:00 AM	S2AVE
Method: 6020A						
FWGMW-004-181001-GW	280-116053-7	AQ	N	3020A	10/22/2018 3:00:00 PM	S2AVE
FWGMW-011-181001-GW	280-116053-1	AQ	N	3020A	10/23/2018 10:45:00 AM	S2AVE
FWGMW-012-181001-GW	280-116053-4	AQ	N	3020A	10/23/2018 12:40:00 PM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 6020A						
LL1MW-065-181001-GW	280-116053-5	AQ	N	3020A	10/23/2018 3:00:00 PM	S2AVE
LL1MW-086-181001-GW	280-116053-3	AQ	N	3020A	10/22/2018 3:35:00 PM	S2AVE
WBGMW-006-181001-GW	280-116053-8	AQ	N	3020A	10/23/2018 9:10:00 AM	S2AVE
WBGMW-020-181001-GW	280-116053-6	AQ	N	3020A	10/23/2018 12:55:00 PM	S2AVE
WBGMW-021-181001-GW	280-116053-9	AQ	N	3020A	10/23/2018 10:50:00 AM	S2AVE
Method: 7470A						
FWGMW-004-181001-GW	280-116053-7	AQ	N	7470A	10/22/2018 3:00:00 PM	S2AVE
FWGMW-011-181001-GW	280-116053-1	AQ	N	7470A	10/23/2018 10:45:00 AM	S2AVE
FWGMW-012-181001-GW	280-116053-4	AQ	N	7470A	10/23/2018 12:40:00 PM	S2AVE
LL1MW-065-181001-GW	280-116053-5	AQ	N	7470A	10/23/2018 3:00:00 PM	S2AVE
LL1MW-086-181001-GW	280-116053-3	AQ	N	7470A	10/22/2018 3:35:00 PM	S2AVE
WBGMW-006-181001-GW	280-116053-8	AQ	N	7470A	10/23/2018 9:10:00 AM	S2AVE
WBGMW-020-181001-GW	280-116053-6	AQ	N	7470A	10/23/2018 12:55:00 PM	S2AVE
WBGMW-021-181001-GW	280-116053-9	AQ	N	7470A	10/23/2018 10:50:00 AM	S2AVE
Method: 8270D						
FWGMW-004-181001-GW	280-116053-7	AQ	N	3520C	10/22/2018 3:00:00 PM	S2AVE
FWGMW-011-181001-GW	280-116053-1	AQ	N	3520C	10/23/2018 10:45:00 AM	S2AVE
FWGMW-012-181001-GW	280-116053-4	AQ	N	3520C	10/23/2018 12:40:00 PM	S2AVE
LL1MW-065-181001-GW	280-116053-5	AQ	N	3520C	10/23/2018 3:00:00 PM	S2AVE
LL1MW-086-181001-GW	280-116053-3	AQ	N	3520C	10/22/2018 3:35:00 PM	S2AVE
WBGMW-006-181001-GW	280-116053-8	AQ	N	3520C	10/23/2018 9:10:00 AM	S2AVE
WBGMW-020-181001-GW	280-116053-6	AQ	N	3520C	10/23/2018 12:55:00 PM	S2AVE
WBGMW-021-181001-GW	280-116053-9	AQ	N	3520C	10/23/2018 10:50:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method		Collection Date	Validation Code
Method: 8330B							
FWGMW-004-181001-GW	280-116053-7	AQ	N		3535	10/22/2018 3:00:00 PM	S2AVE
FWGMW-011-181001-GW	280-116053-1	AQ	N		3535	10/23/2018 10:45:00 AM	S2AVE
FWGMW-012-181001-GW	280-116053-4	AQ	N		3535	10/23/2018 12:40:00 PM	S2AVE
LL1MW-065-181001-GW	280-116053-5	AQ	N		3535	10/23/2018 3:00:00 PM	S2AVE
LL1MW-086-181001-GW	280-116053-3	AQ	N		3535	10/22/2018 3:35:00 PM	S2AVE
WBGMW-006-181001-GW	280-116053-8	AQ	N		3535	10/23/2018 9:10:00 AM	S2AVE
WBGMW-020-181001-GW	280-116053-6	AQ	N		3535	10/23/2018 12:55:00 PM	S2AVE
WBGMW-021-181001-GW	280-116053-9	AQ	N		3535	10/23/2018 10:50:00 AM	S2AVE
Method: 9012B							
FWGMW-010-181001-GW	280-116053-2	AQ	N	Gen Prep		10/22/2018 3:35:00 PM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116053-1
EDD Filename: 280-116053-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	SR
Matrix Spike/Matrix Spike Duplicates	N
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	SR
Compound Quantitation	SR
Field Duplicates	N
Field Triplicates	N
Field Blanks	N

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: **6010C**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-434973/1-A	10/30/2018 12:29:00 AM	CALCIUM	54.2 ug/L	FWGMW-004-181001-GW FWGMW-011-181001-GW FWGMW-012-181001-GW LL1MW-065-181001-GW LL1MW-086-181001-GW WBGMW-006-181001-GW WBGMW-020-181001-GW WBGMW-021-181001-GW

**CONFIRMED, results >AL, no qual

Method: **8330B**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436019/1-A	11/5/2018 5:34:00 PM	2-NITROTOLUENE	0.345 ug/L	FWGMW-011-181001-GW FWGMW-012-181001-GW LL1MW-086-181001-GW

**CONFIRMED, for reanalyzed samples not reported, no qual

Surrogate Outlier Report

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8330B
Matrix: AQ

Sample ID (Analysis Type)	Surrogate	Sample % Recovery	% Recovery Limits	Affected Compounds	Flag
FWGMW-004-181001-GW	1,2-DINITROBENZENE	71	83.00-119.00	All Target Analytes	J (all detects) UJ (all non-detects)
FWGMW-011-181001-GW	1,2-DINITROBENZENE	59	83.00-119.00	All Target Analytes	J(all detects) UJ(all non-detects)
FWGMW-012-181001-GW	1,2-DINITROBENZENE	61	83.00-119.00	All Target Analytes	J(all detects) UJ(all non-detects)
LL1MW-065-181001-GW	1,2-DINITROBENZENE	64	83.00-119.00	All Target Analytes	J(all detects) UJ(all non-detects)
LL1MW-086-181001-GW	1,2-DINITROBENZENE	66	83.00-119.00	All Target Analytes	J(all detects) UJ(all non-detects)
WBGMW-006-181001-GW	1,2-DINITROBENZENE	55	83.00-119.00	All Target Analytes	J(all detects) UJ(all non-detects)
WBGMW-020-181001-GW	1,2-DINITROBENZENE	67	83.00-119.00	All Target Analytes	J(all detects) UJ(all non-detects)
WBGMW-021-181001-GW	1,2-DINITROBENZENE	50	83.00-119.00	All Target Analytes	J(all detects) UJ(all non-detects)

*CONFIRMED and qualified

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8330B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCS 280-435346/2-A (FWGMW-004-181001-GW FWGMW-011-181001-GW FWGMW-012-181001-GW LL1MW-065-181001-GW LL1MW-086-181001-GW WBGMW-006-181001-GW WBGMW-020-181001-GW WBGMW-021-181001-GW)	1,3-DINITROBENZENE 2,4-DINITROTOLUENE 2,6-DINITROTOLUENE 2-AMINO-4,6-DINITROTOLUENE 2-NITROTOLUENE 3-NITROTOLUENE 4-AMINO-2,6-DINITROTOLUENE 4-NITROTOLUENE	77 70 71 65 61 55 61 69	- - - - - - - -	78.00-120.00 78.00-120.00 77.00-127.00 79.00-120.00 70.00-127.00 73.00-125.00 76.00-125.00 71.00-127.00	- - - - - - - -	1,3-DINITROBENZENE 2,4-DINITROTOLUENE 2,6-DINITROTOLUENE 2-AMINO-4,6-DINITROTOLUENE 2-NITROTOLUENE 3-NITROTOLUENE 4-AMINO-2,6-DINITROTOLUENE 4-NITROTOLUENE	J (all detects) UJ (all non-detects)

*CONFIRMED and qualified

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGMW-004-181001-GW	ALUMINUM	J	35	300	LOQ	ug/L	J (all detects)
	IRON	J	72	100	LOQ	ug/L	
FWGMW-011-181001-GW	ALUMINUM	J	180	300	LOQ	ug/L	J (all detects)
LL1MW-065-181001-GW	IRON	J	31	100	LOQ	ug/L	J (all detects)
WBGMW-006-181001-GW	IRON	J	42	100	LOQ	ug/L	J (all detects)

Method: 6010C-KNA

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGMW-004-181001-GW	POTASSIUM	J	1100	3000	LOQ	ug/L	J (all detects)
	SODIUM	J	4100	5000	LOQ	ug/L	
FWGMW-011-181001-GW	POTASSIUM	J	1800	3000	LOQ	ug/L	J (all detects)
FWGMW-012-181001-GW	POTASSIUM	J	1100	3000	LOQ	ug/L	J (all detects)
LL1MW-065-181001-GW	POTASSIUM	J	1300	3000	LOQ	ug/L	J (all detects)
WBGMW-006-181001-GW	POTASSIUM	J	1100	3000	LOQ	ug/L	J (all detects)
WBGMW-020-181001-GW	POTASSIUM	J	890	3000	LOQ	ug/L	J (all detects)
	SODIUM	J	3900	5000	LOQ	ug/L	
WBGMW-021-181001-GW	POTASSIUM	J	1500	3000	LOQ	ug/L	J (all detects)
	SODIUM	J	4700	5000	LOQ	ug/L	

Method: 6020A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGMW-004-181001-GW	MANGANESE	J	3.1	3.5	LOQ	ug/L	J (all detects)
	NICKEL	J	0.30	3.0	LOQ	ug/L	
	SELENIUM	J	0.94	5.0	LOQ	ug/L	
FWGMW-011-181001-GW	ARSENIC	J	4.3	5.0	LOQ	ug/L	J (all detects)
	LEAD	J	0.18	3.0	LOQ	ug/L	
	NICKEL	J	1.3	3.0	LOQ	ug/L	
	ZINC	J	2.4	20	LOQ	ug/L	
FWGMW-012-181001-GW	ARSENIC	J	1.4	5.0	LOQ	ug/L	J (all detects)
	NICKEL	J	0.98	3.0	LOQ	ug/L	
LL1MW-065-181001-GW	COBALT	J	0.17	1.0	LOQ	ug/L	J (all detects)
LL1MW-086-181001-GW	ANTIMONY	J	0.40	6.0	LOQ	ug/L	J (all detects)
	BERYLLIUM	J	0.28	1.0	LOQ	ug/L	
	CHROMIUM	J	6.7	10	LOQ	ug/L	
	THALLIUM	J	0.079	1.0	LOQ	ug/L	
WBGMW-006-181001-GW	COBALT	J	0.34	1.0	LOQ	ug/L	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6020A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
WBGMW-020-181001-GW	ARSENIC	J	1.2	5.0	LOQ	ug/L	
	COBALT	J	0.48	1.0	LOQ	ug/L	J (all detects)
	NICKEL	J	2.7	3.0	LOQ	ug/L	
WBGMW-021-181001-GW	COBALT	J	0.23	1.0	LOQ	ug/L	J (all detects)

Method: 8330B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGMW-012-181001-GW	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	J H	0.090	0.20	LOQ	ug/L	J (all detects)
WBGMW-020-181001-GW	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	J Q	0.10	0.20	LOQ	ug/L	J (all detects)

Data Qualifier Summary

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6010C **Matrix:** AQ

Sample ID: FWGMW-004-181001-GW **Collected:** 10/22/2018 3:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
IRON	72	J	85	LOD	100	LOQ	ug/L	J	RI
ALUMINUM	35	J	70	LOD	300	LOQ	ug/L	J	RI

Sample ID: FWGMW-011-181001-GW **Collected:** 10/23/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	180	J	70	LOD	300	LOQ	ug/L	J	RI

Sample ID: LL1MW-065-181001-GW **Collected:** 10/23/2018 3:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
IRON	31	J	85	LOD	100	LOQ	ug/L	J	RI

Sample ID: WBGMW-006-181001-GW **Collected:** 10/23/2018 9:10:00 AM **Analysis Type:** RE/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
IRON	42	J	85	LOD	100	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6010C-KNA **Matrix:** AQ

Sample ID: FWGMW-004-181001-GW **Collected:** 10/22/2018 3:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1100	J	940	LOD	3000	LOQ	ug/L	J	RI
SODIUM	4100	J	350	LOD	5000	LOQ	ug/L	J	RI

Sample ID: FWGMW-011-181001-GW **Collected:** 10/23/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1800	J	940	LOD	3000	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 6010C-KNA **Matrix:** AQ

Sample ID: FWGMW-012-181001-GW **Collected:** 10/23/2018 12:40:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1100	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: LL1MW-065-181001-GW **Collected:** 10/23/2018 3:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1300	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: WBGMW-006-181001-GW **Collected:** 10/23/2018 9:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1100	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: WBGMW-020-181001-GW **Collected:** 10/23/2018 12:55:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	890	J	940	LOD	3000	LOQ	ug/L	J	RI
SODIUM	3900	J	350	LOD	5000	LOQ	ug/L	J	RI

Sample ID: WBGMW-021-181001-GW **Collected:** 10/23/2018 10:50:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1500	J	940	LOD	3000	LOQ	ug/L	J	RI
SODIUM	4700	J	350	LOD	5000	LOQ	ug/L	J	RI

Method Category: METALS

Method: 6020A **Matrix:** AQ

Sample ID: FWGMW-004-181001-GW **Collected:** 10/22/2018 3:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MANGANESE	3.1	J	0.95	LOD	3.5	LOQ	ug/L	J	RI
NICKEL	0.30	J	1.0	LOD	3.0	LOQ	ug/L	J	RI
SELENIUM	0.94	J	2.0	LOD	5.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 6020A **Matrix:** AQ

Sample ID: FWGMW-011-181001-GW **Collected:** 10/23/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	4.3	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
LEAD	0.18	J	0.70	LOD	3.0	LOQ	ug/L	J	RI
NICKEL	1.3	J	1.0	LOD	3.0	LOQ	ug/L	J	RI
ZINC	2.4	J	8.0	LOD	20	LOQ	ug/L	J	RI

Sample ID: FWGMW-012-181001-GW **Collected:** 10/23/2018 12:40:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	1.4	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
NICKEL	0.98	J	1.0	LOD	3.0	LOQ	ug/L	J	RI

Sample ID: LL1MW-065-181001-GW **Collected:** 10/23/2018 3:00:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
COBALT	0.17	J	0.20	LOD	1.0	LOQ	ug/L	J	RI

Sample ID: LL1MW-086-181001-GW **Collected:** 10/22/2018 3:35:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.40	J	1.0	LOD	6.0	LOQ	ug/L	J	RI
BERYLLIUM	0.28	J	0.30	LOD	1.0	LOQ	ug/L	J	RI
CHROMIUM	6.7	J	1.8	LOD	10	LOQ	ug/L	J	RI
THALLIUM	0.079	J	0.20	LOD	1.0	LOQ	ug/L	J	RI

Sample ID: WBGMW-006-181001-GW **Collected:** 10/23/2018 9:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
COBALT	0.34	J	0.20	LOD	1.0	LOQ	ug/L	J	RI

Sample ID: WBGMW-020-181001-GW **Collected:** 10/23/2018 12:55:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	1.2	J	1.0	LOD	5.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 6020A **Matrix:** AQ

Sample ID: WBGMW-020-181001-GW **Collected:** 10/23/2018 12:55:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
COBALT	0.48	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
NICKEL	2.7	J	1.0	LOD	3.0	LOQ	ug/L	J	RI

Sample ID: WBGMW-021-181001-GW **Collected:** 10/23/2018 10:50:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
COBALT	0.23	J	0.20	LOD	1.0	LOQ	ug/L	J	RI

Method Category: SVOA

Method: 8330B **Matrix:** AQ

Sample ID: FWGMW-004-181001-GW **Collected:** 10/22/2018 3:00:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3,5-TRINITROBENZENE	0.40	U Q	0.40	LOD	0.99	LOQ	ug/L	UJ	Surr
1,3-DINITROBENZENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
2,4,6-TRINITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Surr
2,4-DINITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
2,6-DINITROTOLUENE	0.20	U Q	0.20	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
2-AMINO-4,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
2-NITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
3-NITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
4-AMINO-2,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
4-NITROTOLUENE	0.40	U Q M	0.40	LOD	0.99	LOQ	ug/L	UJ	Lcs, Surr
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.12	U Q	0.12	LOD	0.20	LOQ	ug/L	UJ	Surr
NITROBENZENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Surr
NITROGLYCERINE	2.0	U Q	2.0	LOD	3.0	LOQ	ug/L	UJ	Surr
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Surr
PETN	1.2	U Q	1.2	LOD	2.0	LOQ	ug/L	UJ	Surr
Tetryl	0.20	U Q	0.20	LOD	0.24	LOQ	ug/L	UJ	Surr

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: SVOA

Method: 8330B **Matrix:** AQ

Sample ID: FWGMW-011-181001-GW **Collected:** 10/23/2018 10:45:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3,5-TRINITROBENZENE	0.39	U Q	0.39	LOD	0.98	LOQ	ug/L	UJ	Surr
1,3-DINITROBENZENE	0.20	U Q	0.20	LOD	0.39	LOQ	ug/L	UJ	Lcs, Surr
2,4,6-TRINITROTOLUENE	0.20	U Q	0.20	LOD	0.39	LOQ	ug/L	UJ	Surr
2,4-DINITROTOLUENE	0.20	U Q	0.20	LOD	0.39	LOQ	ug/L	UJ	Lcs, Surr
2,6-DINITROTOLUENE	0.20	U Q	0.20	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
2-AMINO-4,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
2-NITROTOLUENE	0.20	U Q	0.20	LOD	0.39	LOQ	ug/L	UJ	Lcs, Surr
3-NITROTOLUENE	0.20	U Q M	0.20	LOD	0.39	LOQ	ug/L	UJ	Lcs, Surr
4-AMINO-2,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
4-NITROTOLUENE	0.39	U Q M	0.39	LOD	0.98	LOQ	ug/L	UJ	Lcs, Surr
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.12	U Q	0.12	LOD	0.20	LOQ	ug/L	UJ	Surr
NITROBENZENE	0.20	U Q	0.20	LOD	0.39	LOQ	ug/L	UJ	Surr
NITROGLYCERINE	2.0	U Q	2.0	LOD	2.9	LOQ	ug/L	UJ	Surr
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.20	U Q	0.20	LOD	0.39	LOQ	ug/L	UJ	Surr
PETN	1.2	U Q	1.2	LOD	2.0	LOQ	ug/L	UJ	Surr
Tetryl	0.20	U Q	0.20	LOD	0.23	LOQ	ug/L	UJ	Surr

Sample ID: FWGMW-012-181001-GW **Collected:** 10/23/2018 12:40:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3,5-TRINITROBENZENE	0.40	U Q	0.40	LOD	1.0	LOQ	ug/L	UJ	Surr
1,3-DINITROBENZENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
2,4,6-TRINITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Surr
2,4-DINITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
2,6-DINITROTOLUENE	0.20	U Q	0.20	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
2-AMINO-4,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
2-NITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
3-NITROTOLUENE	0.20	U Q M	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
4-AMINO-2,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
4-NITROTOLUENE	0.40	U Q M	0.40	LOD	1.0	LOQ	ug/L	UJ	Lcs, Surr
NITROBENZENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Surr
NITROGLYCERINE	2.0	U Q	2.0	LOD	3.0	LOQ	ug/L	UJ	Surr

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: SVOA

Method: 8330B **Matrix:** AQ

Sample ID: FWGMW-012-181001-GW **Collected:** 10/23/2018 12:40:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.20	U Q M	0.20	LOD	0.40	LOQ	ug/L	UJ	Surr
PETN	1.2	U Q	1.2	LOD	2.0	LOQ	ug/L	UJ	Surr
Tetryl	0.20	U Q	0.20	LOD	0.24	LOQ	ug/L	UJ	Surr

Sample ID: LL1MW-065-181001-GW **Collected:** 10/23/2018 3:00:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3,5-TRINITROBENZENE	0.39	U Q	0.39	LOD	0.97	LOQ	ug/L	UJ	Surr
1,3-DINITROBENZENE	0.19	U Q	0.19	LOD	0.39	LOQ	ug/L	UJ	Lcs, Surr
2,4,6-TRINITROTOLUENE	0.19	U Q	0.19	LOD	0.39	LOQ	ug/L	UJ	Surr
2,4-DINITROTOLUENE	0.19	U Q	0.19	LOD	0.39	LOQ	ug/L	UJ	Lcs, Surr
2,6-DINITROTOLUENE	0.19	U Q	0.19	LOD	0.19	LOQ	ug/L	UJ	Lcs, Surr
2-AMINO-4,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.19	LOQ	ug/L	UJ	Lcs, Surr
2-NITROTOLUENE	0.19	U Q M	0.19	LOD	0.39	LOQ	ug/L	UJ	Lcs, Surr
3-NITROTOLUENE	0.19	U Q	0.19	LOD	0.39	LOQ	ug/L	UJ	Lcs, Surr
4-AMINO-2,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.19	LOQ	ug/L	UJ	Lcs, Surr
4-NITROTOLUENE	0.39	U Q M	0.39	LOD	0.97	LOQ	ug/L	UJ	Lcs, Surr
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.12	U Q	0.12	LOD	0.19	LOQ	ug/L	UJ	Surr
NITROBENZENE	0.19	U Q	0.19	LOD	0.39	LOQ	ug/L	UJ	Surr
NITROGLYCERINE	1.9	U Q	1.9	LOD	2.9	LOQ	ug/L	UJ	Surr
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.19	U Q M	0.19	LOD	0.39	LOQ	ug/L	UJ	Surr
PETN	1.2	U Q	1.2	LOD	1.9	LOQ	ug/L	UJ	Surr
Tetryl	0.19	U Q	0.19	LOD	0.23	LOQ	ug/L	UJ	Surr

Sample ID: LL1MW-086-181001-GW **Collected:** 10/22/2018 3:35:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3,5-TRINITROBENZENE	0.43	U Q	0.43	LOD	1.1	LOQ	ug/L	UJ	Surr
1,3-DINITROBENZENE	0.21	U Q	0.21	LOD	0.43	LOQ	ug/L	UJ	Lcs, Surr
2,4,6-TRINITROTOLUENE	0.21	U Q	0.21	LOD	0.43	LOQ	ug/L	UJ	Surr
2,4-DINITROTOLUENE	0.21	U Q	0.21	LOD	0.43	LOQ	ug/L	UJ	Lcs, Surr
2,6-DINITROTOLUENE	0.21	U Q	0.21	LOD	0.21	LOQ	ug/L	UJ	Lcs, Surr

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: SVOA

Method: 8330B **Matrix:** AQ

Sample ID: LL1MW-086-181001-GW **Collected:** 10/22/2018 3:35:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-AMINO-4,6-DINITROTOLUENE	0.13	U Q	0.13	LOD	0.21	LOQ	ug/L	UJ	Lcs, Surr
2-NITROTOLUENE	0.21	U Q	0.21	LOD	0.43	LOQ	ug/L	UJ	Lcs, Surr
3-NITROTOLUENE	0.21	U Q	0.21	LOD	0.43	LOQ	ug/L	UJ	Lcs, Surr
4-AMINO-2,6-DINITROTOLUENE	0.13	U Q	0.13	LOD	0.21	LOQ	ug/L	UJ	Lcs, Surr
4-NITROTOLUENE	0.43	U Q M	0.43	LOD	1.1	LOQ	ug/L	UJ	Lcs, Surr
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.13	U Q	0.13	LOD	0.21	LOQ	ug/L	UJ	Surr
NITROBENZENE	0.21	U Q	0.21	LOD	0.43	LOQ	ug/L	UJ	Surr
NITROGLYCERINE	2.1	U Q	2.1	LOD	3.2	LOQ	ug/L	UJ	Surr
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.21	U Q M	0.21	LOD	0.43	LOQ	ug/L	UJ	Surr
PETN	1.3	U Q	1.3	LOD	2.1	LOQ	ug/L	UJ	Surr
Tetryl	0.21	U Q	0.21	LOD	0.26	LOQ	ug/L	UJ	Surr

Sample ID: WBGMW-006-181001-GW **Collected:** 10/23/2018 9:10:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3,5-TRINITROBENZENE	0.41	U Q	0.41	LOD	1.0	LOQ	ug/L	UJ	Surr
1,3-DINITROBENZENE	0.21	U Q	0.21	LOD	0.41	LOQ	ug/L	UJ	Lcs, Surr
2,4,6-TRINITROTOLUENE	0.21	U Q	0.21	LOD	0.41	LOQ	ug/L	UJ	Surr
2,4-DINITROTOLUENE	0.21	U Q	0.21	LOD	0.41	LOQ	ug/L	UJ	Lcs, Surr
2,6-DINITROTOLUENE	0.21	U Q	0.21	LOD	0.21	LOQ	ug/L	UJ	Lcs, Surr
2-AMINO-4,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.21	LOQ	ug/L	UJ	Lcs, Surr
2-NITROTOLUENE	0.21	U Q	0.21	LOD	0.41	LOQ	ug/L	UJ	Lcs, Surr
3-NITROTOLUENE	0.21	U Q	0.21	LOD	0.41	LOQ	ug/L	UJ	Lcs, Surr
4-AMINO-2,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.21	LOQ	ug/L	UJ	Lcs, Surr
4-NITROTOLUENE	0.41	U Q	0.41	LOD	1.0	LOQ	ug/L	UJ	Lcs, Surr
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	7.4	Q	0.12	LOD	0.21	LOQ	ug/L	J	Surr
NITROBENZENE	0.21	U Q	0.21	LOD	0.41	LOQ	ug/L	UJ	Surr
NITROGLYCERINE	2.1	U Q	2.1	LOD	3.1	LOQ	ug/L	UJ	Surr
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2.1	Q M	0.21	LOD	0.41	LOQ	ug/L	J	Surr
PETN	1.2	U Q	1.2	LOD	2.1	LOQ	ug/L	UJ	Surr
Tetryl	0.21	U Q	0.21	LOD	0.25	LOQ	ug/L	UJ	Surr

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: SVOA

Method: 8330B **Matrix:** AQ

Sample ID: WBGMW-020-181001-GW **Collected:** 10/23/2018 12:55:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3,5-TRINITROBENZENE	0.40	U Q	0.40	LOD	0.99	LOQ	ug/L	UJ	Surr
1,3-DINITROBENZENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
2,4,6-TRINITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Surr
2,4-DINITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
2,6-DINITROTOLUENE	0.20	U Q	0.20	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
2-AMINO-4,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
2-NITROTOLUENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
3-NITROTOLUENE	0.20	U Q M	0.20	LOD	0.40	LOQ	ug/L	UJ	Lcs, Surr
4-AMINO-2,6-DINITROTOLUENE	0.12	U Q	0.12	LOD	0.20	LOQ	ug/L	UJ	Lcs, Surr
4-NITROTOLUENE	0.40	U Q M	0.40	LOD	0.99	LOQ	ug/L	UJ	Lcs, Surr
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.10	J Q	0.12	LOD	0.20	LOQ	ug/L	J	RI, Surr
NITROBENZENE	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Surr
NITROGLYCERINE	2.0	U Q	2.0	LOD	3.0	LOQ	ug/L	UJ	Surr
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.20	U Q	0.20	LOD	0.40	LOQ	ug/L	UJ	Surr
PETN	1.2	U Q	1.2	LOD	2.0	LOQ	ug/L	UJ	Surr

Sample ID: WBGMW-021-181001-GW **Collected:** 10/23/2018 10:50:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3,5-TRINITROBENZENE	0.42	U Q	0.42	LOD	1.0	LOQ	ug/L	UJ	Surr
1,3-DINITROBENZENE	0.21	U Q	0.21	LOD	0.42	LOQ	ug/L	UJ	Lcs, Surr
2,4,6-TRINITROTOLUENE	0.21	U Q	0.21	LOD	0.42	LOQ	ug/L	UJ	Surr
2,4-DINITROTOLUENE	0.21	U Q	0.21	LOD	0.42	LOQ	ug/L	UJ	Lcs, Surr
2,6-DINITROTOLUENE	0.21	U Q	0.21	LOD	0.21	LOQ	ug/L	UJ	Lcs, Surr
2-AMINO-4,6-DINITROTOLUENE	0.13	U Q	0.13	LOD	0.21	LOQ	ug/L	UJ	Lcs, Surr
2-NITROTOLUENE	0.21	U Q	0.21	LOD	0.42	LOQ	ug/L	UJ	Lcs, Surr
3-NITROTOLUENE	0.21	U Q	0.21	LOD	0.42	LOQ	ug/L	UJ	Lcs, Surr
4-AMINO-2,6-DINITROTOLUENE	0.13	U Q	0.13	LOD	0.21	LOQ	ug/L	UJ	Lcs, Surr
4-NITROTOLUENE	0.42	U Q M	0.42	LOD	1.0	LOQ	ug/L	UJ	Lcs, Surr
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.13	U Q	0.13	LOD	0.21	LOQ	ug/L	UJ	Surr
NITROBENZENE	0.21	U Q	0.21	LOD	0.42	LOQ	ug/L	UJ	Surr
NITROGLYCERINE	2.1	U Q	2.1	LOD	3.1	LOQ	ug/L	UJ	Surr

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: SVOA

Method: 8330B **Matrix:** AQ

Sample ID: WBGMW-021-181001-GW **Collected:** 10/23/2018 10:50:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.21	U Q	0.21	LOD	0.42	LOQ	ug/L	UJ	Surr
PETN	1.3	U Q	1.3	LOD	2.1	LOQ	ug/L	UJ	Surr
Tetryl	0.21	U Q	0.21	LOD	0.25	LOQ	ug/L	UJ	Surr

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116053-1 **Laboratory: TA DEN**

EDD Filename: 280-116053-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
Lcs	Laboratory Control Spike Lower Estimation
Mb	Method Blank Contamination
RI	Reporting Limit Trace Value
Surr	Surrogate/Tracer Recovery Lower Estimation

* denotes a non-reportable result

LEIDOS
Laboratory Data Verification Checklist

Project: RVAAP

SDG No: J116186

Analyte Group: 8/260B

Sample Matrix: Water

EDD (Y/N):

Disposition of Data Package:

NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)		Y
Check for LCS results (e.g., org. form III, inorg. form XII)		Y
Check for method blank results (e.g., org. form IV, inorg. form III)		Y
Check for MS/MSD results (e.g., inorg. form V)		Y
Check for laboratory duplicate results (e.g., inorg. form VI)		NA
Check for Method Calibration and Run Documentation		
organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	method linear range	Y
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	Y
other:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	sample run sequence	Y

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Brooke Francis Date: 12/27/18

QA Review By: Date: 01/04/2019

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: J116186

Analyte Group: VOC, SVOC, Pest/PCB, Explosives, Metals, Wet Chem

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:

Comments:

Sample Summary

Client: Leidos, Inc. TestAmerica Job ID: 280-116186-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-116186-1	FWGmw-024-181001-GW	Water	10/25/18 10:05	10/26/18 13:19
280-116186-2	FWGmw-017-181001-GW	Water	10/25/18 09:50	10/26/18 13:19
280-116186-3	FWGmw-017-181002-GW	Water	10/25/18 09:50	10/26/18 13:19
280-116186-4	FWGTB-181006-TB	Water	10/25/18 09:50	10/26/18 13:19
280-116186-5	FWGmw-021-181001-GW	Water	10/25/18 14:10	10/26/18 13:19
280-116186-6	FWGmw-021-181002-GW	Water	10/25/18 14:10	10/26/18 13:19
280-116186-7	FWGTB-181005-TB	Water	10/25/18 14:10	10/26/18 13:19
280-116186-8	LL1mw-080-181001-GW	Water	10/24/18 15:45	10/26/18 13:19
280-116186-9	FWGmw-015-181001-GW	Water	10/24/18 15:30	10/26/18 13:19
280-116186-10	LL3mw-246-181001-GW	Water	10/25/18 13:20	10/26/18 13:19
280-116186-11	LL2mw-059-181001-GW	Water	10/25/18 09:12	10/26/18 13:19
280-116186-12	LL2mw-267-181001-GW	Water	10/25/18 12:35	10/26/18 13:19
280-116186-13	LL1mw-081-181001-GW	Water	10/25/18 13:50	10/26/18 13:19
280-116186-14	LL2mw-272-181001-GW	Water	10/25/18 15:00	10/26/18 13:19
280-116186-15	FWGTB-181004-TB	Water	10/25/18 00:00	10/26/18 13:19

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116186

Laboratory: Test America

Analysis: VOC

Method: 8260B

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

Some results were qualified as non-detect due to trip blank contamination

Some results were qualified as estimated due to holding time discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/27/18

QA Reviewed by: Richman Stark Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed
FWGmw-024-181001-GW	10/25	11/9	HT + 1 DAY					
FWGmw-017-181001-GW	10/25	11/9						
FWGTB-181006-TB	10/25	11/9						
FWGmw-021-181001-GW	10/25	11/9						
FWGTB-181005-TB	10/25	11/9						
FWGTB-181004-TB	10/25	11/13	HT + 5 DAYS					

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: ADR did not list holding time discrepancies, see Form 1's

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: Surrogates met control limits

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: All IS results met control limits

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)
10/25	FWGTB-181006-TB		Methylene Chloride	0.39 ug/L
10/25	FWGTB-181005-TB		Methylene Chloride	0.34 ug/L

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MB were free from contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected
Methylene Chloride	0.39 ug/L	3.9 ug/L	FWGmw-017-181001-GW, 181002-GW
Methylene Chloride	0.34 ug/L	3.4 ug/L	FWGmw-021-181001-GW, 181002-GW

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: ADR did not qualify for TB, see Form 1's

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable (Y) or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: 9/28/18 10/29/18 10/22/18
VOC - Date(s) of continuing calibration: 11/8/18 11/12/18
Was the 12 hour critieria met? (Y) or N

SVOC- Date of initial calibration:
SVOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: All calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-437301, LCS 280-436917

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R results met control limits

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116186

Analysis: SVOC, PAH

Method: 8270/SIM

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/27/18

QA Reviewed by: Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
FWGmw-021-181001-GW					50						
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: Surrogates met control limits for regular 8270D

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: All IS results met control limits

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: See ADR output for blank contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration:
VOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: 11/12/18 10/29/18
SVOC - Date(s) of continuing calibration: 11/13/18 11/1/18
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: All calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-435687 LCS 280-435408

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R results met control limits

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116186

Analysis: Pesticides/PCB

Method: 8081/8082

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

Some sample results were qualified due to MS/MSD, column comparison, and calibration discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/27/18

QA Reviewed by: Richman Stark Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: Column comparison discrepancies were not noted in ADR, see Form 1's)

Calibration discrepancies were not noted in the narrative

pcbS

The following samples required a sulfuric acid clean-up, via EPA Method 3665A, to reduce matrix interferences: FWGmw-021-181001-GW (280-116186-5), (LCS 280-436278/2-A), (MB 280-436278/1-A) and (280-116303-B-1-A).

The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: FWGmw-021-181001-GW (280-116186-5), (LCS 280-436278/2-A), (MB 280-436278/1-A) and (280-116303-B-1-A).

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: All surrogates met control limits

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: ~~IS results met control limits~~

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MBs were free from contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: _____
VOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: _____
SVOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: NA

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected
	% D		
Toxaphene	- 32.56		ICV 433303/34 COL 1 SAMPLES J / UJ
Toxaphene	- 26.36		ICV 433303/33 COL 2
ICV 280-438388/39 A1248	16 / 20		SAMPLE A1248 = U NO QUAL

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: ADR did not qualify for ICV, see Form 1's

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: FWGmw-021-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: See ADR output for discrepancies, ~~not qualified by ADR, see Form 1's~~ ADR QUAL AS NEEDED

X. Laboratory Control Sample Information

General LCS Criteria: percent recovery (%R)	VOC	SVOC	Pest	PCB
	80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-435801 LCS 280-436278

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R results met control limits

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J116186 **Analysis:** Explosives
Method: 8330B
Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DoD QSM

Some results were qualified due to MS/MSD and column comparison discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/27/18

QA Reviewed by: Richman Stark Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: RESULTS FROM BOTH COLUMNS WERE REPORTED BY LAB; AND ~~Some samples were reanalyzed for RDX and HMX and~~ the highest result was ~~reported~~ MARKED AS FINAL

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes:
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be $\leq$ 20%
Continuing calibration %D must be within $\pm$ 15%

Deviations:

Compound	Correlation Coefficient	% RSD	%D	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks: All calibration results met control limits

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks: See ADR output for discrepancies, however results were ND and did not require qualification

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MB was free from contamination

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: FWGmw-021-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks: See ADR outputs for qualification

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-435504

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R results met control limits

Leidos - Project Specific
Perchlorate by Mass Spectrometry Methods Data Verification/Validation

Project: RVAAP

SDG No: J116186

Analysis: Perchlorate

Method: 6860

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Isotope Ratios
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution
Mas Tuning	

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

* **If this SDG requires full validation; recalculations from the raw data are required where noted in the verification/validation checklist. Attach all calculations at the end of the validation checklist.**

Data verification and data validation are essentially identical, with the exception that validation requires results to be recalculated from the raw data.

Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded

Verification/Validation by: Brooke Francis

Date: 12/27/18

QA Reviewed by:

Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: NBo additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Waters - Cool 4°C with headspace to reduce anaerobic biodegradation; analysis within 28 days of sample collection

Soils - Cool 4°C ; extraction within 28 days of sample collection; analysis within 18 days of sample extraction

Deviations:

Sample #	Date Collected	Date Analyzed	Comments

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: Holding times were met

IV. $^{35}CL/^{37}CL$ Isotope Ratios

List any field samples, field QC samples, or laboratory QC samples where the $^{35}CL/^{37}CL$ Isotope ratio does not fall within 2.3 to 2.8:

Deviations:

Sample #	Provide the ratio below:

Sample #	Provide the ratio below:

Actions:

1. If the $^{35}CL/^{37}CL$ isotope ratio does not meet acceptance criteria the sample must be reanalyzed.
2. If any sample is reported with an unacceptable $^{35}CL/^{37}CL$ isotope ratio, the results must be rejected (R)

Remarks: Ration met control limits

V. Internal Standards Performance

Internal standard areas must be between ± 50% of the average areas from the initial calibrations (Y/N)
Relative retention times must be within 0.98-1.02 (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time is outside acceptance criteria use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: IS met control limits

VI. Blanks

A method blank was reported for each aqueous analytical batch and one method blank was reported for each soil extraction batch? (Y/N)
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Sample ID #	Compound	Conc.

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Sample ID #	Compound	Conc.

Remarks: MB and CCBs were free from contamination

VI. Blanks (continued)

Calculate the action level based on 5X the highest blank concentration

Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If contamination exists in method blanks < 1/2 LOQ, samples must be re-extracted and reanalyzed. Use professional judgement to qualify the data if this occurs.
5. If method blanks were not analyzed use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

Mass Calibration Acceptable? (Y/N)

Date of initial calibration: _____
r>0.995? (Y/N)
ICV ≤ 15% drift? (Y/N)

Date(s) of continuing calibration: _____
CCV analyzed at beginning of analytical sequence and after every 10 field sample? (Y/N)
CCV ≤ 15% drift? (Y/N)

LOQ Standard ≤ 30% drift? (Y/N)
LOQ Standard analyzed daily? (Y/N)

Deviations: Calibration results met control limits

Compound	Date	r value	%Drift	Samples Affected

Actions:

* **If this SDG requires full validation; recalculate the r value, a CCV% Drift, and a LOQ % Drift from the raw data. Attach all calculations at the end of the validation checklist.**

1. If initial calibration curve criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. Only evaluate the ICV if it brackets field samples. If the ICV does bracket field samples, then CCV actions apply
3. If a CCV is above the upper control limit, qualify detects as estimated (J). Nondects require no action.
4. If a CCV is below the lower control limit but > 30% recovery, qualify results as estimated (J/UJ).
5. If a CCV is ≤ 30% recovery, qualify detects as estimated (J) and nondetects as rejected (R)
6. If CCVs were not analyzed at the proper frequency, use professional judgement.
7. If an acceptable mass calibration was not performed, then all data should be rejected (R)
8. If a LOQ standard is above the upper control limit, qualify detects as estimated (J). Nondects require no action.
9. If a LOQ standard is below the lower control limit but > 10% recovery, qualify results as estimated (J/UJ).
10. If a LOQ standard is ≤ 10% recovery, qualify detects as estimated (J) and nondetects as rejected (R)
11. If LOQ standards were not analyzed at the proper frequency, use professional judgement.

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:
percent recovery (%R) 80-120% recovery
relative percent difference (RPD) 20% RPD

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ).
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

* **If this SDG requires full validation; recalculate at least one % recovery and one % RPD from the raw data. Attach all calculations at the end of the validation checklist.**

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
Percent recovery (%R) = 80-120% recovery
RPD if LCSD performed = 20% RPD

Laboratory LCS Identifications: LCS 280-436718/13

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

*** If this SDG requires full validation; recalculate at least one % recovery and one % RPD (if LCSD was performed) from the raw data. Attach all calculations at the end of the validation checklist.**

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R met control limits

LEIDOS
Metals Data Review Checklist

Project: RVAAP

SDG No: J116186

Laboratory: Test America

Analysis: Metals

Method: 6010/6020/7470

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on an examination of the following:

Case Narrative	MS/MSD Recoveries and Differences
Analytical Holding Times	Duplicate Relative Percent Differences
Sample Preservation	ICP Serial Dilution
Method Calibration	Furnace Atomic Absorption QC
Method and Project Blanks	Re-analysis and Secondary Dilution
LCS Recoveries	Internal Standard Performance (if applicable)

Project specific QA/QC or contract requirements may take priority over validation criteria in this proceudre.

Overall remarks: DoD QSM

Some results were qualified as estimated due to calibration, serial dilution, PDS, and MS/MS discrepancies

Some results were qualified as non-detect due to blank contamination

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/27

QA Reviewed by: Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Metals - Waters - preserved to pH<2, 180 days from sample collection
Metals - Soils - 180 days from sample collection
Mercury - Waters - preserved to pH<2, 28 days from sample collection
Mercury - Soils - 28 days from sample collection

Deviations:

Sample #	Metals				Mercury			
	Date Collected	Date Analyzed	Days >HT	pH Check	Date Collected	Date Analyzed	Days >HT	pH Check

Actions:

1. If preserved samples exceed holding time, qualify all associated results as estimated (J/UJ).
2. If unpreserved samples exceed holding time, qualify all associated results as unusable (R).
3. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
4. If water samples are not acidified, use professional judgement. Minimally, qualify data as estimated (J) and non-detects unusable (R).
5. If soil samples exceed holding time, use professional judgement to qualify data.

Remarks: All holding times were met

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.)

Initial calibration linearity criteria is r ≥ 0.995
ICV and CCV criteria are ± 10% recovery, low level check standard allowed ± 30%
ICP inter-element check standard criteria ± 20%

Deviations:

Element	Date	Intial Calib.	ICV/ CCV	%R	Samples Affected	
Sodium			CCVL	128	436427-67	116186-9, 10, 11, 12
Beryllium			CCV	121	437281-76	116186-5, 9, 10, 11, 12
Selenium			CCV	119		↓
Beryllium			ICVL	75	437281-11	None
Nickel			CCVL	127	437281-58	116186-1, 2
Vanadium			CCVL	126		↓
Nickel			CCVL	133	437281-70	116186-1, 2, 5, 9, 10, 11, 12
Vanadium			CCVL	133		↓
Vanadium			CCVL	128	437281-78	116186-5, 9, 10, 11, 12
Beryllium			ICVL	75	437321-11	None
Nickel			CCVL	125	437321-62	116186-1, 2, 9, 10
Cadmium				121		↓

Actions:

1. If any elements initial claibration linearity is <0.995, qualify the data as estimated (J/UJ)
2. If any elements initial claibration linearity is <0.95, qualify the data as unusable (R)

3a. If any elements ICV or CCV recovery is <90%, qualify the data as estimated (J/UJ)

3b. If any elements ICV or CCV recovery is > 110%, qualify results ≥ MDL as estimated (J).
Do not qualify non-detects.

4a. If any elements ICV or CCV recovery is <75%, qualify the data as unusable (R)

4b. If any elements ICV or CCV recovery is > 125% qualify positive results as estimated (J) or non-detects as unusable (R).

4c. If any element ICV or CCV recovery is ≥ 160%, qualify positive results ≥ MDL as unusable (R).
Do not qualify non-detects.

5a. If any elements CRI recovery is 50 - 69% (30 - 49% for Sb, Pb, Tb), qualify results ≥ MDL (but < 2 times CRQL) as estimated (J/UJ) and results > 2 times CRQL are not qualified.

5b. If any elements CRI recovery is < 50% (<30% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) and non-detects as unusable (R). Results > 2 times CRQL are estimated (J).

5c. If any elements CRI recovery is > 130% but < 180% (>150% but ≤ 200% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) as esimated (J). And non-detects and results ≥ 2x CRQL are not qualified.

5d. If CRI or (R) > 180% (> 200% for Sb, Pb, Ti), qualify results that are ≥ MDL as unusable (R).

Remarks: _____

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.) (continued)

Analytical Sequence and MS Tune	(Y/N)
1. Were the appropriate number of ICP standards used?	Y
2. Were the appropriate number of AA standards used?	Y
3. Was calibration performed and documented at the beginning of each run?	Y
4. Were calibration check standards run at 10% frequency or every two hours?	Y
5. Were low level standard checks analyzed at approximately 2X the PQL?	Y
6. Was ICP-MS mass calibration within 0.1 AMU?	Y
7. Was ICP-MS % RSD of the aboslute signals for all analytes < 5%?	Y

Deviations:

Element	Deviation	Samples Affected

Actions:

1. If instrument calibration is questionable, use professional judgement, qualify the data as estimated (J/UJ)
2. If instrument calibration documentation can not be obtained or is inadequate, qualify the data as unusable (R)
3. If mass calibration for ICP-MS was not within 0.1 AMU qualify analyte results as estimated (J/UJ)
4. If % RSD for ICP-MS was > 5% for any analyte in the tuning solution, qualify associated results as estimated (J/UJ).

Results:

V. Blanks (ICB, CCB, Method Blank, Equipment Rinsate Blank)

A. Blank Results

If the blank level is > CRQL for any analyte, check that the analyte's concentration in the samples is > 10 times the blank value. The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account when applying the action level.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
CCB 436427-52	Sodium	221 ug/L	2210	116186-1, 2, 5, 9, 10, 11, 12
CCB 436427-66	Sodium	207 ug/L	2070	116186-9, 10, 11, 12
ICB 437281-10	Vanadium	0.856	8.56	None
CCB 437281-57	Vanadium	1.90	19	116186-1, 2
CCB 437281-69	Antimony	0.525	5.25	116186-1, 2, 5, 9, 10, 11, 12
	Vanadium	2.14	21.4	
CCB 437281-77	Vanadium	2.15	21.5	116186-5, 9, 10, 11, 12
ICB 437321-10	Vanadium	0.856	8.56	None
CCB 437321-61	Antimony	0.471	4.71	116186-1, 2, 9, 10
MB 435538	Vanadium	0.572	5.72	See ADR Output 116186-1, 2, 5, 9, 10, 11, 12

If additional space is required, use next page

Actions:

1. For blank results ≥ MDL but ≤ CRQL, qualify samples ≥ MDL but < CRQL as CRQL U.
   Use proffessional judgement to qualify sample results exceeding the CRQL.

2a. If blank results are > CRQL: For sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < 10 times the blank qualify results as unusable (R) or estimated (J). No action is taken for sample results ≥ 10 times the blank levels.

2b. If ICB/ CCB results are > CRQL; for sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < blank results, qualify results as not detected (U) at the level of the blank or unusable (R). Use professional judgement for sample results > blank results.

Remarks: _____

V. Blanks (continued)

The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected

V. Blanks (continued)

B. Frequency Requirements (Y/N)

1. Was a method (preparation) blank analyzed for each matrix? Y
2. Was a method blank processed for every analytical batch (20 samples)? Y
3. Was a calibration blank analyzed at 10% frequency or every two hours? Y

Deviations:

Element	Deviation	Samples Affected

Remarks:

C. Baseline Shift Evaluation

List the highest negative blank concentration for each analyte observed in laboratory or project blanks.

Deviations:

Blank ID	Element	Max. Neg Conc.	Action Level	Samples Affected

Actions:

1. If the absolute value of the maximum negative blank result is > the CRQL, qualify positive results as estimated (J) and non-detects as estimated (UJ).

Remarks:

VI. Laboratory Control Sample Evaluation

All LCS recovery criteria are set at 80-120%
An LCS must be analyzed for each matrix and for each digestion batch or set of twenty samples

Deviations:

Element	Date	%R	Matrix	Samples Affected

Actions:

1. If any element's LCS recovery is >120%, qualify positive results as (J).
2. If any element's LCS recovery is 50-79%, qualify positive results as (J) and non-detect results as (UJ)

3a. If any element's LCS recovery is <50%, qualify positive results as (J) and non-detect results as (R)
3b. If the LCS recovery is > 150%, qualify all results as unusable (R).

4. For soil LCS recovery > upper limit, qualify samples results ≥ MDL as estimated (J).
5. For soil LCS recovery < lower limit, qualify results ≥ MDL as esimated (J) and non-detected estimated (UJ).
6. Use professional judgement to qualify data if the LCS frequency criteria are not met.

Remarks: LCS %R met control limits

VII. Matrix Spike Evaluation

All MS recovery criteria are set at 75-125%
An MS must be analyzed for each matrix and for each digestion batch or set of twenty samples
Verify that a field blank or PE sample was not used for spiked sample analysis
Verify that a post-digestion spike was analyzed for those anlytes where the pre-digestion spike recovery is outside control limits and the sample result is < 4 times the spike added.
Project Sample(s) Spiked: _____

Deviations:

Element	Spiked Sample Result	Sample Result	Spike Amount	%R	Samples Affected

Actions:

1. If the sample concentration exceeds the spiking level by a factor of 4X or more, do not qualify the data
2. If the spike recovery is >125%, qualify all positive values as (J).
3. If the spike recovery is between 30-74%, qualify positive values as (J) and non-detect values as estimated (UJ)
4. If the spike recovery is <30%, qualify positive values as (J) and non-detects are qualified unusable (R)
if the post-digestion spike recovery is < 75% (or none was performed); non-detects are qualified as estimated (UJ)
If the post-digestion spike reocvery is ≥ 75%. There is no post-digestion spike performed for mercury.
5. Qualify all samples of similar matrix to the spiked sample in the same manner
6. Use professional judgement to qualify data if the MS frequency criteria are not met.
7. Use professional judgement for qualification of data for unspiked elements

Remarks: See ADR output

VIII. Laboratory Duplicate Evaluation

Duplicate relative percent difference (RPD) for water is 20% (both results > 5 times CDRL) or < CRDL difference (if either result is < 5 times CRDL) and RPD for soil is 35% (if both results are > 5 times CRDL or < 2 times CRDL if either result is < 5 times CRDL).
When duplicate sample values are both less than the reporting level they are considered acceptable
When dupicate sample values are within 5X the reporting level they are acceptable if their absolute difference is within 3X the reporting level
Verify that a field blank on PE sample was not used for duplicate analysis.

Deviations: ____

Element	Sample #	Duplicate #	RPD	Samples Affected

Actions:

1. If an element's RPD is >20% (water) / >35% (soil), qualify positive results as (J) and non-detect results as (UJ)
2. For low concentrations, if an element's duplicate absolute difference is > 3X the reporting level, qualify positive results as (J) and non-detect results as (UJ)
3. Use professional judgement to qualify data if the duplicate frequency criteria are not met.

Remarks: NA

IX. Inductively Coupled Plasma (ICP) Serial Dilution Analysis

Verify that a field blank or PE sample was not used for serial dilution.
Serial dilution of positive results are performed when values exceed 50X the IDL
Results from serial dilutions should agree within 10% of the original undiluted analysis

Deviations:

Element	Sample #	Sample Result	Serial Dilution	%D	Action
Calcium	280-116186-1			11	(J), not qualified by ADR

Actions:

1. If the serial dilution %D is >10 and the analyte results are >50X the IDL, qualify all positive results as estimated (J) and non-detects as estimated (UJ).

Remarks: _____

X. Furnace Atomic Absorption QC

A. Duplicate Precision (Y/N)

1. Were duplicate injections performed for all samples? _____
2. Were one point analytical spikes performed for all samples? _____
3. Did duplicate injections agree within ± 20%? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If duplicate injection results are outside ± 20%, qualify positive results as (J) and non-detect results as (UJ)

Remarks: NA

B. Post Digestion Spike Recoveries (Y/N)

1. Did post digestion spike recoveries meet an 85-115% recovery criteria? N
2. If spike recoveries did not meet recovery criteria were samples analyzed by MSA? Y
3. If MSA was used to analyze samples, was its' correlation coefficient ≥ 0.995? Y

Deviations:

Element	Deviation	Sample Affected
Silver	79%	FWGmw-017-181001-GW (J) not qualified by ADR

Actions:

1. If post digestion spike recoveries are >115%, qualify positive results as (J) and non-detect results as (U)
2. If post digestion spike recoveries are 11-84%, qualify positive results as (J) and non-detect results as (UJ)
3. If post digestion spike recoveries are <10%, qualify positive results as (R) and non-detect results as (R)
4. If MSA was used to quantitate values and the correlation coefficient was <0.995, qualify data as (J or UJ)
5. If MSA was used to quantitate values and the correlation coefficient was <0.95, qualify data as (R)

Remarks: _____

XI. Inductively Coupled Plasma (ICP) Interference Check Sample Evaluation

Interference check samples should be analyzed at the beginning and end of each analysis run, or at a minimum of twice per 8 hour working shift.
Results for the ICS solution AB must fall within control limits of 20% for analytes included in the solution.
Evaluate the ICS A solution raw data for results with an absolute value ≥ MDL for analytes that are not present in the ICS A solution.

Deviations:

Element	Sample #	Sample Result	Interferent Result	Action

Actions:

1. If the ICS AB %R for an analyte is > 120%, qualify sample results ≥ MDL as estimated (J) and non-detects should not be qualified.
2. If the ICS AB %R for an analyte is 50-79%, qualify sample results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ).
3. If the ICS AB %R for an analyte is <50%, qualify all sample results that are ≥ MDL and all non-detects as as unusable (R).
4. If results ≥ MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents and with analyte concentration that approximate those levels in the ICS A, sample results ≥ MDL should be qualified as estimated (J) and non-detects should not be qualified.
5. If negative results with absolute values > MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents, affected sample results > MDL should be qualified as estimated (J) and non-detects (UJ).

Remarks: All ICS results met control limits

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116186

Analysis: Cyanide

Method: 9012

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: DoD QSM

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/28/18

QA Reviewed by: Richman Stark Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: All calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: All blanks were free from contamination

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS %R results met control limits

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: All MS/MSD %R and RPD results met control limits

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116186

Analysis: Hexa Chromium

Method: 7196

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: Laboratory control limits

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/28/18

QA Reviewed by: Richman Stark Date: 01/04/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: MB and CCB were free from contamination

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS %R results met control limits

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: NA

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

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

Client Sample ID: FWGmw-024-181001-GW **Lab Sample ID: 280-116186-1**
Date Collected: 10/25/18 10:05 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H UJ A03	1.0	0.40	0.16	ug/L		11/09/18 04:48	1
1,1,2,2-Tetrachloroethane	0.80	U H	1.0	0.80	0.21	ug/L		11/09/18 04:48	1
1,1,2-Trichloroethane	0.80	U H	1.0	0.80	0.27	ug/L		11/09/18 04:48	1
1,1-Dichloroethane	0.80	U H	1.0	0.80	0.22	ug/L		11/09/18 04:48	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/09/18 04:48	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/09/18 04:48	1
1,2-Dichloroethane	0.40	U H	1.0	0.40	0.13	ug/L		11/09/18 04:48	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/09/18 04:48	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/09/18 04:48	1
2-Butanone (MEK)	4.0	U H	6.0	4.0	2.0	ug/L		11/09/18 04:48	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/09/18 04:48	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/09/18 04:48	1
Acetone	6.4	U M H	10	6.4	1.9	ug/L		11/09/18 04:48	1
Benzene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 04:48	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 04:48	1
Bromochloromethane	0.20	U H	1.0	0.20	0.10	ug/L		11/09/18 04:48	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 04:48	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/09/18 04:48	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/09/18 04:48	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/09/18 04:48	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/09/18 04:48	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 04:48	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/09/18 04:48	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 04:48	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/09/18 04:48	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 04:48	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 04:48	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 04:48	1
Methylene Chloride	0.80	U H	5.0	0.80	0.32	ug/L		11/09/18 04:48	1
Styrene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 04:48	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/09/18 04:48	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 04:48	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/09/18 04:48	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 04:48	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/09/18 04:48	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/09/18 04:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*11/09/18 04:48*	*1*
4-Bromofluorobenzene (Surr)	*102*		*85 - 114*		*11/09/18 04:48*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 119*		*11/09/18 04:48*	*1*
Toluene-d8 (Surr)	*103*		*89 - 112*		*11/09/18 04:48*	*1*

Client Sample ID: FWGmw-017-181001-GW **Lab Sample ID: 280-116186-2**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H UJ A03	1.0	0.40	0.16	ug/L		11/09/18 05:08	1
1,1,2,2-Tetrachloroethane	0.80	U H UJ A03	1.0	0.80	0.21	ug/L		11/09/18 05:08	1
1,1,2-Trichloroethane	0.80	U H UJ A03	1.0	0.80	0.27	ug/L		11/09/18 05:08	1

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

Client Sample ID: FWGmw-017-181001-GW **Lab Sample ID: 280-116186-2**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethane	0.80	U H UJ A03	1.0	0.80	0.22	ug/L		11/09/18 05:08	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/09/18 05:08	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/09/18 05:08	1
1,2-Dichloroethane	0.40	U H	1.0	0.40	0.13	ug/L		11/09/18 05:08	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/09/18 05:08	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/09/18 05:08	1
2-Butanone (MEK)	4.0	U H	6.0	4.0	2.0	ug/L		11/09/18 05:08	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/09/18 05:08	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/09/18 05:08	1
Acetone	**6.6**	**J H** J A03	10	6.4	1.9	ug/L		11/09/18 05:08	1
Benzene	0.40	U H UJ A03	1.0	0.40	0.16	ug/L		11/09/18 05:08	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:08	1
Bromochloromethane	0.20	U H	1.0	0.20	0.10	ug/L		11/09/18 05:08	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:08	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/09/18 05:08	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/09/18 05:08	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/09/18 05:08	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/09/18 05:08	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:08	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/09/18 05:08	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:08	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/09/18 05:08	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:08	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:08	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:08	1
Methylene Chloride UJ A03, F04	0.80 **0.46**	**J H** ~~U~~ F04	5.0	0.80	0.32	ug/L		11/09/18 05:08	1
Styrene	0.40	U H UJ A03	1.0	0.40	0.17	ug/L		11/09/18 05:08	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/09/18 05:08	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:08	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/09/18 05:08	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:08	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/09/18 05:08	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/09/18 05:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*81 - 118*		*11/09/18 05:08*	*1*
4-Bromofluorobenzene (Surr)	*104*		*85 - 114*		*11/09/18 05:08*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 119*		*11/09/18 05:08*	*1*
Toluene-d8 (Surr)	*98*		*89 - 112*		*11/09/18 05:08*	*1*

Client Sample ID: FWGTB-181006-TB **Lab Sample ID: 280-116186-4**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H UJ A03	1.0	0.40	0.16	ug/L		11/09/18 05:28	1
1,1,2,2-Tetrachloroethane	0.80	U H	1.0	0.80	0.21	ug/L		11/09/18 05:28	1
1,1,2-Trichloroethane	0.80	U H	1.0	0.80	0.27	ug/L		11/09/18 05:28	1
1,1-Dichloroethane	0.80	U H	1.0	0.80	0.22	ug/L		11/09/18 05:28	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/09/18 05:28	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/09/18 05:28	1

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

Client Sample ID: FWGTB-181006-TB **Lab Sample ID: 280-116186-4**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2-Dichloroethane	0.40	U H UJ A03	1.0	0.40	0.13	ug/L		11/09/18 05:28	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/09/18 05:28	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/09/18 05:28	1
2-Butanone (MEK)	4.0	U H	6.0	4.0	2.0	ug/L		11/09/18 05:28	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/09/18 05:28	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/09/18 05:28	1
Acetone	6.4	U H	10	6.4	1.9	ug/L		11/09/18 05:28	1
Benzene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:28	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:28	1
Bromochloromethane	0.20	U H	1.0	0.20	0.10	ug/L		11/09/18 05:28	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:28	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/09/18 05:28	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/09/18 05:28	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/09/18 05:28	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/09/18 05:28	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:28	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/09/18 05:28	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:28	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/09/18 05:28	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:28	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:28	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:28	1
Methylene Chloride	**0.39**	**J H** J A03	5.0	0.80	0.32	ug/L		11/09/18 05:28	1
Styrene	0.40	U H UJ A03	1.0	0.40	0.17	ug/L		11/09/18 05:28	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/09/18 05:28	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:28	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/09/18 05:28	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:28	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/09/18 05:28	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/09/18 05:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*81 - 118*		*11/09/18 05:28*	*1*
4-Bromofluorobenzene (Surr)	*99*		*85 - 114*		*11/09/18 05:28*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 119*		*11/09/18 05:28*	*1*
Toluene-d8 (Surr)	*98*		*89 - 112*		*11/09/18 05:28*	*1*

Client Sample ID: FWGmw-021-181001-GW **Lab Sample ID: 280-116186-5**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H UJ A03	1.0	0.40	0.16	ug/L		11/09/18 05:49	1
1,1,2,2-Tetrachloroethane	0.80	U H	1.0	0.80	0.21	ug/L		11/09/18 05:49	1
1,1,2-Trichloroethane	0.80	U H	1.0	0.80	0.27	ug/L		11/09/18 05:49	1
1,1-Dichloroethane	0.80	U H	1.0	0.80	0.22	ug/L		11/09/18 05:49	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/09/18 05:49	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/09/18 05:49	1
1,2-Dichloroethane	0.40	U H	1.0	0.40	0.13	ug/L		11/09/18 05:49	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/09/18 05:49	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/09/18 05:49	1

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

Client Sample ID: FWGmw-021-181001-GW **Lab Sample ID: 280-116186-5**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Butanone (MEK)	4.0	U H UJ A03	6.0	4.0	2.0	ug/L		11/09/18 05:49	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/09/18 05:49	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/09/18 05:49	1
Acetone	6.4	U M H	10	6.4	1.9	ug/L		11/09/18 05:49	1
Benzene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:49	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:49	1
Bromochloromethane	0.20	U H	1.0	0.20	0.10	ug/L		11/09/18 05:49	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:49	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/09/18 05:49	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/09/18 05:49	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/09/18 05:49	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/09/18 05:49	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:49	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/09/18 05:49	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:49	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/09/18 05:49	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:49	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:49	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:49	1
Methylene Chloride UJ A03, F04	0.80 **0.62**	**J H** U F04	5.0	0.80	0.32	ug/L		11/09/18 05:49	1
Styrene	0.40	U H UJ A03	1.0	0.40	0.17	ug/L		11/09/18 05:49	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/09/18 05:49	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 05:49	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/09/18 05:49	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 05:49	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/09/18 05:49	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/09/18 05:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*81 - 118*		*11/09/18 05:49*	*1*
4-Bromofluorobenzene (Surr)	*100*		*85 - 114*		*11/09/18 05:49*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 119*		*11/09/18 05:49*	*1*
Toluene-d8 (Surr)	*101*		*89 - 112*		*11/09/18 05:49*	*1*

Client Sample ID: FWGTB-181005-TB **Lab Sample ID: 280-116186-7**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H UJ A03	1.0	0.40	0.16	ug/L		11/09/18 06:09	1
1,1,2,2-Tetrachloroethane	0.80	U H	1.0	0.80	0.21	ug/L		11/09/18 06:09	1
1,1,2-Trichloroethane	0.80	U H	1.0	0.80	0.27	ug/L		11/09/18 06:09	1
1,1-Dichloroethane	0.80	U H	1.0	0.80	0.22	ug/L		11/09/18 06:09	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/09/18 06:09	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/09/18 06:09	1
1,2-Dichloroethane	0.40	U H	1.0	0.40	0.13	ug/L		11/09/18 06:09	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/09/18 06:09	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/09/18 06:09	1
2-Butanone (MEK)	4.0	U H	6.0	4.0	2.0	ug/L		11/09/18 06:09	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/09/18 06:09	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/09/18 06:09	1

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

Client Sample ID: FWGTB-181005-TB **Lab Sample ID: 280-116186-7**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	6.4	U H UJ A03	10	6.4	1.9	ug/L		11/09/18 06:09	1
Benzene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 06:09	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 06:09	1
Bromochloromethane	0.20	U H	1.0	0.20	0.10	ug/L		11/09/18 06:09	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 06:09	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/09/18 06:09	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/09/18 06:09	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/09/18 06:09	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/09/18 06:09	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 06:09	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/09/18 06:09	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 06:09	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/09/18 06:09	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 06:09	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 06:09	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 06:09	1
Methylene Chloride	**0.34**	**J H** J A03	5.0	0.80	0.32	ug/L		11/09/18 06:09	1
Styrene	0.40	U H UJ A03	1.0	0.40	0.17	ug/L		11/09/18 06:09	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/09/18 06:09	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/09/18 06:09	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/09/18 06:09	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/09/18 06:09	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/09/18 06:09	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/09/18 06:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*81 - 118*		*11/09/18 06:09*	*1*
4-Bromofluorobenzene (Surr)	*102*		*85 - 114*		*11/09/18 06:09*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 119*		*11/09/18 06:09*	*1*
Toluene-d8 (Surr)	*100*		*89 - 112*		*11/09/18 06:09*	*1*

Client Sample ID: FWGTB-181004-TB **Lab Sample ID: 280-116186-15**
Date Collected: 10/25/18 00:00 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H UJ A03	1.0	0.40	0.16	ug/L		11/13/18 00:57	1
1,1,2,2-Tetrachloroethane	0.80	U H	1.0	0.80	0.21	ug/L		11/13/18 00:57	1
1,1,2-Trichloroethane	0.80	U H	1.0	0.80	0.27	ug/L		11/13/18 00:57	1
1,1-Dichloroethane	0.80	U H	1.0	0.80	0.22	ug/L		11/13/18 00:57	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/13/18 00:57	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/13/18 00:57	1
1,2-Dichloroethane	0.40	U H	1.0	0.40	0.13	ug/L		11/13/18 00:57	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/13/18 00:57	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/13/18 00:57	1
2-Butanone (MEK)	4.0	U H	6.0	4.0	2.0	ug/L		11/13/18 00:57	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/13/18 00:57	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/13/18 00:57	1
Acetone	6.4	U H	10	6.4	1.9	ug/L		11/13/18 00:57	1
Benzene	0.40	U H	1.0	0.40	0.16	ug/L		11/13/18 00:57	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/13/18 00:57	1

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

Client Sample ID: FWGTB-181004-TB **Lab Sample ID: 280-116186-15**
Date Collected: 10/25/18 00:00 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bromochloromethane	0.20	U H UJ A03	1.0	0.20	0.10	ug/L		11/13/18 00:57	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/13/18 00:57	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/13/18 00:57	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/13/18 00:57	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/13/18 00:57	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/13/18 00:57	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/13/18 00:57	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/13/18 00:57	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/13/18 00:57	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/13/18 00:57	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/13/18 00:57	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/13/18 00:57	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/13/18 00:57	1
Methylene Chloride	0.80	U H	5.0	0.80	0.32	ug/L		11/13/18 00:57	1
Styrene	0.40	U H	1.0	0.40	0.17	ug/L		11/13/18 00:57	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/13/18 00:57	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/13/18 00:57	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/13/18 00:57	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/13/18 00:57	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/13/18 00:57	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/13/18 00:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*81 - 118*		*11/13/18 00:57*	*1*
4-Bromofluorobenzene (Surr)	*103*		*85 - 114*		*11/13/18 00:57*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 119*		*11/13/18 00:57*	*1*
Toluene-d8 (Surr)	*103*		*89 - 112*		*11/13/18 00:57*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: FWGmw-024-181001-GW **Lab Sample ID: 280-116186-1**
Date Collected: 10/25/18 10:05 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.013	U	0.10	0.013	0.0062	ug/L		11/02/18 02:27	1
2-Methylnaphthalene	0.013	U	0.10	0.013	0.0063	ug/L		11/02/18 02:27	1
Acenaphthene	0.042	U	0.10	0.042	0.0044	ug/L		11/02/18 02:27	1
Acenaphthylene	0.042	U	0.10	0.042	0.0054	ug/L		11/02/18 02:27	1
Anthracene	0.042	U	0.10	0.042	0.0059	ug/L		11/02/18 02:27	1
Benzo[a]anthracene	0.013	U	0.10	0.013	0.0044	ug/L		11/02/18 02:27	1
Benzo[a]pyrene	0.013	U	0.10	0.013	0.0072	ug/L		11/02/18 02:27	1
Benzo[b]fluoranthene	0.013	U	0.10	0.013	0.0033	ug/L		11/02/18 02:27	1
Benzo[g,h,i]perylene	0.013	U	0.10	0.013	0.0065	ug/L		11/02/18 02:27	1
Benzo[k]fluoranthene	0.013	U M U	0.10	0.013	0.0066	ug/L		11/02/18 02:27	1
Chrysene	0.013	U	0.10	0.013	0.0035	ug/L		11/02/18 02:27	1
Dibenz(a,h)anthracene	0.013	U	0.10	0.013	0.0043	ug/L		11/02/18 02:27	1
Fluoranthene	0.013	U	0.10	0.013	0.0050	ug/L		11/02/18 02:27	1
Fluorene	0.042	U	0.10	0.042	0.0058	ug/L		11/02/18 02:27	1
Indeno[1,2,3-cd]pyrene	0.042	U	0.10	0.042	0.0047	ug/L		11/02/18 02:27	1
Naphthalene	**0.036**	**J**	0.10	0.013	0.0084	ug/L		11/02/18 02:27	1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: FWGmw-024-181001-GW **Lab Sample ID: 280-116186-1**
Date Collected: 10/25/18 10:05 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Phenanthrene	0.021	U	0.10	0.021	0.0098	ug/L		11/02/18 02:27	1
Pyrene	0.021	U	0.10	0.021	0.0064	ug/L		11/02/18 02:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*62*		*53 - 106*	*10/29/18 21:02*	*11/02/18 02:27*	*1*
Nitrobenzene-d5	*69*		*55 - 111*	*10/29/18 21:02*	*11/02/18 02:27*	*1*
Terphenyl-d14	*93*		*58 - 132*	*10/29/18 21:02*	*11/02/18 02:27*	*1*

Client Sample ID: FWGmw-017-181001-GW **Lab Sample ID: 280-116186-2**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.013	U	0.11	0.013	0.0066	ug/L		11/02/18 02:57	1
2-Methylnaphthalene	0.013	U	0.11	0.013	0.0067	ug/L		11/02/18 02:57	1
Acenaphthene	0.045	U	0.11	0.045	0.0047	ug/L		11/02/18 02:57	1
Acenaphthylene	0.045	U	0.11	0.045	0.0057	ug/L		11/02/18 02:57	1
Anthracene	0.045	U	0.11	0.045	0.0062	ug/L		11/02/18 02:57	1
Benzo[a]anthracene	0.013	U	0.11	0.013	0.0047	ug/L		11/02/18 02:57	1
Benzo[a]pyrene	0.013	U M U	0.11	0.013	0.0077	ug/L		11/02/18 02:57	1
Benzo[b]fluoranthene	0.013	U	0.11	0.013	0.0034	ug/L		11/02/18 02:57	1
Benzo[g,h,i]perylene	0.013	U	0.11	0.013	0.0069	ug/L		11/02/18 02:57	1
Benzo[k]fluoranthene	0.013	U M U	0.11	0.013	0.0070	ug/L		11/02/18 02:57	1
Chrysene	0.013	U	0.11	0.013	0.0037	ug/L		11/02/18 02:57	1
Dibenz(a,h)anthracene	0.013	U	0.11	0.013	0.0046	ug/L		11/02/18 02:57	1
Fluoranthene	0.013	U	0.11	0.013	0.0053	ug/L		11/02/18 02:57	1
Fluorene	0.045	U	0.11	0.045	0.0061	ug/L		11/02/18 02:57	1
Indeno[1,2,3-cd]pyrene	0.045	U	0.11	0.045	0.0050	ug/L		11/02/18 02:57	1
Naphthalene	0.013	U	0.11	0.013	0.0089	ug/L		11/02/18 02:57	1
Phenanthrene	0.022	U	0.11	0.022	0.010	ug/L		11/02/18 02:57	1
Pyrene	0.022	U	0.11	0.022	0.0068	ug/L		11/02/18 02:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*70*		*53 - 106*	*10/29/18 21:02*	*11/02/18 02:57*	*1*
Nitrobenzene-d5	*78*		*55 - 111*	*10/29/18 21:02*	*11/02/18 02:57*	*1*
Terphenyl-d14	*101*		*58 - 132*	*10/29/18 21:02*	*11/02/18 02:57*	*1*

Client Sample ID: FWGmw-017-181002-GW **Lab Sample ID: 280-116186-3**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.013	U	0.11	0.013	0.0066	ug/L		11/02/18 03:26	1
2-Methylnaphthalene	0.013	U	0.11	0.013	0.0067	ug/L		11/02/18 03:26	1
Acenaphthene	0.044	U	0.11	0.044	0.0047	ug/L		11/02/18 03:26	1
Acenaphthylene	0.044	U	0.11	0.044	0.0057	ug/L		11/02/18 03:26	1
Anthracene	0.044	U	0.11	0.044	0.0062	ug/L		11/02/18 03:26	1
Benzo[a]anthracene	**0.057**	**J**	0.11	0.013	0.0047	ug/L		11/02/18 03:26	1
Benzo[a]pyrene	**0.031**	**J**	0.11	0.013	0.0077	ug/L		11/02/18 03:26	1
Benzo[b]fluoranthene	**0.056**	**J**	0.11	0.013	0.0034	ug/L		11/02/18 03:26	1
Benzo[g,h,i]perylene	**0.047**	**J**	0.11	0.013	0.0069	ug/L		11/02/18 03:26	1
Benzo[k]fluoranthene	**0.054**	**J**	0.11	0.013	0.0070	ug/L		11/02/18 03:26	1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: FWGmw-017-181002-GW **Lab Sample ID: 280-116186-3**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chrysene	**0.074**	**J**	0.11	0.013	0.0037	ug/L		11/02/18 03:26	1
Dibenz(a,h)anthracene	**0.021**	**J**	0.11	0.013	0.0046	ug/L		11/02/18 03:26	1
Fluoranthene	0.013	U	0.11	0.013	0.0053	ug/L		11/02/18 03:26	1
Fluorene	0.044	U	0.11	0.044	0.0061	ug/L		11/02/18 03:26	1
Indeno[1,2,3-cd]pyrene	**0.039**	**J**	0.11	0.044	0.0050	ug/L		11/02/18 03:26	1
Naphthalene	0.013	U	0.11	0.013	0.0089	ug/L		11/02/18 03:26	1
Phenanthrene	0.022	U	0.11	0.022	0.010	ug/L		11/02/18 03:26	1
Pyrene	0.022	U	0.11	0.022	0.0068	ug/L		11/02/18 03:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*61*		*53 - 106*	*10/29/18 21:02*	*11/02/18 03:26*	*1*
Nitrobenzene-d5	*71*		*55 - 111*	*10/29/18 21:02*	*11/02/18 03:26*	*1*
Terphenyl-d14	*98*		*58 - 132*	*10/29/18 21:02*	*11/02/18 03:26*	*1*

Client Sample ID: FWGmw-021-181001-GW **Lab Sample ID: 280-116186-5**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.014	U U	0.12	0.014	0.0070	ug/L		11/02/18 03:55	1
2-Methylnaphthalene	0.014	U	0.12	0.014	0.0071	ug/L		11/02/18 03:55	1
Acenaphthene	0.047	U Q	0.12	0.047	0.0050	ug/L		11/02/18 03:55	1
Acenaphthylene	0.047	U Q	0.12	0.047	0.0060	ug/L		11/02/18 03:55	1
Anthracene	0.047	U Q	0.12	0.047	0.0066	ug/L		11/02/18 03:55	1
Benzo[a]anthracene	0.014	U	0.12	0.014	0.0050	ug/L		11/02/18 03:55	1
Benzo[a]pyrene	0.014	U	0.12	0.014	0.0081	ug/L		11/02/18 03:55	1
Benzo[b]fluoranthene	0.014	U M	0.12	0.014	0.0037	ug/L		11/02/18 03:55	1
Benzo[g,h,i]perylene	0.014	U	0.12	0.014	0.0073	ug/L		11/02/18 03:55	1
Benzo[k]fluoranthene	0.014	U M	0.12	0.014	0.0074	ug/L		11/02/18 03:55	1
Chrysene	0.014	U	0.12	0.014	0.0039	ug/L		11/02/18 03:55	1
Dibenz(a,h)anthracene	0.014	U	0.12	0.014	0.0048	ug/L		11/02/18 03:55	1
Fluoranthene	0.014	U Q	0.12	0.014	0.0057	ug/L		11/02/18 03:55	1
Fluorene	0.047	U Q	0.12	0.047	0.0065	ug/L		11/02/18 03:55	1
Indeno[1,2,3-cd]pyrene	0.047	U	0.12	0.047	0.0053	ug/L		11/02/18 03:55	1
Naphthalene	0.014	U	0.12	0.014	0.0094	ug/L		11/02/18 03:55	1
Phenanthrene	0.024	U Q	0.12	0.024	0.011	ug/L		11/02/18 03:55	1
Pyrene	0.024	U Q	0.12	0.024	0.0072	ug/L		11/02/18 03:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*50*	*Q*	*53 - 106*	*10/29/18 21:02*	*11/02/18 03:55*	*1*
Nitrobenzene-d5	*60*		*55 - 111*	*10/29/18 21:02*	*11/02/18 03:55*	*1*
Terphenyl-d14	*80*		*58 - 132*	*10/29/18 21:02*	*11/02/18 03:55*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: FWGmw-024-181001-GW **Lab Sample ID: 280-116186-1**
Date Collected: 10/25/18 10:05 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	1.1	U	11	1.1	0.30	ug/L		11/13/18 13:07	1
1,2-Dichlorobenzene	0.54	U	11	0.54	0.25	ug/L		11/13/18 13:07	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: FWGmw-024-181001-GW **Lab Sample ID: 280-116186-1**
Date Collected: 10/25/18 10:05 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3-Dichlorobenzene	1.1	U	11	1.1	0.32	ug/L		11/13/18 13:07	1
1,4-Dichlorobenzene	1.1	U	11	1.1	0.34	ug/L		11/13/18 13:07	1
1,4-Dioxane	4.7	U	19	4.7	1.8	ug/L		11/13/18 13:07	1
2,4,5-Trichlorophenol	1.1	U	22	1.1	0.48	ug/L		11/13/18 13:07	1
2,4,6-Trichlorophenol	1.1	U	22	1.1	0.31	ug/L		11/13/18 13:07	1
2,4-Dichlorophenol	2.2	U	11	2.2	0.69	ug/L		11/13/18 13:07	1
2,4-Dimethylphenol	2.2	U	11	2.2	0.62	ug/L		11/13/18 13:07	1
2,4-Dinitrophenol	32	U	86	32	11	ug/L		11/13/18 13:07	1
2,4-Dinitrotoluene	4.7	U	22	4.7	1.8	ug/L		11/13/18 13:07	1
2,6-Dinitrotoluene	4.7	U	22	4.7	2.0	ug/L		11/13/18 13:07	1
2-Chloronaphthalene	1.1	U	11	1.1	0.28	ug/L		11/13/18 13:07	1
2-Chlorophenol	4.7	U	11	4.7	2.2	ug/L		11/13/18 13:07	1
2-Methylphenol	2.2	U	11	2.2	1.1	ug/L		11/13/18 13:07	1
2-Nitroaniline	4.7	U	54	4.7	1.9	ug/L		11/13/18 13:07	1
2-Nitrophenol	1.1	U	22	1.1	0.42	ug/L		11/13/18 13:07	1
3 & 4 Methylphenol	0.54	U	22	0.54	0.27	ug/L		11/13/18 13:07	1
3,3'-Dichlorobenzidine	4.7	U	54	4.7	2.2	ug/L		11/13/18 13:07	1
3-Nitroaniline	4.7	U	54	4.7	2.2	ug/L		11/13/18 13:07	1
4,6-Dinitro-2-methylphenol	9.5	U	86	9.5	4.3	ug/L		11/13/18 13:07	1
4-Bromophenyl phenyl ether	1.1	U	11	1.1	0.46	ug/L		11/13/18 13:07	1
4-Chloro-3-methylphenol	5.4	U	22	5.4	2.6	ug/L		11/13/18 13:07	1
4-Chloroaniline	4.7	U	27	4.7	2.3	ug/L		11/13/18 13:07	1
4-Chlorophenyl phenyl ether	4.7	U	11	4.7	1.8	ug/L		11/13/18 13:07	1
4-Nitroaniline	4.7	U	54	4.7	2.2	ug/L		11/13/18 13:07	1
4-Nitrophenol	4.3	U	54	4.3	1.3	ug/L		11/13/18 13:07	1
Benzoic acid	32	U	86	32	11	ug/L		11/13/18 13:07	1
Benzyl alcohol	0.54	U	27	0.54	0.25	ug/L		11/13/18 13:07	1
bis (2-chloroisopropyl) ether	1.1	U	11	1.1	0.30	ug/L		11/13/18 13:07	1
Bis(2-chloroethoxy)methane	2.2	U	11	2.2	1.0	ug/L		11/13/18 13:07	1
Bis(2-chloroethyl)ether	1.1	U	22	1.1	0.44	ug/L		11/13/18 13:07	1
Bis(2-ethylhexyl) phthalate	2.2	U	11	2.2	0.60	ug/L		11/13/18 13:07	1
Butyl benzyl phthalate	2.2	U	22	2.2	1.1	ug/L		11/13/18 13:07	1
Carbazole	1.1	U	11	1.1	0.46	ug/L		11/13/18 13:07	1
Dibenzofuran	1.1	U	11	1.1	0.31	ug/L		11/13/18 13:07	1
Diethyl phthalate	1.1	U	22	1.1	0.41	ug/L		11/13/18 13:07	1
Dimethyl phthalate	0.54	U	22	0.54	0.23	ug/L		11/13/18 13:07	1
Di-n-butyl phthalate	4.7	U	22	4.7	1.2	ug/L		11/13/18 13:07	1
Di-n-octyl phthalate	1.1	U	22	1.1	0.38	ug/L		11/13/18 13:07	1
Hexachlorobenzene	2.2	U	11	2.2	0.71	ug/L		11/13/18 13:07	1
Hexachlorobutadiene	11	U	32	11	3.6	ug/L		11/13/18 13:07	1
Hexachlorocyclopentadiene	32	U	54	32	11	ug/L		11/13/18 13:07	1
Hexachloroethane	4.7	U	11	4.7	2.3	ug/L		11/13/18 13:07	1
Isophorone	0.54	U	11	0.54	0.23	ug/L		11/13/18 13:07	1
Nitrobenzene	2.2	U	22	2.2	0.87	ug/L		11/13/18 13:07	1
N-Nitrosodi-n-propylamine	1.1	U	22	1.1	0.38	ug/L		11/13/18 13:07	1
N-Nitrosodiphenylamine	1.1	U	11	1.1	0.47	ug/L		11/13/18 13:07	1
Pentachlorophenol	65	U	86	65	22	ug/L		11/13/18 13:07	1
Phenol	4.7	U	11	4.7	2.2	ug/L		11/13/18 13:07	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol (Surr)	*87*		*43 - 140*	*10/31/18 10:52*	*11/13/18 13:07*	*1*
2-Fluorobiphenyl	*84*		*44 - 119*	*10/31/18 10:52*	*11/13/18 13:07*	*1*
2-Fluorophenol (Surr)	*92*		*19 - 119*	*10/31/18 10:52*	*11/13/18 13:07*	*1*
Nitrobenzene-d5 (Surr)	*90*		*44 - 120*	*10/31/18 10:52*	*11/13/18 13:07*	*1*
Phenol-d5 (Surr)	*94*		*10 - 115*	*10/31/18 10:52*	*11/13/18 13:07*	*1*
Terphenyl-d14 (Surr)	*96*		*50 - 134*	*10/31/18 10:52*	*11/13/18 13:07*	*1*

Client Sample ID: FWGmw-017-181001-GW **Lab Sample ID: 280-116186-2**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	1.1	U	11	1.1	0.31	ug/L		11/13/18 13:36	1
1,2-Dichlorobenzene	0.55	U	11	0.55	0.25	ug/L		11/13/18 13:36	1
1,3-Dichlorobenzene	1.1	U	11	1.1	0.33	ug/L		11/13/18 13:36	1
1,4-Dichlorobenzene	1.1	U	11	1.1	0.35	ug/L		11/13/18 13:36	1
1,4-Dioxane	4.8	U	20	4.8	1.8	ug/L		11/13/18 13:36	1
2,4,5-Trichlorophenol	1.1	U	22	1.1	0.49	ug/L		11/13/18 13:36	1
2,4,6-Trichlorophenol	1.1	U	22	1.1	0.32	ug/L		11/13/18 13:36	1
2,4-Dichlorophenol	2.2	U	11	2.2	0.70	ug/L		11/13/18 13:36	1
2,4-Dimethylphenol	2.2	U	11	2.2	0.63	ug/L		11/13/18 13:36	1
2,4-Dinitrophenol	33	U	88	33	11	ug/L		11/13/18 13:36	1
2,4-Dinitrotoluene	4.8	U	22	4.8	1.8	ug/L		11/13/18 13:36	1
2,6-Dinitrotoluene	4.8	U	22	4.8	2.1	ug/L		11/13/18 13:36	1
2-Chloronaphthalene	1.1	U	11	1.1	0.28	ug/L		11/13/18 13:36	1
2-Chlorophenol	4.8	U	11	4.8	2.2	ug/L		11/13/18 13:36	1
2-Methylphenol	2.2	U	11	2.2	1.1	ug/L		11/13/18 13:36	1
2-Nitroaniline	4.8	U	55	4.8	1.9	ug/L		11/13/18 13:36	1
2-Nitrophenol	1.1	U	22	1.1	0.43	ug/L		11/13/18 13:36	1
3 & 4 Methylphenol	0.55	U	22	0.55	0.27	ug/L		11/13/18 13:36	1
3,3'-Dichlorobenzidine	4.8	U	55	4.8	2.2	ug/L		11/13/18 13:36	1
3-Nitroaniline	4.8	U	55	4.8	2.2	ug/L		11/13/18 13:36	1
4,6-Dinitro-2-methylphenol	9.6	U	88	9.6	4.4	ug/L		11/13/18 13:36	1
4-Bromophenyl phenyl ether	1.1	U	11	1.1	0.47	ug/L		11/13/18 13:36	1
4-Chloro-3-methylphenol	5.5	U	22	5.5	2.6	ug/L		11/13/18 13:36	1
4-Chloroaniline	4.8	U	27	4.8	2.3	ug/L		11/13/18 13:36	1
4-Chlorophenyl phenyl ether	4.8	U	11	4.8	1.8	ug/L		11/13/18 13:36	1
4-Nitroaniline	4.8	U	55	4.8	2.2	ug/L		11/13/18 13:36	1
4-Nitrophenol	4.4	U	55	4.4	1.3	ug/L		11/13/18 13:36	1
Benzoic acid	33	U	88	33	11	ug/L		11/13/18 13:36	1
Benzyl alcohol	0.55	U	27	0.55	0.25	ug/L		11/13/18 13:36	1
bis (2-chloroisopropyl) ether	1.1	U	11	1.1	0.31	ug/L		11/13/18 13:36	1
Bis(2-chloroethoxy)methane	2.2	U	11	2.2	1.1	ug/L		11/13/18 13:36	1
Bis(2-chloroethyl)ether	1.1	U	22	1.1	0.45	ug/L		11/13/18 13:36	1
Bis(2-ethylhexyl) phthalate	2.2	U	11	2.2	0.61	ug/L		11/13/18 13:36	1
Butyl benzyl phthalate	2.2	U	22	2.2	1.1	ug/L		11/13/18 13:36	1
Carbazole	1.1	U	11	1.1	0.47	ug/L		11/13/18 13:36	1
Dibenzofuran	1.1	U	11	1.1	0.32	ug/L		11/13/18 13:36	1
Diethyl phthalate	1.1	U	22	1.1	0.42	ug/L		11/13/18 13:36	1
Dimethyl phthalate	0.55	U	22	0.55	0.23	ug/L		11/13/18 13:36	1
Di-n-butyl phthalate	4.8	U	22	4.8	1.3	ug/L		11/13/18 13:36	1
Di-n-octyl phthalate	1.1	U	22	1.1	0.38	ug/L		11/13/18 13:36	1
Hexachlorobenzene	2.2	U	11	2.2	0.72	ug/L		11/13/18 13:36	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: FWGmw-017-181001-GW **Lab Sample ID: 280-116186-2**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hexachlorobutadiene	11	U	33	11	3.6	ug/L		11/13/18 13:36	1
Hexachlorocyclopentadiene	33	U	55	33	11	ug/L		11/13/18 13:36	1
Hexachloroethane	4.8	U	11	4.8	2.3	ug/L		11/13/18 13:36	1
Isophorone	0.55	U	11	0.55	0.23	ug/L		11/13/18 13:36	1
Nitrobenzene	2.2	U	22	2.2	0.89	ug/L		11/13/18 13:36	1
N-Nitrosodi-n-propylamine	1.1	U	22	1.1	0.38	ug/L		11/13/18 13:36	1
N-Nitrosodiphenylamine	1.1	U	11	1.1	0.48	ug/L		11/13/18 13:36	1
Pentachlorophenol	66	U	88	66	22	ug/L		11/13/18 13:36	1
Phenol	4.8	U	11	4.8	2.2	ug/L		11/13/18 13:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*87*		*43 - 140*	*10/31/18 10:52*	*11/13/18 13:36*	*1*
2-Fluorobiphenyl	*78*		*44 - 119*	*10/31/18 10:52*	*11/13/18 13:36*	*1*
2-Fluorophenol (Surr)	*78*		*19 - 119*	*10/31/18 10:52*	*11/13/18 13:36*	*1*
Nitrobenzene-d5 (Surr)	*80*		*44 - 120*	*10/31/18 10:52*	*11/13/18 13:36*	*1*
Phenol-d5 (Surr)	*80*		*10 - 115*	*10/31/18 10:52*	*11/13/18 13:36*	*1*
Terphenyl-d14 (Surr)	*99*		*50 - 134*	*10/31/18 10:52*	*11/13/18 13:36*	*1*

Client Sample ID: FWGmw-017-181002-GW **Lab Sample ID: 280-116186-3**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	1.1	U	11	1.1	0.30	ug/L		11/13/18 14:05	1
1,2-Dichlorobenzene	0.54	U	11	0.54	0.25	ug/L		11/13/18 14:05	1
1,3-Dichlorobenzene	1.1	U	11	1.1	0.33	ug/L		11/13/18 14:05	1
1,4-Dichlorobenzene	1.1	U	11	1.1	0.35	ug/L		11/13/18 14:05	1
1,4-Dioxane	4.8	U	20	4.8	1.8	ug/L		11/13/18 14:05	1
2,4,5-Trichlorophenol	1.1	U	22	1.1	0.49	ug/L		11/13/18 14:05	1
2,4,6-Trichlorophenol	1.1	U	22	1.1	0.32	ug/L		11/13/18 14:05	1
2,4-Dichlorophenol	2.2	U	11	2.2	0.70	ug/L		11/13/18 14:05	1
2,4-Dimethylphenol	2.2	U	11	2.2	0.63	ug/L		11/13/18 14:05	1
2,4-Dinitrophenol	33	U	87	33	11	ug/L		11/13/18 14:05	1
2,4-Dinitrotoluene	4.8	U	22	4.8	1.8	ug/L		11/13/18 14:05	1
2,6-Dinitrotoluene	4.8	U	22	4.8	2.1	ug/L		11/13/18 14:05	1
2-Chloronaphthalene	1.1	U	11	1.1	0.28	ug/L		11/13/18 14:05	1
2-Chlorophenol	4.8	U	11	4.8	2.2	ug/L		11/13/18 14:05	1
2-Methylphenol	2.2	U	11	2.2	1.1	ug/L		11/13/18 14:05	1
2-Nitroaniline	4.8	U	54	4.8	1.9	ug/L		11/13/18 14:05	1
2-Nitrophenol	1.1	U	22	1.1	0.42	ug/L		11/13/18 14:05	1
3 & 4 Methylphenol	0.54	U	22	0.54	0.27	ug/L		11/13/18 14:05	1
3,3'-Dichlorobenzidine	4.8	U	54	4.8	2.2	ug/L		11/13/18 14:05	1
3-Nitroaniline	4.8	U	54	4.8	2.2	ug/L		11/13/18 14:05	1
4,6-Dinitro-2-methylphenol	9.6	U	87	9.6	4.3	ug/L		11/13/18 14:05	1
4-Bromophenyl phenyl ether	1.1	U	11	1.1	0.47	ug/L		11/13/18 14:05	1
4-Chloro-3-methylphenol	5.4	U	22	5.4	2.6	ug/L		11/13/18 14:05	1
4-Chloroaniline	4.8	U	27	4.8	2.3	ug/L		11/13/18 14:05	1
4-Chlorophenyl phenyl ether	4.8	U	11	4.8	1.8	ug/L		11/13/18 14:05	1
4-Nitroaniline	4.8	U	54	4.8	2.2	ug/L		11/13/18 14:05	1
4-Nitrophenol	4.3	U	54	4.3	1.3	ug/L		11/13/18 14:05	1
Benzoic acid	33	U	87	33	11	ug/L		11/13/18 14:05	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: FWGmw-017-181002-GW **Lab Sample ID: 280-116186-3**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Benzyl alcohol	0.54	U	27	0.54	0.25	ug/L		11/13/18 14:05	1
bis (2-chloroisopropyl) ether	1.1	U	11	1.1	0.30	ug/L		11/13/18 14:05	1
Bis(2-chloroethoxy)methane	2.2	U	11	2.2	1.1	ug/L		11/13/18 14:05	1
Bis(2-chloroethyl)ether	1.1	U	22	1.1	0.45	ug/L		11/13/18 14:05	1
Bis(2-ethylhexyl) phthalate	2.2	U	11	2.2	0.61	ug/L		11/13/18 14:05	1
Butyl benzyl phthalate	2.2	U	22	2.2	1.1	ug/L		11/13/18 14:05	1
Carbazole	1.1	U	11	1.1	0.47	ug/L		11/13/18 14:05	1
Dibenzofuran	1.1	U	11	1.1	0.32	ug/L		11/13/18 14:05	1
Diethyl phthalate	1.1	U	22	1.1	0.41	ug/L		11/13/18 14:05	1
Dimethyl phthalate	0.54	U	22	0.54	0.23	ug/L		11/13/18 14:05	1
Di-n-butyl phthalate	4.8	U	22	4.8	1.3	ug/L		11/13/18 14:05	1
Di-n-octyl phthalate	1.1	U	22	1.1	0.38	ug/L		11/13/18 14:05	1
Hexachlorobenzene	2.2	U	11	2.2	0.72	ug/L		11/13/18 14:05	1
Hexachlorobutadiene	11	U	33	11	3.6	ug/L		11/13/18 14:05	1
Hexachlorocyclopentadiene	33	U	54	33	11	ug/L		11/13/18 14:05	1
Hexachloroethane	4.8	U	11	4.8	2.3	ug/L		11/13/18 14:05	1
Isophorone	0.54	U	11	0.54	0.23	ug/L		11/13/18 14:05	1
Nitrobenzene	2.2	U	22	2.2	0.88	ug/L		11/13/18 14:05	1
N-Nitrosodi-n-propylamine	1.1	U	22	1.1	0.38	ug/L		11/13/18 14:05	1
N-Nitrosodiphenylamine	1.1	U	11	1.1	0.48	ug/L		11/13/18 14:05	1
Pentachlorophenol	65	U	87	65	22	ug/L		11/13/18 14:05	1
Phenol	4.8	U	11	4.8	2.2	ug/L		11/13/18 14:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*84*		*43 - 140*	*10/31/18 10:52*	*11/13/18 14:05*	*1*
2-Fluorobiphenyl	*83*		*44 - 119*	*10/31/18 10:52*	*11/13/18 14:05*	*1*
2-Fluorophenol (Surr)	*93*		*19 - 119*	*10/31/18 10:52*	*11/13/18 14:05*	*1*
Nitrobenzene-d5 (Surr)	*91*		*44 - 120*	*10/31/18 10:52*	*11/13/18 14:05*	*1*
Phenol-d5 (Surr)	*93*		*10 - 115*	*10/31/18 10:52*	*11/13/18 14:05*	*1*
Terphenyl-d14 (Surr)	*102*		*50 - 134*	*10/31/18 10:52*	*11/13/18 14:05*	*1*

Client Sample ID: FWGmw-021-181001-GW **Lab Sample ID: 280-116186-5**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	1.1	U	11	1.1	0.31	ug/L		11/13/18 14:34	1
1,2-Dichlorobenzene	0.55	U	11	0.55	0.25	ug/L		11/13/18 14:34	1
1,3-Dichlorobenzene	1.1	U	11	1.1	0.33	ug/L		11/13/18 14:34	1
1,4-Dichlorobenzene	1.1	U	11	1.1	0.35	ug/L		11/13/18 14:34	1
1,4-Dioxane	4.9	U	20	4.9	1.9	ug/L		11/13/18 14:34	1
2,4,5-Trichlorophenol	1.1	U	22	1.1	0.50	ug/L		11/13/18 14:34	1
2,4,6-Trichlorophenol	1.1	U	22	1.1	0.32	ug/L		11/13/18 14:34	1
2,4-Dichlorophenol	2.2	U	11	2.2	0.71	ug/L		11/13/18 14:34	1
2,4-Dimethylphenol	2.2	U	11	2.2	0.64	ug/L		11/13/18 14:34	1
2,4-Dinitrophenol	33	U	88	33	11	ug/L		11/13/18 14:34	1
2,4-Dinitrotoluene	4.9	U	22	4.9	1.8	ug/L		11/13/18 14:34	1
2,6-Dinitrotoluene	4.9	U	22	4.9	2.1	ug/L		11/13/18 14:34	1
2-Chloronaphthalene	1.1	U	11	1.1	0.29	ug/L		11/13/18 14:34	1
2-Chlorophenol	4.9	U	11	4.9	2.2	ug/L		11/13/18 14:34	1
2-Methylphenol	2.2	U	11	2.2	1.1	ug/L		11/13/18 14:34	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: FWGmw-021-181001-GW **Lab Sample ID: 280-116186-5**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitroaniline	4.9	U	55	4.9	1.9	ug/L		11/13/18 14:34	1
2-Nitrophenol	1.1	U	22	1.1	0.43	ug/L		11/13/18 14:34	1
3 & 4 Methylphenol	0.55	U	22	0.55	0.28	ug/L		11/13/18 14:34	1
3,3'-Dichlorobenzidine	4.9	U	55	4.9	2.2	ug/L		11/13/18 14:34	1
3-Nitroaniline	4.9	U	55	4.9	2.2	ug/L		11/13/18 14:34	1
4,6-Dinitro-2-methylphenol	9.7	U	88	9.7	4.4	ug/L		11/13/18 14:34	1
4-Bromophenyl phenyl ether	1.1	U	11	1.1	0.47	ug/L		11/13/18 14:34	1
4-Chloro-3-methylphenol	5.5	U	22	5.5	2.7	ug/L		11/13/18 14:34	1
4-Chloroaniline	4.9	U	28	4.9	2.4	ug/L		11/13/18 14:34	1
4-Chlorophenyl phenyl ether	4.9	U	11	4.9	1.8	ug/L		11/13/18 14:34	1
4-Nitroaniline	4.9	U	55	4.9	2.2	ug/L		11/13/18 14:34	1
4-Nitrophenol	4.4	U	55	4.4	1.4	ug/L		11/13/18 14:34	1
Benzoic acid	33	U	88	33	11	ug/L		11/13/18 14:34	1
Benzyl alcohol	0.55	U	28	0.55	0.25	ug/L		11/13/18 14:34	1
bis (2-chloroisopropyl) ether	1.1	U	11	1.1	0.31	ug/L		11/13/18 14:34	1
Bis(2-chloroethoxy)methane	2.2	U	11	2.2	1.1	ug/L		11/13/18 14:34	1
Bis(2-chloroethyl)ether	1.1	U	22	1.1	0.45	ug/L		11/13/18 14:34	1
Bis(2-ethylhexyl) phthalate	2.2	U	11	2.2	0.62	ug/L		11/13/18 14:34	1
Butyl benzyl phthalate	2.2	U	22	2.2	1.1	ug/L		11/13/18 14:34	1
Carbazole	1.1	U	11	1.1	0.47	ug/L		11/13/18 14:34	1
Dibenzofuran	1.1	U	11	1.1	0.32	ug/L		11/13/18 14:34	1
Diethyl phthalate	1.1	U	22	1.1	0.42	ug/L		11/13/18 14:34	1
Dimethyl phthalate	0.55	U	22	0.55	0.23	ug/L		11/13/18 14:34	1
Di-n-butyl phthalate	4.9	U	22	4.9	1.3	ug/L		11/13/18 14:34	1
Di-n-octyl phthalate	1.1	U	22	1.1	0.39	ug/L		11/13/18 14:34	1
Hexachlorobenzene	2.2	U	11	2.2	0.73	ug/L		11/13/18 14:34	1
Hexachlorobutadiene	11	U	33	11	3.6	ug/L		11/13/18 14:34	1
Hexachlorocyclopentadiene	33	U	55	33	11	ug/L		11/13/18 14:34	1
Hexachloroethane	4.9	U	11	4.9	2.3	ug/L		11/13/18 14:34	1
Isophorone	0.55	U	11	0.55	0.23	ug/L		11/13/18 14:34	1
Nitrobenzene	2.2	U	22	2.2	0.89	ug/L		11/13/18 14:34	1
N-Nitrosodi-n-propylamine	1.1	U	22	1.1	0.39	ug/L		11/13/18 14:34	1
N-Nitrosodiphenylamine	1.1	U	11	1.1	0.49	ug/L		11/13/18 14:34	1
Pentachlorophenol	66	U	88	66	22	ug/L		11/13/18 14:34	1
Phenol	4.9	U	11	4.9	2.2	ug/L		11/13/18 14:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*82*		*43 - 140*	*10/31/18 10:52*	*11/13/18 14:34*	*1*
2-Fluorobiphenyl	*79*		*44 - 119*	*10/31/18 10:52*	*11/13/18 14:34*	*1*
2-Fluorophenol (Surr)	*87*		*19 - 119*	*10/31/18 10:52*	*11/13/18 14:34*	*1*
Nitrobenzene-d5 (Surr)	*90*		*44 - 120*	*10/31/18 10:52*	*11/13/18 14:34*	*1*
Phenol-d5 (Surr)	*86*		*10 - 115*	*10/31/18 10:52*	*11/13/18 14:34*	*1*
Terphenyl-d14 (Surr)	*100*		*50 - 134*	*10/31/18 10:52*	*11/13/18 14:34*	*1*

Client Sample ID: FWGmw-015-181001-GW **Lab Sample ID: 280-116186-9**
Date Collected: 10/24/18 15:30 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.0	U	10	2.0	0.57	ug/L		11/13/18 15:03	1
Butyl benzyl phthalate	2.0	U	20	2.0	1.0	ug/L		11/13/18 15:03	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: FWGmw-015-181001-GW **Lab Sample ID: 280-116186-9**
Date Collected: 10/24/18 15:30 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Diethyl phthalate	1.0	U	20	1.0	0.38	ug/L		11/13/18 15:03	1
Dimethyl phthalate	0.51	U	20	0.51	0.21	ug/L		11/13/18 15:03	1
Di-n-butyl phthalate	4.5	U	20	4.5	1.2	ug/L		11/13/18 15:03	1
Di-n-octyl phthalate	1.0	U	20	1.0	0.35	ug/L		11/13/18 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*86*		*43 - 140*	*10/31/18 10:52*	*11/13/18 15:03*	*1*
2-Fluorobiphenyl	*86*		*44 - 119*	*10/31/18 10:52*	*11/13/18 15:03*	*1*
2-Fluorophenol (Surr)	*92*		*19 - 119*	*10/31/18 10:52*	*11/13/18 15:03*	*1*
Nitrobenzene-d5 (Surr)	*92*		*44 - 120*	*10/31/18 10:52*	*11/13/18 15:03*	*1*
Phenol-d5 (Surr)	*91*		*10 - 115*	*10/31/18 10:52*	*11/13/18 15:03*	*1*
Terphenyl-d14 (Surr)	*86*		*50 - 134*	*10/31/18 10:52*	*11/13/18 15:03*	*1*

Client Sample ID: LL3mw-246-181001-GW **Lab Sample ID: 280-116186-10**
Date Collected: 10/25/18 13:20 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.0	U	10	2.0	0.57	ug/L		11/13/18 15:32	1
Butyl benzyl phthalate	2.0	U	20	2.0	1.0	ug/L		11/13/18 15:32	1
Diethyl phthalate	1.0	U	20	1.0	0.38	ug/L		11/13/18 15:32	1
Dimethyl phthalate	0.50	U	20	0.50	0.21	ug/L		11/13/18 15:32	1
Di-n-butyl phthalate	4.4	U	20	4.4	1.2	ug/L		11/13/18 15:32	1
Di-n-octyl phthalate	1.0	U	20	1.0	0.35	ug/L		11/13/18 15:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*81*		*43 - 140*	*10/31/18 10:52*	*11/13/18 15:32*	*1*
2-Fluorobiphenyl	*80*		*44 - 119*	*10/31/18 10:52*	*11/13/18 15:32*	*1*
2-Fluorophenol (Surr)	*88*		*19 - 119*	*10/31/18 10:52*	*11/13/18 15:32*	*1*
Nitrobenzene-d5 (Surr)	*87*		*44 - 120*	*10/31/18 10:52*	*11/13/18 15:32*	*1*
Phenol-d5 (Surr)	*86*		*10 - 115*	*10/31/18 10:52*	*11/13/18 15:32*	*1*
Terphenyl-d14 (Surr)	*96*		*50 - 134*	*10/31/18 10:52*	*11/13/18 15:32*	*1*

Client Sample ID: LL2mw-059-181001-GW **Lab Sample ID: 280-116186-11**
Date Collected: 10/25/18 09:12 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.0	U	10	2.0	0.57	ug/L		11/13/18 16:01	1
Butyl benzyl phthalate	2.0	U	20	2.0	1.0	ug/L		11/13/18 16:01	1
Diethyl phthalate	1.0	U	20	1.0	0.39	ug/L		11/13/18 16:01	1
Dimethyl phthalate	0.51	U	20	0.51	0.21	ug/L		11/13/18 16:01	1
Di-n-butyl phthalate	4.5	U	20	4.5	1.2	ug/L		11/13/18 16:01	1
Di-n-octyl phthalate	1.0	U	20	1.0	0.36	ug/L		11/13/18 16:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*92*		*43 - 140*	*10/31/18 10:52*	*11/13/18 16:01*	*1*
2-Fluorobiphenyl	*89*		*44 - 119*	*10/31/18 10:52*	*11/13/18 16:01*	*1*
2-Fluorophenol (Surr)	*95*		*19 - 119*	*10/31/18 10:52*	*11/13/18 16:01*	*1*
Nitrobenzene-d5 (Surr)	*94*		*44 - 120*	*10/31/18 10:52*	*11/13/18 16:01*	*1*
Phenol-d5 (Surr)	*95*		*10 - 115*	*10/31/18 10:52*	*11/13/18 16:01*	*1*
Terphenyl-d14 (Surr)	*102*		*50 - 134*	*10/31/18 10:52*	*11/13/18 16:01*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: LL2mw-267-181001-GW **Lab Sample ID: 280-116186-12**
Date Collected: 10/25/18 12:35 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.0	U	10	2.0	0.57	ug/L		11/13/18 16:31	1
Butyl benzyl phthalate	2.0	U	20	2.0	1.0	ug/L		11/13/18 16:31	1
Diethyl phthalate	1.0	U	20	1.0	0.39	ug/L		11/13/18 16:31	1
Dimethyl phthalate	0.51	U	20	0.51	0.21	ug/L		11/13/18 16:31	1
Di-n-butyl phthalate	4.5	U	20	4.5	1.2	ug/L		11/13/18 16:31	1
Di-n-octyl phthalate	1.0	U	20	1.0	0.36	ug/L		11/13/18 16:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*95*		*43 - 140*	*10/31/18 10:52*	*11/13/18 16:31*	*1*
2-Fluorobiphenyl	*87*		*44 - 119*	*10/31/18 10:52*	*11/13/18 16:31*	*1*
2-Fluorophenol (Surr)	*101*		*19 - 119*	*10/31/18 10:52*	*11/13/18 16:31*	*1*
Nitrobenzene-d5 (Surr)	*98*		*44 - 120*	*10/31/18 10:52*	*11/13/18 16:31*	*1*
Phenol-d5 (Surr)	*104*		*10 - 115*	*10/31/18 10:52*	*11/13/18 16:31*	*1*
Terphenyl-d14 (Surr)	*104*		*50 - 134*	*10/31/18 10:52*	*11/13/18 16:31*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Client Sample ID: FWGmw-021-181001-GW **Lab Sample ID: 280-116186-5**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.021	U	0.052	0.021	0.0080	ug/L		11/14/18 20:28	1
4,4'-DDE	0.021	U	0.052	0.021	0.0078	ug/L		11/14/18 20:28	1
4,4'-DDT	0.052	U	0.052	0.052	0.015	ug/L		11/14/18 20:28	1
Aldrin	0.021	U	0.052	0.021	0.0061	ug/L		11/14/18 20:28	1
alpha-BHC	0.021	U	0.052	0.021	0.0055	ug/L		11/14/18 20:28	1
alpha-Chlordane	0.021	U	0.052	0.021	0.0055	ug/L		11/14/18 20:28	1
beta-BHC	0.021	U	0.052	0.021	0.0091	ug/L		11/14/18 20:28	1
delta-BHC	0.021	U	0.052	0.021	0.0060	ug/L		11/14/18 20:28	1
Dieldrin	0.021	U	0.052	0.021	0.0066	ug/L		11/14/18 20:28	1
Endosulfan I	0.021	U	0.052	0.021	0.0060	ug/L		11/14/18 20:28	1
Endosulfan II	0.021	U	0.052	0.021	0.0073	ug/L		11/14/18 20:28	1
Endosulfan sulfate	0.021	U	0.052	0.021	0.0059	ug/L		11/14/18 20:28	1
Endrin	0.021	U	0.052	0.021	0.0082	ug/L		11/14/18 20:28	1
Endrin aldehyde PER ADR	0.021	U UJ H02	0.052	0.021	0.0092	ug/L		11/14/18 20:28	1
Endrin ketone	0.021	U	0.052	0.021	0.0073	ug/L		11/14/18 20:28	1
gamma-BHC (Lindane)	0.021	U	0.052	0.021	0.0072	ug/L		11/14/18 20:28	1
gamma-Chlordane	0.021	U	0.052	0.021	0.0095	ug/L		11/14/18 20:28	1
Heptachlor	0.021	U	0.052	0.021	0.0080	ug/L		11/14/18 20:28	1
Heptachlor epoxide	0.021	U	0.052	0.021	0.0078	ug/L		11/14/18 20:28	1
Methoxychlor	0.052	U	0.052	0.052	0.014	ug/L		11/14/18 20:28	1
Toxaphene ADR QUAL FOR MS, ADD OTHER REASON CODES	**1.3**	**J** J H02 M08 C05	2.1	0.83	0.38	ug/L		11/14/18 20:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*53*		*34 - 122*	*11/01/18 08:30*	*11/14/18 20:28*	*1*
Tetrachloro-m-xylene	*66*		*44 - 124*	*11/01/18 08:30*	*11/14/18 20:28*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: FWGmw-021-181001-GW **Lab Sample ID: 280-116186-5**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.41	U M	1.0	0.41	0.13	ug/L		11/26/18 22:50	1
PCB-1221	0.26	U M	1.0	0.26	0.22	ug/L		11/26/18 22:50	1
PCB-1232	0.62	U M	1.0	0.62	0.17	ug/L		11/26/18 22:50	1
PCB-1242	0.31	U M	1.0	0.31	0.11	ug/L		11/26/18 22:50	1
PCB-1248	0.31	U Q M	1.0	0.31	0.094	ug/L		11/26/18 22:50	1
PCB-1254	0.26	U M	1.0	0.26	0.12	ug/L		11/26/18 22:50	1
PCB-1260	0.41	U M	1.0	0.41	0.16	ug/L		11/26/18 22:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*75*		*25 - 120*	*11/05/18 09:12*	*11/26/18 22:50*	*1*
DCB Decachlorobiphenyl	*57*	*Q*	*30 - 136*	*11/05/18 09:12*	*11/26/18 22:50*	*1*

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: FWGmw-024-181001-GW **Lab Sample ID: 280-116186-1**
Date Collected: 10/25/18 10:05 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.43	U Q	1.1	0.43	0.22	ug/L		11/01/18 22:33	1
1,3-Dinitrobenzene	0.22	U Q	0.43	0.22	0.096	ug/L		11/01/18 22:33	1
2,4,6-Trinitrotoluene	0.22	U Q	0.43	0.22	0.079	ug/L		11/01/18 22:33	1
2,4-Dinitrotoluene	0.22	U Q	0.43	0.22	0.091	ug/L		11/01/18 22:33	1
2,6-Dinitrotoluene	0.22	U Q	0.22	0.22	0.070	ug/L		11/01/18 22:33	1
2-Amino-4,6-dinitrotoluene	0.13	U Q	0.22	0.13	0.055	ug/L		11/01/18 22:33	1
2-Nitrotoluene	0.22	U Q	0.43	0.22	0.093	ug/L		11/01/18 22:33	1
3-Nitrotoluene	0.22	U Q	0.43	0.22	0.091	ug/L		11/01/18 22:33	1
4-Amino-2,6-dinitrotoluene	0.13	U Q	0.22	0.13	0.063	ug/L		11/01/18 22:33	1
4-Nitrotoluene	0.43	U Q	1.1	0.43	0.22	ug/L		11/01/18 22:33	1
HMX	0.22	U M Q	0.43	0.22	0.095	ug/L		11/01/18 22:33	1
Nitrobenzene	0.22	U Q	0.43	0.22	0.099	ug/L		11/01/18 22:33	1
Nitroglycerin	2.2	U Q	3.3	2.2	1.0	ug/L		11/01/18 22:33	1
PETN	1.3	U Q	2.2	1.3	0.45	ug/L		11/01/18 22:33	1
RDX	0.13	U Q	0.22	0.13	0.057	ug/L		11/01/18 22:33	1
Tetryl	0.22	U Q	0.26	0.22	0.086	ug/L		11/01/18 22:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*121*	*Q*	*83 - 119*	*10/30/18 13:24*	*11/01/18 22:33*	*1*

Client Sample ID: FWGmw-017-181001-GW **Lab Sample ID: 280-116186-2**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.47	U	1.2	0.47	0.23	ug/L		11/01/18 22:56	1
1,3-Dinitrobenzene	0.23	U	0.47	0.23	0.10	ug/L		11/01/18 22:56	1
2,4,6-Trinitrotoluene	0.23	U	0.47	0.23	0.084	ug/L		11/01/18 22:56	1
2,4-Dinitrotoluene	0.23	U	0.47	0.23	0.098	ug/L		11/01/18 22:56	1
2,6-Dinitrotoluene	0.23	U	0.23	0.23	0.075	ug/L		11/01/18 22:56	1
2-Amino-4,6-dinitrotoluene	0.14	U	0.23	0.14	0.059	ug/L		11/01/18 22:56	1
2-Nitrotoluene	0.23	U	0.47	0.23	0.10	ug/L		11/01/18 22:56	1
3-Nitrotoluene	0.23	U	0.47	0.23	0.097	ug/L		11/01/18 22:56	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: FWGmw-017-181001-GW **Lab Sample ID: 280-116186-2**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4-Amino-2,6-dinitrotoluene	0.14	U	0.23	0.14	0.067	ug/L		11/01/18 22:56	1
4-Nitrotoluene	0.47	U	1.2	0.47	0.23	ug/L		11/01/18 22:56	1
HMX	0.23	U M U	0.47	0.23	0.10	ug/L		11/01/18 22:56	1
Nitrobenzene	0.23	U	0.47	0.23	0.11	ug/L		11/01/18 22:56	1
Nitroglycerin	2.3	U	3.5	2.3	1.1	ug/L		11/01/18 22:56	1
PETN	1.4	U	2.3	1.4	0.48	ug/L		11/01/18 22:56	1
RDX	0.14	U	0.23	0.14	0.061	ug/L		11/01/18 22:56	1
Tetryl	0.23	U	0.28	0.23	0.092	ug/L		11/01/18 22:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*94*		*83 - 119*	*10/30/18 13:24*	*11/01/18 22:56*	*1*

Client Sample ID: FWGmw-021-181001-GW **Lab Sample ID: 280-116186-5**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

NOTE: THE ADR ASSIGNED QUALIFIERS FOR MS RESUTLS ARE CORRECT
ADD RESON CODE FOR COL COMPARISON OUTLIER

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.43	U M U	1.1	0.43	0.22	ug/L		11/01/18 23:19	1
1,3-Dinitrobenzene	0.22	U	0.43	0.22	0.096	ug/L		11/01/18 23:19	1
2,4,6-Trinitrotoluene	0.22	U	0.43	0.22	0.078	ug/L		11/01/18 23:19	1
2,4-Dinitrotoluene	0.22	U	0.43	0.22	0.090	ug/L		11/03/18 00:45	1
2,6-Dinitrotoluene	0.22	U	0.22	0.22	0.070	ug/L		11/01/18 23:19	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.22	0.13	0.055	ug/L		11/03/18 00:45	1
2-Nitrotoluene	0.22	U J1 UJ H02	0.43	0.22	0.092	ug/L		11/01/18 23:19	1
3-Nitrotoluene	0.22	U J1 M U	0.43	0.22	0.090	ug/L		11/01/18 23:19	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.22	0.13	0.062	ug/L		11/01/18 23:19	1
4-Nitrotoluene	0.43	U	1.1	0.43	0.22	ug/L		11/01/18 23:19	1
HMX	0.22	U	0.43	0.22	0.095	ug/L		11/01/18 23:19	1
Nitrobenzene	0.22	U J1 UJ H02	0.43	0.22	0.098	ug/L		11/01/18 23:19	1
Nitroglycerin	2.2	U	3.2	2.2	0.99	ug/L		11/01/18 23:19	1
PETN	1.3	U	2.2	1.3	0.45	ug/L		11/01/18 23:19	1
RDX	**0.72**	**J1** J H01 M08	0.22	0.13	0.056	ug/L		11/01/18 23:19	1
RDX	**0.17**	**J J1** *	0.22	0.13	0.056	ug/L		11/03/18 00:45	1
Tetryl	0.22	U	0.26	0.22	0.086	ug/L		11/03/18 00:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*94*		*83 - 119*	*10/30/18 13:24*	*11/01/18 23:19*	*1*
1,2-Dinitrobenzene	*85*		*83 - 119*	*10/30/18 13:24*	*11/03/18 00:45*	*1*

Client Sample ID: FWGmw-021-181002-GW **Lab Sample ID: 280-116186-6**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.45	U M U	1.1	0.45	0.22	ug/L		11/02/18 01:14	1
1,3-Dinitrobenzene	0.22	U	0.45	0.22	0.10	ug/L		11/02/18 01:14	1
2,4,6-Trinitrotoluene	0.22	U	0.45	0.22	0.081	ug/L		11/02/18 01:14	1
2,4-Dinitrotoluene	0.22	U	0.45	0.22	0.094	ug/L		11/02/18 01:14	1
2,6-Dinitrotoluene	0.22	U	0.22	0.22	0.072	ug/L		11/02/18 01:14	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.22	0.13	0.057	ug/L		11/03/18 02:30	1
2-Nitrotoluene	0.22	U	0.45	0.22	0.096	ug/L		11/02/18 01:14	1
3-Nitrotoluene	0.22	U M U	0.45	0.22	0.094	ug/L		11/02/18 01:14	1

* DO NOT REPORT

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: FWGmw-021-181002-GW **Lab Sample ID: 280-116186-6**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4-Amino-2,6-dinitrotoluene	0.13	U	0.22	0.13	0.065	ug/L		11/02/18 01:14	1
4-Nitrotoluene	0.45	U	1.1	0.45	0.22	ug/L		11/02/18 01:14	1
HMX	0.22	U	0.45	0.22	0.098	ug/L		11/02/18 01:14	1
Nitrobenzene	0.22	U	0.45	0.22	0.10	ug/L		11/02/18 01:14	1
Nitroglycerin	2.2	U	3.4	2.2	1.0	ug/L		11/02/18 01:14	1
PETN	1.3	U	2.2	1.3	0.47	ug/L		11/02/18 01:14	1
RDX	**0.65**	**J1** J M08	0.22	0.13	0.059	ug/L		11/02/18 01:14	1
RDX	**0.19**	**J J1** *	0.22	0.13	0.059	ug/L		11/03/18 02:30	1
Tetryl	0.22	U M U	0.27	0.22	0.089	ug/L		11/02/18 01:14	1

* DO NOT REPORT

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*117*		*83 - 119*	*10/30/18 13:24*	*11/02/18 01:14*	*1*
1,2-Dinitrobenzene	*95*		*83 - 119*	*10/30/18 13:24*	*11/03/18 02:30*	*1*

Client Sample ID: LL1mw-080-181001-GW **Lab Sample ID: 280-116186-8**
Date Collected: 10/24/18 15:45 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.50	U	1.3	0.50	0.25	ug/L		11/02/18 01:37	1
1,3-Dinitrobenzene	0.25	U	0.50	0.25	0.11	ug/L		11/03/18 03:05	1
2,4,6-Trinitrotoluene	0.25	U	0.50	0.25	0.091	ug/L		11/02/18 01:37	1
2,4-Dinitrotoluene	0.25	U	0.50	0.25	0.10	ug/L		11/02/18 01:37	1
2,6-Dinitrotoluene	0.25	U	0.25	0.25	0.081	ug/L		11/02/18 01:37	1
2-Amino-4,6-dinitrotoluene	**0.84**		0.25	0.15	0.063	ug/L		11/02/18 01:37	1
2-Nitrotoluene	0.25	U	0.50	0.25	0.11	ug/L		11/02/18 01:37	1
3-Nitrotoluene	0.25	U	0.50	0.25	0.10	ug/L		11/02/18 01:37	1
4-Amino-2,6-dinitrotoluene	**1.1**		0.25	0.15	0.072	ug/L		11/02/18 01:37	1
4-Nitrotoluene	0.50	U	1.3	0.50	0.25	ug/L		11/02/18 01:37	1
HMX	**3.3**	**M** =	0.50	0.25	0.11	ug/L		11/02/18 01:37	1
Nitrobenzene	0.25	U	0.50	0.25	0.11	ug/L		11/02/18 01:37	1
Nitroglycerin	2.5	U	3.8	2.5	1.2	ug/L		11/02/18 01:37	1
PETN	1.5	U	2.5	1.5	0.52	ug/L		11/02/18 01:37	1
RDX	**5.3**	**M** =	0.25	0.15	0.065	ug/L		11/02/18 01:37	1
Tetryl	0.25	U M U	0.30	0.25	0.099	ug/L		11/02/18 01:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*100*		*83 - 119*	*10/30/18 13:24*	*11/02/18 01:37*	*1*
1,2-Dinitrobenzene	*91*		*83 - 119*	*10/30/18 13:24*	*11/03/18 03:05*	*1*

Client Sample ID: FWGmw-015-181001-GW **Lab Sample ID: 280-116186-9**
Date Collected: 10/24/18 15:30 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.42	U	1.1	0.42	0.21	ug/L		11/02/18 02:00	1
1,3-Dinitrobenzene	0.21	U	0.42	0.21	0.093	ug/L		11/02/18 02:00	1
2,4,6-Trinitrotoluene	0.21	U	0.42	0.21	0.076	ug/L		11/02/18 02:00	1
2,4-Dinitrotoluene	0.21	U	0.42	0.21	0.088	ug/L		11/02/18 02:00	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.068	ug/L		11/02/18 02:00	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.21	0.13	0.053	ug/L		11/02/18 02:00	1
2-Nitrotoluene	0.21	U	0.42	0.21	0.090	ug/L		11/02/18 02:00	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: FWGmw-015-181001-GW **Lab Sample ID: 280-116186-9**
Date Collected: 10/24/18 15:30 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
3-Nitrotoluene	0.21	U	0.42	0.21	0.088	ug/L		11/02/18 02:00	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.21	0.13	0.061	ug/L		11/02/18 02:00	1
4-Nitrotoluene	0.42	U	1.1	0.42	0.21	ug/L		11/02/18 02:00	1
HMX	0.21	U M U	0.42	0.21	0.092	ug/L		11/02/18 02:00	1
Nitrobenzene	0.21	U	0.42	0.21	0.096	ug/L		11/02/18 02:00	1
Nitroglycerin	2.1	U	3.2	2.1	0.97	ug/L		11/02/18 02:00	1
PETN	1.3	U	2.1	1.3	0.44	ug/L		11/02/18 02:00	1
RDX	0.13	U	0.21	0.13	0.055	ug/L		11/02/18 02:00	1
Tetryl	0.21	U	0.25	0.21	0.084	ug/L		11/02/18 02:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*98*		*83 - 119*	*10/30/18 13:24*	*11/02/18 02:00*	*1*

Client Sample ID: LL3mw-246-181001-GW **Lab Sample ID: 280-116186-10**
Date Collected: 10/25/18 13:20 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.41	U	1.0	0.41	0.20	ug/L		11/02/18 02:23	1
1,3-Dinitrobenzene	0.20	U	0.41	0.20	0.091	ug/L		11/02/18 02:23	1
2,4,6-Trinitrotoluene	0.20	U	0.41	0.20	0.074	ug/L		11/02/18 02:23	1
2,4-Dinitrotoluene	0.20	U	0.41	0.20	0.086	ug/L		11/02/18 02:23	1
2,6-Dinitrotoluene	0.20	U	0.20	0.20	0.066	ug/L		11/02/18 02:23	1
2-Amino-4,6-dinitrotoluene	**0.28**		0.20	0.12	0.052	ug/L		11/02/18 02:23	1
2-Nitrotoluene	0.20	U	0.41	0.20	0.088	ug/L		11/02/18 02:23	1
3-Nitrotoluene	0.20	U	0.41	0.20	0.085	ug/L		11/02/18 02:23	1
4-Amino-2,6-dinitrotoluene	**0.26**		0.20	0.12	0.059	ug/L		11/02/18 02:23	1
4-Nitrotoluene	0.41	U	1.0	0.41	0.20	ug/L		11/02/18 02:23	1
HMX	0.20	U	0.41	0.20	0.090	ug/L		11/02/18 02:23	1
Nitrobenzene	0.20	U	0.41	0.20	0.093	ug/L		11/02/18 02:23	1
Nitroglycerin	2.0	U	3.1	2.0	0.94	ug/L		11/02/18 02:23	1
PETN	1.2	U	2.0	1.2	0.43	ug/L		11/02/18 02:23	1
RDX	0.12	U	0.20	0.12	0.054	ug/L		11/02/18 02:23	1
Tetryl	0.20	U M U	0.25	0.20	0.081	ug/L		11/02/18 02:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*103*		*83 - 119*	*10/30/18 13:24*	*11/02/18 02:23*	*1*

Client Sample ID: LL2mw-059-181001-GW **Lab Sample ID: 280-116186-11**
Date Collected: 10/25/18 09:12 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	**2.9**		0.95	0.38	0.19	ug/L		11/02/18 02:46	1
1,3-Dinitrobenzene	**0.27**	J J1 J M08	0.38	0.19	0.084	ug/L		11/02/18 02:46	1
1,3-Dinitrobenzene	**0.10**	J J1 *	0.38	0.19	0.084	ug/L		11/03/18 04:49	1
2,4,6-Trinitrotoluene	0.19	U	0.38	0.19	0.069	ug/L		11/02/18 02:46	1
2,4-Dinitrotoluene	**0.62**		0.38	0.19	0.079	ug/L		11/02/18 02:46	1
2,6-Dinitrotoluene	0.19	U	0.19	0.19	0.061	ug/L		11/02/18 02:46	1
2-Amino-4,6-dinitrotoluene	**0.66**		0.19	0.11	0.048	ug/L		11/02/18 02:46	1
2-Nitrotoluene	0.19	U M U	0.38	0.19	0.081	ug/L		11/02/18 02:46	1
3-Nitrotoluene	0.19	U	0.38	0.19	0.079	ug/L		11/02/18 02:46	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: LL2mw-059-181001-GW **Lab Sample ID: 280-116186-11**
Date Collected: 10/25/18 09:12 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4-Amino-2,6-dinitrotoluene	**0.45**		0.19	0.11	0.055	ug/L		11/02/18 02:46	1
4-Nitrotoluene	0.38	U	0.95	0.38	0.19	ug/L		11/02/18 02:46	1
HMX	0.19	U M U	0.38	0.19	0.083	ug/L		11/02/18 02:46	1
Nitrobenzene	0.19	U	0.38	0.19	0.086	ug/L		11/02/18 02:46	1
Nitroglycerin	1.9	U	2.8	1.9	0.87	ug/L		11/02/18 02:46	1
PETN	1.1	U	1.9	1.1	0.39	ug/L		11/02/18 02:46	1
RDX	0.11	U	0.19	0.11	0.050	ug/L		11/02/18 02:46	1
Tetryl	0.19	U M U	0.23	0.19	0.075	ug/L		11/02/18 02:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*97*		*83 - 119*	*10/30/18 13:24*	*11/02/18 02:46*	*1*
1,2-Dinitrobenzene	*83*		*83 - 119*	*10/30/18 13:24*	*11/03/18 04:49*	*1*

Client Sample ID: LL2mw-267-181001-GW **Lab Sample ID: 280-116186-12**
Date Collected: 10/25/18 12:35 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.39	U	0.98	0.39	0.20	ug/L		11/02/18 03:09	1
1,3-Dinitrobenzene	0.20	U	0.39	0.20	0.087	ug/L		11/02/18 03:09	1
2,4,6-Trinitrotoluene	**0.11**	**J**	0.39	0.20	0.071	ug/L		11/02/18 03:09	1
2,4-Dinitrotoluene	**0.12**	**J**	0.39	0.20	0.082	ug/L		11/02/18 03:09	1
2,6-Dinitrotoluene	0.20	U	0.20	0.20	0.063	ug/L		11/02/18 03:09	1
2-Amino-4,6-dinitrotoluene	**0.50**		0.20	0.12	0.049	ug/L		11/02/18 03:09	1
2-Nitrotoluene	0.20	U	0.39	0.20	0.083	ug/L		11/02/18 03:09	1
3-Nitrotoluene	0.20	U M U	0.39	0.20	0.081	ug/L		11/02/18 03:09	1
4-Amino-2,6-dinitrotoluene	**0.45**		0.20	0.12	0.056	ug/L		11/02/18 03:09	1
4-Nitrotoluene	0.39	U	0.98	0.39	0.20	ug/L		11/02/18 03:09	1
HMX	**0.98**	**M J1** J M08	0.39	0.20	0.085	ug/L		11/02/18 03:09	1
HMX	**0.36**	**J J1** *	0.39	0.20	0.085	ug/L		11/03/18 05:24	1
Nitrobenzene	0.20	U	0.39	0.20	0.089	ug/L		11/03/18 05:24	1
Nitroglycerin	2.0	U	2.9	2.0	0.90	ug/L		11/02/18 03:09	1
PETN	1.2	U	2.0	1.2	0.41	ug/L		11/02/18 03:09	1
RDX	**0.79**	**M J1** J M08	0.20	0.12	0.051	ug/L		11/02/18 03:09	1
RDX	**0.41**	**J1** *	0.20	0.12	0.051	ug/L		11/03/18 05:24	1
Tetryl	0.20	U M U	0.23	0.20	0.077	ug/L		11/02/18 03:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*105*	*M*	*83 - 119*	*10/30/18 13:24*	*11/02/18 03:09*	*1*
1,2-Dinitrobenzene	*89*		*83 - 119*	*10/30/18 13:24*	*11/03/18 05:24*	*1*

Client Sample ID: LL1mw-081-181001-GW **Lab Sample ID: 280-116186-13**
Date Collected: 10/25/18 13:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.44	U	1.1	0.44	0.22	ug/L		11/02/18 03:32	1
1,3-Dinitrobenzene	0.22	U	0.44	0.22	0.097	ug/L		11/02/18 03:32	1
2,4,6-Trinitrotoluene	0.22	U	0.44	0.22	0.080	ug/L		11/02/18 03:32	1
2,4-Dinitrotoluene	0.22	U	0.44	0.22	0.092	ug/L		11/02/18 03:32	1
2,6-Dinitrotoluene	0.22	U	0.22	0.22	0.071	ug/L		11/02/18 03:32	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.22	0.13	0.056	ug/L		11/02/18 03:32	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: LL1mw-081-181001-GW **Lab Sample ID: 280-116186-13**
Date Collected: 10/25/18 13:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrotoluene	0.22	U	0.44	0.22	0.094	ug/L		11/02/18 03:32	1
3-Nitrotoluene	0.22	U	0.44	0.22	0.092	ug/L		11/02/18 03:32	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.22	0.13	0.063	ug/L		11/02/18 03:32	1
4-Nitrotoluene	0.44	U	1.1	0.44	0.22	ug/L		11/02/18 03:32	1
HMX	0.22	U	0.44	0.22	0.096	ug/L		11/03/18 05:59	1
Nitrobenzene	0.22	U	0.44	0.22	0.10	ug/L		11/02/18 03:32	1
Nitroglycerin	2.2	U	3.3	2.2	1.0	ug/L		11/02/18 03:32	1
PETN	1.3	U	2.2	1.3	0.46	ug/L		11/02/18 03:32	1
RDX	0.13	U	0.22	0.13	0.057	ug/L		11/02/18 03:32	1
Tetryl	0.22	U	0.26	0.22	0.087	ug/L		11/02/18 03:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*111*		*83 - 119*	*10/30/18 13:24*	*11/02/18 03:32*	*1*
1,2-Dinitrobenzene	*89*		*83 - 119*	*10/30/18 13:24*	*11/03/18 05:59*	*1*

Method: 6860 - Perchlorate by IC/MS or IC/MS/MS

Client Sample ID: LL3mw-246-181001-GW **Lab Sample ID: 280-116186-10**
Date Collected: 10/25/18 13:20 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perchlorate	**0.032**	**J**	0.050	0.010	0.0040	ug/L		11/07/18 15:29	1

Method: 6010C - Metals (ICP)

Client Sample ID: FWGmw-024-181001-GW **Lab Sample ID: 280-116186-1**
Date Collected: 10/25/18 10:05 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		11/05/18 22:17	1
Calcium	**72000**	J E07	1000	140	35	ug/L		11/05/18 22:17	1
Iron	**1100**		100	85	22	ug/L		11/05/18 22:17	1
Magnesium	**21000**		500	40	11	ug/L		11/05/18 22:17	1
Potassium	**990**	**J**	3000	940	240	ug/L		11/05/18 22:17	1
Sodium	**5700**		5000	350	120	ug/L		11/06/18 18:54	1

Client Sample ID: FWGmw-017-181001-GW **Lab Sample ID: 280-116186-2**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		11/05/18 22:34	1
Calcium	**68000**		1000	140	35	ug/L		11/05/18 22:34	1
Iron	**430**		100	85	22	ug/L		11/05/18 22:34	1
Magnesium	**27000**		500	40	11	ug/L		11/05/18 22:34	1
Potassium	**1800**	**J**	3000	940	240	ug/L		11/05/18 22:34	1
Sodium	**12000**		5000	350	120	ug/L		11/06/18 19:11	1

Method: 6010C - Metals (ICP)

Client Sample ID: FWGmw-021-181001-GW **Lab Sample ID: 280-116186-5**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		11/05/18 22:38	1
Calcium	**18000**		1000	140	35	ug/L		11/05/18 22:38	1
Iron	**4700**		100	85	22	ug/L		11/05/18 22:38	1
Magnesium	**6900**		500	40	11	ug/L		11/05/18 22:38	1
Potassium	**1500**	**J**	3000	940	240	ug/L		11/05/18 22:38	1
Sodium	**3900**	**J**	5000	350	120	ug/L		11/06/18 19:14	1

Client Sample ID: FWGmw-015-181001-GW **Lab Sample ID: 280-116186-9**
Date Collected: 10/24/18 15:30 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**32**	**J**	300	70	18	ug/L		11/05/18 22:55	1
Calcium	**270000**		1000	140	35	ug/L		11/05/18 22:55	1
Iron	**210**		100	85	22	ug/L		11/05/18 22:55	1
Magnesium	**250000**		500	40	11	ug/L		11/05/18 22:55	1
Potassium	**3500**		3000	940	240	ug/L		11/05/18 22:55	1
Sodium	**45000**	J D05	5000	350	120	ug/L		11/06/18 19:31	1

Client Sample ID: LL3mw-246-181001-GW **Lab Sample ID: 280-116186-10**
Date Collected: 10/25/18 13:20 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		11/05/18 22:59	1
Calcium	**23000**		1000	140	35	ug/L		11/05/18 22:59	1
Iron	85	U	100	85	22	ug/L		11/05/18 22:59	1
Magnesium	**7300**		500	40	11	ug/L		11/05/18 22:59	1
Potassium	**1300**	**J**	3000	940	240	ug/L		11/05/18 22:59	1
Sodium	**3300**	**J** J D05	5000	350	120	ug/L		11/06/18 19:34	1

Client Sample ID: LL2mw-059-181001-GW **Lab Sample ID: 280-116186-11**
Date Collected: 10/25/18 09:12 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		11/05/18 23:02	1
Calcium	**28000**		1000	140	35	ug/L		11/05/18 23:02	1
Iron	85	U	100	85	22	ug/L		11/05/18 23:02	1
Magnesium	**12000**		500	40	11	ug/L		11/05/18 23:02	1
Potassium	**710**	**J**	3000	940	240	ug/L		11/05/18 23:02	1
Sodium	**3100**	**J** J D05	5000	350	120	ug/L		11/06/18 19:37	1

Client Sample ID: LL2mw-267-181001-GW **Lab Sample ID: 280-116186-12**
Date Collected: 10/25/18 12:35 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**67**	**J**	300	70	18	ug/L		11/05/18 23:05	1
Calcium	**32000**		1000	140	35	ug/L		11/05/18 23:05	1
Iron	**2300**		100	85	22	ug/L		11/05/18 23:05	1
Magnesium	**14000**		500	40	11	ug/L		11/05/18 23:05	1
Potassium	**630**	**J**	3000	940	240	ug/L		11/05/18 23:05	1
Sodium	**7400**	J D05	5000	350	120	ug/L		11/06/18 19:41	1

Client Sample Results

Client: Leidos, Inc. TestAmerica Job ID: 280-116186-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Method: 6020A - Metals (ICP/MS)

NOTE:BARIUM, MANGANESE ADR-ASSIGNED QUALIFIERS DELETED FOR SEVERAL SAMPLES (ONLY THE PARENT SAMPLE SHOULD BE QUALIFIED); SEE ADR REPORT FOR DETAILS

Client Sample ID: FWGmw-024-181001-GW **Lab Sample ID: 280-116186-1**
Date Collected: 10/25/18 10:05 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/12/18 14:12	1
Arsenic	**3.0**	**J**	5.0	1.0	0.33	ug/L		11/12/18 14:12	1
Barium delete ADR qualifier	**8.7**		3.0	0.95	0.29	ug/L		11/12/18 14:12	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/12/18 14:12	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/12/18 14:12	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/12/18 14:12	1
Cobalt	**0.53**	**J**	1.0	0.20	0.054	ug/L		11/12/18 14:12	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/12/18 14:12	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/12/18 14:12	1
Manganese delete ADR qualifier	**260**		3.5	0.95	0.31	ug/L		11/12/18 14:12	1
Nickel	**1.5**	**J** J D05	3.0	1.0	0.30	ug/L		11/12/18 17:17	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/12/18 14:12	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/12/18 14:12	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/12/18 14:12	1
Vanadium	2.0	U Q U	6.0	2.0	0.50	ug/L		11/12/18 14:12	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/12/18 14:12	1

Client Sample ID: FWGmw-017-181001-GW **Lab Sample ID: 280-116186-2**
Date Collected: 10/25/18 09:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/12/18 14:16	1
Arsenic	**3.3**	**J**	5.0	1.0	0.33	ug/L		11/12/18 14:16	1
Barium	**120**	**J1** J H02	3.0	0.95	0.29	ug/L		11/12/18 14:16	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/12/18 14:16	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/12/18 14:16	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/12/18 14:16	1
Cobalt	**0.40**	**J**	1.0	0.20	0.054	ug/L		11/12/18 14:16	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/12/18 14:16	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/12/18 14:16	1
Manganese	**310**	**J1** ~~=~~ J H02	3.5	0.95	0.31	ug/L		11/12/18 14:16	1
Nickel	**1.0**	**J** J D05	3.0	1.0	0.30	ug/L		11/12/18 17:20	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/12/18 14:16	1
Silver	0.10	U J1 UJ E03	5.0	0.10	0.033	ug/L		11/12/18 14:16	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/12/18 14:16	1
Vanadium	2.0	U Q U	6.0	2.0	0.50	ug/L		11/12/18 14:16	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/12/18 14:16	1

Client Sample ID: FWGmw-021-181001-GW **Lab Sample ID: 280-116186-5**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony 1.0	**0.46**	**J** U F06	6.0	1.0	0.40	ug/L		11/12/18 14:46	1
Arsenic	**1.5**	**J**	5.0	1.0	0.33	ug/L		11/12/18 14:46	1
Barium delete ADR qualifier	**17**		3.0	0.95	0.29	ug/L		11/12/18 14:46	1
Beryllium	0.30	U Q U	1.0	0.30	0.080	ug/L		11/12/18 14:46	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/12/18 14:46	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/12/18 14:46	1
Cobalt	**3.0**		1.0	0.20	0.054	ug/L		11/12/18 14:46	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/12/18 14:46	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: FWGmw-021-181001-GW **Lab Sample ID: 280-116186-5**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/12/18 14:46	1
Manganese delete ADR qualifier	**550**		3.5	0.95	0.31	ug/L		11/12/18 14:46	1
Nickel	**10**	J D05	3.0	1.0	0.30	ug/L		11/12/18 16:24	1
Selenium	2.0	U Q U	5.0	2.0	0.70	ug/L		11/12/18 14:46	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/12/18 14:46	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/12/18 14:46	1
Vanadium	2.0 **0.99**	**J Q** UJ F06 D05	6.0	2.0	0.50	ug/L		11/12/18 14:46	1
Zinc	**21**		20	8.0	2.0	ug/L		11/12/18 14:46	1

Client Sample ID: FWGmw-015-181001-GW **Lab Sample ID: 280-116186-9**
Date Collected: 10/24/18 15:30 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/12/18 14:50	1
Arsenic	**0.79**	**J**	5.0	1.0	0.33	ug/L		11/12/18 14:50	1
Barium delete ADR qualifier	**11**		3.0	0.95	0.29	ug/L		11/12/18 14:50	1
Beryllium	0.30	U Q U	1.0	0.30	0.080	ug/L		11/12/18 14:50	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/12/18 14:50	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/12/18 14:50	1
Cobalt	**0.73**	**J**	1.0	0.20	0.054	ug/L		11/12/18 14:50	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/12/18 14:50	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/12/18 14:50	1
Manganese delete ADR qualifier	**550**		3.5	0.95	0.31	ug/L		11/12/18 14:50	1
Nickel	**1.2**	**J** J D05	3.0	1.0	0.30	ug/L		11/12/18 17:09	1
Selenium	2.0	U Q U	5.0	2.0	0.70	ug/L		11/12/18 14:50	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/12/18 14:50	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/12/18 14:50	1
Vanadium	2.0	U Q U	6.0	2.0	0.50	ug/L		11/12/18 14:50	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/12/18 14:50	1

Client Sample ID: LL3mw-246-181001-GW **Lab Sample ID: 280-116186-10**
Date Collected: 10/25/18 13:20 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0 **0.44**	**J** U F06	6.0	1.0	0.40	ug/L		11/12/18 14:54	1
Arsenic	1.0	U	5.0	1.0	0.33	ug/L		11/12/18 14:54	1
Barium delete ADR qualifier	**16**		3.0	0.95	0.29	ug/L		11/12/18 14:54	1
Beryllium	0.30	U Q U	1.0	0.30	0.080	ug/L		11/12/18 14:54	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/12/18 14:54	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/12/18 14:54	1
Cobalt	0.20	U	1.0	0.20	0.054	ug/L		11/12/18 14:54	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/12/18 14:54	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/12/18 14:54	1
Manganese delete ADR reason code	**0.67**	**J**	3.5	0.95	0.31	ug/L		11/12/18 14:54	1
Nickel	**1.5**	**J** J D05	3.0	1.0	0.30	ug/L		11/12/18 17:13	1
Selenium	2.0	U Q U	5.0	2.0	0.70	ug/L		11/12/18 14:54	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/12/18 14:54	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/12/18 14:54	1
Vanadium	2.0	U Q U	6.0	2.0	0.50	ug/L		11/12/18 14:54	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/12/18 14:54	1

Client Sample Results

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-116186-1

Client Sample ID: LL2mw-059-181001-GW
Date Collected: 10/25/18 09:12
Date Received: 10/26/18 13:19

Lab Sample ID: 280-116186-11
Matrix: Water

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/12/18 14:57	1
Arsenic	1.0	U	5.0	1.0	0.33	ug/L		11/12/18 14:57	1
Barium delete ADR reason code	**2.7**	**J**	3.0	0.95	0.29	ug/L		11/12/18 14:57	1
Beryllium	0.30	U Q U	1.0	0.30	0.080	ug/L		11/12/18 14:57	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/12/18 14:57	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/12/18 14:57	1
Cobalt	**0.33**	**J**	1.0	0.20	0.054	ug/L		11/12/18 14:57	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/12/18 14:57	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/12/18 14:57	1
Manganese delete ADR qualifier	**120**		3.5	0.95	0.31	ug/L		11/12/18 14:57	1
Nickel	**5.9**	J D05	3.0	1.0	0.30	ug/L		11/12/18 16:27	1
Selenium	2.0	U Q U	5.0	2.0	0.70	ug/L		11/12/18 14:57	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/12/18 14:57	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/12/18 14:57	1
Vanadium	2.0	U Q U	6.0	2.0	0.50	ug/L		11/12/18 14:57	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/12/18 14:57	1

Client Sample ID: LL2mw-267-181001-GW
Date Collected: 10/25/18 12:35
Date Received: 10/26/18 13:19

Lab Sample ID: 280-116186-12
Matrix: Water

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/12/18 15:01	1
Arsenic	**2.3**	**J**	5.0	1.0	0.33	ug/L		11/12/18 15:01	1
Barium delete ADR qualifier	**18**		3.0	0.95	0.29	ug/L		11/12/18 15:01	1
Beryllium	0.30	U Q U	1.0	0.30	0.080	ug/L		11/12/18 15:01	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/12/18 15:01	1
Chromium	**0.56**	**J**	10	1.8	0.50	ug/L		11/12/18 15:01	1
Cobalt	**3.3**		1.0	0.20	0.054	ug/L		11/12/18 15:01	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/12/18 15:01	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/12/18 15:01	1
Manganese delete ADR qualifier	**560**		3.5	0.95	0.31	ug/L		11/12/18 15:01	1
Nickel	**3.1**	J D05	3.0	1.0	0.30	ug/L		11/12/18 16:31	1
Selenium	2.0	U Q U	5.0	2.0	0.70	ug/L		11/12/18 15:01	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/12/18 15:01	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/12/18 15:01	1
Vanadium	2.0	U Q U	6.0	2.0	0.50	ug/L		11/12/18 15:01	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/12/18 15:01	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: FWGmw-024-181001-GW
Date Collected: 10/25/18 10:05
Date Received: 10/26/18 13:19

Lab Sample ID: 280-116186-1
Matrix: Water

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/08/18 19:01	1

Client Sample ID: FWGmw-017-181001-GW
Date Collected: 10/25/18 09:50
Date Received: 10/26/18 13:19

Lab Sample ID: 280-116186-2
Matrix: Water

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/08/18 19:03	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: FWGmw-021-181001-GW **Lab Sample ID: 280-116186-5**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/08/18 19:06	1

Client Sample ID: FWGmw-015-181001-GW **Lab Sample ID: 280-116186-9**
Date Collected: 10/24/18 15:30 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/08/18 19:17	1

Client Sample ID: LL3mw-246-181001-GW **Lab Sample ID: 280-116186-10**
Date Collected: 10/25/18 13:20 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/08/18 19:23	1

Client Sample ID: LL2mw-059-181001-GW **Lab Sample ID: 280-116186-11**
Date Collected: 10/25/18 09:12 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/08/18 19:26	1

Client Sample ID: LL2mw-267-181001-GW **Lab Sample ID: 280-116186-12**
Date Collected: 10/25/18 12:35 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/08/18 19:28	1

General Chemistry

Client Sample ID: FWGmw-021-181001-GW **Lab Sample ID: 280-116186-5**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/07/18 17:06	1

Client Sample ID: FWGmw-021-181002-GW **Lab Sample ID: 280-116186-6**
Date Collected: 10/25/18 14:10 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/07/18 17:10	1

Client Sample ID: LL1mw-081-181001-GW **Lab Sample ID: 280-116186-13**
Date Collected: 10/25/18 13:50 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	**0.0027**	**J**	0.010	0.0050	0.0020	mg/L		11/07/18 17:12	1

Client Sample ID: LL2mw-272-181001-GW **Lab Sample ID: 280-116186-14**
Date Collected: 10/25/18 15:00 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/07/18 17:13	1

Client: Leidos, Inc. TestAmerica Job ID: 280-116186-2
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

General Chemistry

Client Sample ID: FWGmw-024-181001-GW **Lab Sample ID: 280-116186-1**
Date Collected: 10/25/18 10:05 **Matrix: Water**
Date Received: 10/26/18 13:19

Analyte	Result	Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Hexavalent chromium	ND	U	0.020		0.0030	mg/L		10/25/18 17:30	1

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116186-1						
Method: 6010C						
FWGmw-015-181001-GW	280-116186-9	AQ	N	3010A	10/24/2018 3:30:00 PM	S2AVE
FWGmw-017-181001-GW	280-116186-2	AQ	N	3010A	10/25/2018 9:50:00 AM	S2AVE
FWGmw-021-181001-GW	280-116186-5	AQ	N	3010A	10/25/2018 2:10:00 PM	S2AVE
FWGmw-024-181001-GW	280-116186-1	AQ	N	3010A	10/25/2018 10:05:00 AM	S2AVE
FWGmw-024-181001-GWMS	280-116186-1MS	AQ	MS	3010A	10/25/2018 10:05:00 AM	S2AVE
FWGmw-024-181001-GWMSD	280-116186-1MSD	AQ	MSD	3010A	10/25/2018 10:05:00 AM	S2AVE
LL2mw-059-181001-GW	280-116186-11	AQ	N	3010A	10/25/2018 9:12:00 AM	S2AVE
LL2mw-267-181001-GW	280-116186-12	AQ	N	3010A	10/25/2018 12:35:00 PM	S2AVE
LL3mw-246-181001-GW	280-116186-10	AQ	N	3010A	10/25/2018 1:20:00 PM	S2AVE
Method: 6010C-KNA						
FWGmw-015-181001-GW	280-116186-9	AQ	N	3010A	10/24/2018 3:30:00 PM	S2AVE
FWGmw-017-181001-GW	280-116186-2	AQ	N	3010A	10/25/2018 9:50:00 AM	S2AVE
FWGmw-021-181001-GW	280-116186-5	AQ	N	3010A	10/25/2018 2:10:00 PM	S2AVE
FWGmw-024-181001-GW	280-116186-1	AQ	N	3010A	10/25/2018 10:05:00 AM	S2AVE
FWGmw-024-181001-GWMS	280-116186-1MS	AQ	MS	3010A	10/25/2018 10:05:00 AM	S2AVE
FWGmw-024-181001-GWMSD	280-116186-1MSD	AQ	MSD	3010A	10/25/2018 10:05:00 AM	S2AVE
LL2mw-059-181001-GW	280-116186-11	AQ	N	3010A	10/25/2018 9:12:00 AM	S2AVE
LL2mw-267-181001-GW	280-116186-12	AQ	N	3010A	10/25/2018 12:35:00 PM	S2AVE
LL3mw-246-181001-GW	280-116186-10	AQ	N	3010A	10/25/2018 1:20:00 PM	S2AVE
Method: 6020A						
FWGmw-015-181001-GW	280-116186-9	AQ	N	3020A	10/24/2018 3:30:00 PM	S2AVE
FWGmw-017-181001-GW	280-116186-2	AQ	N	3020A	10/25/2018 9:50:00 AM	S2AVE
FWGmw-017-181001-GWMS	280-116186-2MS	AQ	MS	3020A	10/25/2018 9:50:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 6020A						
FWGmw-017-181001-GWMSD	280-116186-2MSD	AQ	MSD	3020A	10/25/2018 9:50:00 AM	S2AVE
FWGmw-021-181001-GW	280-116186-5	AQ	N	3020A	10/25/2018 2:10:00 PM	S2AVE
FWGmw-024-181001-GW	280-116186-1	AQ	N	3020A	10/25/2018 10:05:00 AM	S2AVE
LL2mw-059-181001-GW	280-116186-11	AQ	N	3020A	10/25/2018 9:12:00 AM	S2AVE
LL2mw-267-181001-GW	280-116186-12	AQ	N	3020A	10/25/2018 12:35:00 PM	S2AVE
LL3mw-246-181001-GW	280-116186-10	AQ	N	3020A	10/25/2018 1:20:00 PM	S2AVE
Method: 6860						
LL3mw-246-181001-GW	280-116186-10	AQ	N	METHOD	10/25/2018 1:20:00 PM	S2AVE
Method: 7470A						
FWGmw-015-181001-GW	280-116186-9	AQ	N	7470A	10/24/2018 3:30:00 PM	S2AVE
FWGmw-017-181001-GW	280-116186-2	AQ	N	7470A	10/25/2018 9:50:00 AM	S2AVE
FWGmw-021-181001-GW	280-116186-5	AQ	N	7470A	10/25/2018 2:10:00 PM	S2AVE
FWGmw-021-181001-GWMS	280-116186-5MS	AQ	MS	7470A	10/25/2018 2:10:00 PM	S2AVE
FWGmw-021-181001-GWMSD	280-116186-5MSD	AQ	MSD	7470A	10/25/2018 2:10:00 PM	S2AVE
FWGmw-024-181001-GW	280-116186-1	AQ	N	7470A	10/25/2018 10:05:00 AM	S2AVE
LL2mw-059-181001-GW	280-116186-11	AQ	N	7470A	10/25/2018 9:12:00 AM	S2AVE
LL2mw-267-181001-GW	280-116186-12	AQ	N	7470A	10/25/2018 12:35:00 PM	S2AVE
LL3mw-246-181001-GW	280-116186-10	AQ	N	7470A	10/25/2018 1:20:00 PM	S2AVE
Method: 8081B						
FWGmw-021-181001-GW	280-116186-5	AQ	N	3510C	10/25/2018 2:10:00 PM	S2AVE
FWGmw-021-181001-GWMS	280-116186-5MS	AQ	MS	3510C	10/25/2018 2:10:00 PM	S2AVE
FWGmw-021-181001-GWMSD	280-116186-5MSD	AQ	MSD	3510C	10/25/2018 2:10:00 PM	S2AVE
Method: 8082A						
FWGmw-021-181001-GW	280-116186-5	AQ	N	3510C	10/25/2018 2:10:00 PM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method		Collection Date	Validation Code
Method: 8260B							
FWGmw-017-181001-GW	280-116186-2	AQ	N	METHOD		10/25/2018 9:50:00 AM	S2AVE
FWGmw-021-181001-GW	280-116186-5	AQ	N	METHOD		10/25/2018 2:10:00 PM	S2AVE
FWGmw-024-181001-GW	280-116186-1	AQ	N	METHOD		10/25/2018 10:05:00 AM	S2AVE
FWGTB-181004-TB	280-116186-15	AQ	TB	METHOD		10/25/2018	S2AVE
FWGTB-181005-TB	280-116186-7	AQ	TB	METHOD		10/25/2018 2:10:00 PM	S2AVE
FWGTB-181006-TB	280-116186-4	AQ	TB	METHOD		10/25/2018 9:50:00 AM	S2AVE
Method: 8270D							
FWGmw-015-181001-GW	280-116186-9	AQ	N	3520C		10/24/2018 3:30:00 PM	S2AVE
FWGmw-017-181001-GW	280-116186-2	AQ	N	3520C		10/25/2018 9:50:00 AM	S2AVE
FWGmw-017-181002-GW	280-116186-3	AQ	FD	3520C		10/25/2018 9:50:00 AM	S2AVE
FWGmw-021-181001-GW	280-116186-5	AQ	N	3520C		10/25/2018 2:10:00 PM	S2AVE
FWGmw-024-181001-GW	280-116186-1	AQ	N	3520C		10/25/2018 10:05:00 AM	S2AVE
LL2mw-059-181001-GW	280-116186-11	AQ	N	3520C		10/25/2018 9:12:00 AM	S2AVE
LL2mw-267-181001-GW	280-116186-12	AQ	N	3520C		10/25/2018 12:35:00 PM	S2AVE
LL3mw-246-181001-GW	280-116186-10	AQ	N	3520C		10/25/2018 1:20:00 PM	S2AVE
Method: 8270D-SIM							
FWGmw-017-181001-GW	280-116186-2	AQ	N	3510C		10/25/2018 9:50:00 AM	S2AVE
FWGmw-017-181002-GW	280-116186-3	AQ	FD	3510C		10/25/2018 9:50:00 AM	S2AVE
FWGmw-021-181001-GW	280-116186-5	AQ	N	3510C		10/25/2018 2:10:00 PM	S2AVE
FWGmw-024-181001-GW	280-116186-1	AQ	N	3510C		10/25/2018 10:05:00 AM	S2AVE
Method: 8330B							
FWGmw-015-181001-GW	280-116186-9	AQ	N		3535	10/24/2018 3:30:00 PM	S2AVE
FWGmw-017-181001-GW	280-116186-2	AQ	N		3535	10/25/2018 9:50:00 AM	S2AVE
FWGmw-021-181001-GW	280-116186-5	AQ	N		3535	10/25/2018 2:10:00 PM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 8330B						
FWGmw-021-181001-GWMS	280-116186-5MS	AQ	MS	3535	10/25/2018 2:10:00 PM	S2AVE
FWGmw-021-181001-GWMSD	280-116186-5MSD	AQ	MSD	3535	10/25/2018 2:10:00 PM	S2AVE
FWGmw-021-181002-GW	280-116186-6	AQ	FD	3535	10/25/2018 2:10:00 PM	S2AVE
FWGmw-024-181001-GW	280-116186-1	AQ	N	3535	10/25/2018 10:05:00 AM	S2AVE
LL1mw-080-181001-GW	280-116186-8	AQ	N	3535	10/24/2018 3:45:00 PM	S2AVE
LL1mw-081-181001-GW	280-116186-13	AQ	N	3535	10/25/2018 1:50:00 PM	S2AVE
LL2mw-059-181001-GW	280-116186-11	AQ	N	3535	10/25/2018 9:12:00 AM	S2AVE
LL2mw-267-181001-GW	280-116186-12	AQ	N	3535	10/25/2018 12:35:00 PM	S2AVE
LL3mw-246-181001-GW	280-116186-10	AQ	N	3535	10/25/2018 1:20:00 PM	S2AVE
Method: 9012B						
FWGmw-021-181001-GW	280-116186-5	AQ	N	Gen Prep	10/25/2018 2:10:00 PM	S2AVE
FWGmw-021-181001-GWMS	280-116186-5MS	AQ	MS	Gen Prep	10/25/2018 2:10:00 PM	S2AVE
FWGmw-021-181001-GWMSD	280-116186-5MSD	AQ	MSD	Gen Prep	10/25/2018 2:10:00 PM	S2AVE
FWGmw-021-181002-GW	280-116186-6	AQ	FD	Gen Prep	10/25/2018 2:10:00 PM	S2AVE
LL1mw-081-181001-GW	280-116186-13	AQ	N	Gen Prep	10/25/2018 1:50:00 PM	S2AVE
LL2mw-272-181001-GW	280-116186-14	AQ	N	Gen Prep	10/25/2018 3:00:00 PM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116186-1
EDD Filename: 280-116186-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	SR
Matrix Spike/Matrix Spike Duplicates	SR
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	A
Field Triplicates	N
Field Blanks	A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: **6020A**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-435538/1-A	11/12/2018 2:00:00 PM	VANADIUM	0.572 ug/L *CONFIRMED	FWGmw-015-181001-GW FWGmw-017-181001-GW FWGmw-021-181001-GW FWGmw-024-181001-GW LL2mw-059-181001-GW LL2mw-267-181001-GW LL3mw-246-181001-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FWGmw-021-181001-GW(RES/TOT)	VANADIUM	0.99 ug/L	0.99U ug/L

Method: **8270D-SIM**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-435408/1-A	11/1/2018 11:01:00 PM	PHENANTHRENE	0.0181 ug/L *CONFIRMED	FWGmw-017-181001-GW FWGmw-017-181002-GW FWGmw-021-181001-GW FWGmw-024-181001-GW

Surrogate Outlier Report

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8270D-SIM
Matrix: AQ

Sample ID (Analysis Type)	Surrogate	Sample % Recovery	% Recovery Limits	Affected Compounds	Flag
FWGmw-021-181001-GW	2-FLUOROBIPHENYL	50	53.00-106.00	No Affected Compounds	

*CONFIRMED

Method: 8330B
Matrix: AQ

Sample ID (Analysis Type)	Surrogate	Sample % Recovery	% Recovery Limits	Affected Compounds	Flag
FWGmw-024-181001-GW	1,2-DINITROBENZENE	121	83.00-119.00	All Target Analytes	J(all detects)

*Confirmed, all ND, no qual

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8330B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FWGmw-021-181001-GWMS FWGmw-021-181001-GWMSD (FWGmw-021-181001-GW)	3-NITROTOLUENE Hexahydro-1,3,5-Trinitro-1,3,5-Triaz	- 138	- -	73.00-125.00 68.00-130.00	96 (30.00) -	3-NITROTOLUENE Hexahydro-1,3,5-Trinitro-1,3,5-Tri	J (all detects)
FWGmw-021-181001-GWMS FWGmw-021-181001-GWMSD (FWGmw-021-181001-GW)	2-NITROTOLUENE NITROBENZENE	60 -	- 43	70.00-127.00 65.00-134.00	- 48 (30.00)	2-NITROTOLUENE NITROBENZENE	J(all detects) UJ(all non-detects)

Method: 6020A *CONFIRMED
Matrix: AQ

QUALIFY PARENT SAMPLE ONLY

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FWGmw-017-181001-GWMS (TOT) FWGmw-017-181001-GWMSD (TOT) (FWGmw-015-181001-GW FWGmw-017-181001-GW FWGmw-021-181001-GW FWGmw-024-181001-GW LL2mw-059-181001-GW LL2mw-267-181001-GW LL3mw-246-181001-GW)	BARIUM MANGANESE	82 71	82 69	86.00-114.00 87.00-115.00	- -	BARIUM MANGANESE *CONFIRMED	J(all detects) UJ(all non-detects)

Method: 8081B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FWGmw-021-181001-GWMS FWGmw-021-181001-GWMSD (FWGmw-021-181001-GW)	ENDRIN ALDEHYDE TOXAPHENE	- 18	49 15	51.00-132.00 33.00-134.00	- -	ENDRIN ALDEHYDE TOXAPHENE	J(all detects) UJ(all non-detects)

*CONFIRMED

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-015-181001-GW	ALUMINUM	J	32	300	LOQ	ug/L	J (all detects)
LL2mw-267-181001-GW	ALUMINUM	J	67	300	LOQ	ug/L	J (all detects)

Method: 6010C-KNA

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-017-181001-GW	POTASSIUM	J	1800	3000	LOQ	ug/L	J (all detects)
FWGmw-021-181001-GW	POTASSIUM	J	1500	3000	LOQ	ug/L	J (all detects)
	SODIUM	J	3900	5000	LOQ	ug/L	
FWGmw-024-181001-GW	POTASSIUM	J	990	3000	LOQ	ug/L	J (all detects)
LL2mw-059-181001-GW	POTASSIUM	J	710	3000	LOQ	ug/L	J (all detects)
	SODIUM	J	3100	5000	LOQ	ug/L	
LL2mw-267-181001-GW	POTASSIUM	J	630	3000	LOQ	ug/L	J (all detects)
LL3mw-246-181001-GW	POTASSIUM	J	1300	3000	LOQ	ug/L	J (all detects)
	SODIUM	J	3300	5000	LOQ	ug/L	

Method: 6020A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-015-181001-GW	ARSENIC	J	0.79	5.0	LOQ	ug/L	J (all detects)
	COBALT	J	0.73	1.0	LOQ	ug/L	
	NICKEL	J	1.2	3.0	LOQ	ug/L	
FWGmw-017-181001-GW	ARSENIC	J	3.3	5.0	LOQ	ug/L	J (all detects)
	COBALT	J	0.40	1.0	LOQ	ug/L	
	NICKEL	J	1.0	3.0	LOQ	ug/L	
FWGmw-021-181001-GW	ANTIMONY	J	0.46	6.0	LOQ	ug/L	J (all detects)
	ARSENIC	J	1.5	5.0	LOQ	ug/L	
	VANADIUM	J Q	0.99	6.0	LOQ	ug/L	
FWGmw-024-181001-GW	ARSENIC	J	3.0	5.0	LOQ	ug/L	J (all detects)
	COBALT	J	0.53	1.0	LOQ	ug/L	
	NICKEL	J	1.5	3.0	LOQ	ug/L	
LL2mw-059-181001-GW	BARIUM	J	2.7	3.0	LOQ	ug/L	J (all detects)
	COBALT	J	0.33	1.0	LOQ	ug/L	
LL2mw-267-181001-GW	ARSENIC	J	2.3	5.0	LOQ	ug/L	J (all detects)
	CHROMIUM	J	0.56	10	LOQ	ug/L	
LL3mw-246-181001-GW	ANTIMONY	J	0.44	6.0	LOQ	ug/L	J (all detects)
	MANGANESE	J	0.67	3.5	LOQ	ug/L	
	NICKEL	J	1.5	3.0	LOQ	ug/L	

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6860
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL3mw-246-181001-GW	PERCHLORATE	J	0.032	0.050	LOQ	ug/L	J (all detects)

Method: 8081B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-021-181001-GW	TOXAPHENE	J	1.3	2.1	LOQ	ug/L	J (all detects)

Method: 8260B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-017-181001-GW	ACETONE	J H	6.6	10	LOQ	ug/L	J (all detects)
	METHYLENE CHLORIDE	J H	0.46	5.0	LOQ	ug/L	
FWGmw-021-181001-GW	METHYLENE CHLORIDE	J H	0.62	5.0	LOQ	ug/L	J (all detects)
FWGTB-181005-TB	METHYLENE CHLORIDE	J H	0.34	5.0	LOQ	ug/L	J (all detects)
FWGTB-181006-TB	METHYLENE CHLORIDE	J H	0.39	5.0	LOQ	ug/L	J (all detects)

Method: 8270D-SIM
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-017-181002-GW	BENZO(A)ANTHRACENE	J	0.057	0.11	LOQ	ug/L	J (all detects)
	BENZO(A)PYRENE	J	0.031	0.11	LOQ	ug/L	
	BENZO(B)FLUORANTHENE	J	0.056	0.11	LOQ	ug/L	
	BENZO(G,H,I)PERYLENE	J	0.047	0.11	LOQ	ug/L	
	BENZO(K)FLUORANTHENE	J	0.054	0.11	LOQ	ug/L	
	CHRYSENE	J	0.074	0.11	LOQ	ug/L	
	DIBENZO(A,H)ANTHRACENE	J	0.021	0.11	LOQ	ug/L	
	INDENO(1,2,3-CD)PYRENE	J	0.039	0.11	LOQ	ug/L	
FWGmw-024-181001-GW	NAPHTHALENE	J	0.036	0.10	LOQ	ug/L	J (all detects)

Method: 8330B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-021-181001-GW	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	J J1	0.17	0.22	LOQ	ug/L	J (all detects)
FWGmw-021-181002-GW	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	J J1	0.19	0.22	LOQ	ug/L	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 8330B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL2mw-059-181001-GW	1,3-DINITROBENZENE	J J1	0.10	0.38	LOQ	ug/L	J (all detects)
LL2mw-267-181001-GW	2,4,6-TRINITROTOLUENE	J	0.11	0.39	LOQ	ug/L	J (all detects)
	2,4-DINITROTOLUENE	J	0.12	0.39	LOQ	ug/L	
	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	J J1	0.36	0.39	LOQ	ug/L	

Method: 9012B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL1mw-081-181001-GW	Cyanide, Total	J	0.0027	0.010	LOQ	mg/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8270D-SIM
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	FWGmw-017-181001-GW	FWGmw-017-181002-GW			
BENZO(A)ANTHRACENE	0.11 U	0.057	200	50.00	No Qualifiers Applied
BENZO(A)PYRENE	0.11 U M	0.031	200	50.00	
BENZO(B)FLUORANTHENE	0.11 U	0.056	200	50.00	
BENZO(G,H,I)PERYLENE	0.11 U	0.047	200	50.00	
BENZO(K)FLUORANTHENE	0.11 U M	0.054	200	50.00	
CHRYSENE	0.11 U	0.074	200	50.00	
DIBENZO(A,H)ANTHRACENE	0.11 U	0.021	200	50.00	
INDENO(1,2,3-CD)PYRENE	0.11 U	0.039	200	50.00	

Method: 8330B
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	FWGmw-021-181001-GW	FWGmw-021-181002-GW			
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.72	0.65	10	50.00	No Qualifiers Applied

Data Qualifier Summary

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: GENCHEM
Method: 6860 **Matrix:** AQ

Sample ID: LL3mw-246-181001-GW **Collected:** 10/25/2018 1:20:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PERCHLORATE	0.032	J	0.010	LOD	0.050	LOQ	ug/L	J	RI

Method Category: GENCHEM
Method: 9012B **Matrix:** AQ

Sample ID: LL1mw-081-181001-GW **Collected:** 10/25/2018 1:50:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Cyanide, Total	0.0027	J	0.0050	LOD	0.010	LOQ	mg/L	J	RI

Method Category: METALS
Method: 6010C **Matrix:** AQ

Sample ID: FWGmw-015-181001-GW **Collected:** 10/24/2018 3:30:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	32	J	70	LOD	300	LOQ	ug/L	J	RI

Sample ID: LL2mw-267-181001-GW **Collected:** 10/25/2018 12:35:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	67	J	70	LOD	300	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6010C-KNA **Matrix:** AQ

Sample ID: FWGmw-017-181001-GW **Collected:** 10/25/2018 9:50:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1800	J	940	LOD	3000	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 6010C-KNA **Matrix:** AQ

Sample ID: FWGmw-021-181001-GW **Collected:** 10/25/2018 2:10:00 PM **Analysis Type:** RE/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SODIUM	3900	J	350	LOD	5000	LOQ	ug/L	J	RI

Sample ID: FWGmw-021-181001-GW **Collected:** 10/25/2018 2:10:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1500	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: FWGmw-024-181001-GW **Collected:** 10/25/2018 10:05:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	990	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: LL2mw-059-181001-GW **Collected:** 10/25/2018 9:12:00 AM **Analysis Type:** RE/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SODIUM	3100	J	350	LOD	5000	LOQ	ug/L	J	RI

Sample ID: LL2mw-059-181001-GW **Collected:** 10/25/2018 9:12:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	710	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: LL2mw-267-181001-GW **Collected:** 10/25/2018 12:35:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	630	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: LL3mw-246-181001-GW **Collected:** 10/25/2018 1:20:00 PM **Analysis Type:** RE/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SODIUM	3300	J	350	LOD	5000	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6010C-KNA **Matrix:** AQ

Sample ID: LL3mw-246-181001-GW **Collected:** 10/25/2018 1:20:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1300	J	940	LOD	3000	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: FWGmw-015-181001-GW **Collected:** 10/24/2018 3:30:00 PM **Analysis Type:** RE/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NICKEL	1.2	J	1.0	LOD	3.0	LOQ	ug/L	J	RI

Sample ID: FWGmw-015-181001-GW **Collected:** 10/24/2018 3:30:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

QUAL FOR MATRIX SPIKE PARENT SAMPLE ONLY

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	0.79	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
BARIUM	11		0.95	LOD	3.0	LOQ	ug/L	~~J~~	~~Ms~~
COBALT	0.73	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
MANGANESE	550		0.95	LOD	3.5	LOQ	ug/L	~~J~~	~~Ms~~

Sample ID: FWGmw-017-181001-GW **Collected:** 10/25/2018 9:50:00 AM **Analysis Type:** RE/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NICKEL	1.0	J	1.0	LOD	3.0	LOQ	ug/L	J	RI

Sample ID: FWGmw-017-181001-GW **Collected:** 10/25/2018 9:50:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.3	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
BARIUM	120	J1	0.95	LOD	3.0	LOQ	ug/L	J	Ms OK
COBALT	0.40	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
MANGANESE	310	J1	0.95	LOD	3.5	LOQ	ug/L	J	Ms OK

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 6020A **Matrix:** AQ

Sample ID: FWGmw-021-181001-GW **Collected:** 10/25/2018 2:10:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

QUAL FOR MATRIX SPIKE PARENT SAMPLE ONLY

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.46	J	1.0	LOD	6.0	LOQ	ug/L	J	RI
ARSENIC	1.5	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
BARIUM	17		0.95	LOD	3.0	LOQ	ug/L	J	Ms
MANGANESE	550		0.95	LOD	3.5	LOQ	ug/L	J	Ms
VANADIUM	0.99	J Q	2.0	LOD	6.0	LOQ	ug/L	U	Mb

Sample ID: FWGmw-024-181001-GW **Collected:** 10/25/2018 10:05:00 AM **Analysis Type:** RE/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NICKEL	1.5	J	1.0	LOD	3.0	LOQ	ug/L	J	RI

Sample ID: FWGmw-024-181001-GW **Collected:** 10/25/2018 10:05:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

QUAL FOR MATRIX SPIKE PARENT SAMPLE ONLY

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.0	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
BARIUM	8.7		0.95	LOD	3.0	LOQ	ug/L	J	Ms
COBALT	0.53	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
MANGANESE	260		0.95	LOD	3.5	LOQ	ug/L	J	Ms

Sample ID: LL2mw-059-181001-GW **Collected:** 10/25/2018 9:12:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

QUAL FOR MATRIX SPIKE PARENT SAMPLE ONLY

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	2.7	J	0.95	LOD	3.0	LOQ	ug/L	J	RI Ms
COBALT	0.33	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
MANGANESE	120		0.95	LOD	3.5	LOQ	ug/L	J	Ms

Sample ID: LL2mw-267-181001-GW **Collected:** 10/25/2018 12:35:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

QUAL FOR MATRIX SPIKE PARENT SAMPLE ONLY

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	2.3	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
BARIUM	18		0.95	LOD	3.0	LOQ	ug/L	J	Ms
CHROMIUM	0.56	J	1.8	LOD	10	LOQ	ug/L	J	RI
MANGANESE	560		0.95	LOD	3.5	LOQ	ug/L	J	Ms

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: LL3mw-246-181001-GW **Collected:** 10/25/2018 1:20:00 PM **Analysis Type:** RE/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NICKEL	1.5	J	1.0	LOD	3.0	LOQ	ug/L	J	RI

QUAL FOR MATRIX SPIKE PARENT SAMPLE ONLY

Sample ID: LL3mw-246-181001-GW **Collected:** 10/25/2018 1:20:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.44	J	1.0	LOD	6.0	LOQ	ug/L	J	RI
BARIUM	16		0.95	LOD	3.0	LOQ	ug/L	J	Ms
MANGANESE	0.67	J	0.95	LOD	3.5	LOQ	ug/L	J	RI, Ms

Method Category: SVOA
Method: 8081B **Matrix:** AQ

Sample ID: FWGmw-021-181001-GW **Collected:** 10/25/2018 2:10:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ENDRIN ALDEHYDE	0.021	U	0.021	LOD	0.052	LOQ	ug/L	UJ	Ms
TOXAPHENE	1.3	J	0.83	LOD	2.1	LOQ	ug/L	J	RI, Ms

Method Category: SVOA
Method: 8270D-SIM **Matrix:** AQ

Sample ID: FWGmw-017-181002-GW **Collected:** 10/25/2018 9:50:00 AM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)ANTHRACENE	0.057	J	0.013	LOD	0.11	LOQ	ug/L	J	RI
BENZO(A)PYRENE	0.031	J	0.013	LOD	0.11	LOQ	ug/L	J	RI
BENZO(B)FLUORANTHENE	0.056	J	0.013	LOD	0.11	LOQ	ug/L	J	RI
BENZO(G,H,I)PERYLENE	0.047	J	0.013	LOD	0.11	LOQ	ug/L	J	RI
BENZO(K)FLUORANTHENE	0.054	J	0.013	LOD	0.11	LOQ	ug/L	J	RI
CHRYSENE	0.074	J	0.013	LOD	0.11	LOQ	ug/L	J	RI
DIBENZO(A,H)ANTHRACENE	0.021	J	0.013	LOD	0.11	LOQ	ug/L	J	RI
INDENO(1,2,3-CD)PYRENE	0.039	J	0.044	LOD	0.11	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: SVOA **Method:** 8270D-SIM **Matrix:** AQ

Sample ID: FWGmw-024-181001-GW **Collected:** 10/25/2018 10:05:00 AM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NAPHTHALENE	0.036	J	0.013	LOD	0.10	LOQ	ug/L	J	RI

Method Category: SVOA **Method:** 8330B **Matrix:** AQ

Sample ID: FWGmw-021-181001-GW **Collected:** 10/25/2018 2:10:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-NITROTOLUENE	0.22	U J1	0.22	LOD	0.43	LOQ	ug/L	UJ	Ms
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.72	J1	0.13	LOD	0.22	LOQ	ug/L	J	Ms
NITROBENZENE	0.22	U J1	0.22	LOD	0.43	LOQ	ug/L	UJ	Ms

Sample ID: LL2mw-059-181001-GW **Collected:** 10/25/2018 9:12:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3-DINITROBENZENE	0.27	J J1	0.19	LOD	0.38	LOQ	ug/L	J	RI

Sample ID: LL2mw-267-181001-GW **Collected:** 10/25/2018 12:35:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4,6-TRINITROTOLUENE	0.11	J	0.20	LOD	0.39	LOQ	ug/L	J	RI
2,4-DINITROTOLUENE	0.12	J	0.20	LOD	0.39	LOQ	ug/L	J	RI

Method Category: VOA **Method:** 8260B **Matrix:** AQ

Sample ID: FWGmw-017-181001-GW **Collected:** 10/25/2018 9:50:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	6.6	J H	6.4	LOD	10	LOQ	ug/L	J	RI
METHYLENE CHLORIDE	0.46	J H	0.80	LOD	5.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 315391 - Ravenna Army Ammunition Plant Â¢â‚¬â„¢NACA

Data Qualifier Summary

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: VOA

Method: 8260B **Matrix:** AQ

Sample ID: FWGmw-021-181001-GW **Collected:** 10/25/2018 2:10:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.62	J H	0.80	LOD	5.0	LOQ	ug/L	J	RI

Sample ID: FWGTB-181005-TB **Collected:** 10/25/2018 2:10:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.34	J H	0.80	LOD	5.0	LOQ	ug/L	J	RI

Sample ID: FWGTB-181006-TB **Collected:** 10/25/2018 9:50:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.39	J H	0.80	LOD	5.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116186-1 **Laboratory: TA DEN**

EDD Filename: 280-116186-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
RI	Reporting Limit Trace Value
Surr	Surrogate/Tracer Recovery Lower Estimation
Surr	Surrogate/Tracer Recovery Upper Estimation

* denotes a non-reportable result

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA CAN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116186-2						
Method: 7196A						
FWGmw-024-181001-GW	280-116186-1	AQ	N	METHOD	10/25/2018 10:05:00 AM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116186-2
EDD Filename: 280-116186-2

Laboratory: TA CAN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	A
Surrogate/Tracer Spikes	N
Matrix Spike/Matrix Spike Duplicates	N
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	A
Field Duplicates	N
Field Triplicates	N
Field Blanks	N

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered Please refer to the Overall Qualifier Summary report for manual qualifiers

LEIDOS
Laboratory Data Verification Checklist

Project: RVAAP

SDG No: J116270

Analyte Group: VOC, SVOC/PAH, Pest/PCB, Explosives, Metals, Wet Chem

Sample Matrix: Water

EDD (Y/N):

Disposition of Data Package:

NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)		Y
Check for LCS results (e.g., org. form III, inorg. form XII)		Y
Check for method blank results (e.g., org. form IV, inorg. form III)		Y
Check for MS/MSD results (e.g., inorg. form V)		Y
Check for laboratory duplicate results (e.g., inorg. form VI)		NA
Check for Method Calibration and Run Documentation		
organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	method linear range	Y
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	Y
other:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	sample run sequence	Y

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Brooke Francis Date: 12/28/18

QA Review By: Date: 01/05/2019

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: j116270

Analyte Group: VOC, SVOC/PAH, Pest/PCB, Explosives, Metals, Wet Chem

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:

Comments:

Sample Summary

Client: Leidos, Inc. TestAmerica Job ID: 280-116270-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-116270-1	FWGmw-018-181001-GW	Water	10/26/18 09:30	10/27/18 08:50
280-116270-2	FWGTB-181006 TB	Water	10/26/18 09:30	10/27/18 08:50
280-116270-4	LL2mw-264-181001-GW	Water	10/26/18 14:00	10/27/18 08:50
280-116270-5	CBPmw-008-181001-GW	Water	10/26/18 10:25	10/27/18 08:50
280-116270-6	CBPmw-009-181001-GW	Water	10/26/18 08:50	10/27/18 08:50
280-116270-7	LL1mw-089-181001-GW	Water	10/26/18 12:25	10/27/18 08:50
280-116270-8	FWGmw-016-181001-GW	Water	10/25/18 15:40	10/27/18 08:50
280-116270-9	FWGmw-020-181001-GW	Water	10/26/18 10:00	10/27/18 08:50
280-116270-10	LL3mw-234-181001-GW	Water	10/26/18 11:15	10/27/18 08:50
280-116270-11	LL3mw-237-181001-GW	Water	10/26/18 13:10	10/27/18 08:50
280-116270-12	LL3mw-244-181001-GW	Water	10/26/18 08:50	10/27/18 08:50
280-116270-13	SCFmw-004-181001-GW	Water	10/26/18 13:35	10/27/18 08:50
280-116270-14	LL1mw-087-181001-GW	Water	10/26/18 13:30	10/27/18 08:50
280-116270-15	LL4mw-200-181001-GW	Water	10/26/18 14:50	10/27/18 08:50

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116270

Analysis: VOC

Method: 8260B

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

Some results were qualified as estimated due to holding time discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/28/18

QA Reviewed by: Richman Stark Date: 01/05/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed
FWGTB-181006-TB	10/26	11/12						

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: ADR did not qualify based on holding times

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No discrepancies, ADR Confirmed

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: No discrepancies, ~~ADR Confirmed~~ (ADR does not evaluate ISTD, assessed during manual validation)

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)
10/26	FWGTB-181006-TB		Methylene Chloride	0.33 ug/L

Remarks: MB were free from contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected
Methylene Chloride	0.33 ug/L	3.3 ug/L	All samples ND, no qual

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks:

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: 10/22
VOC - Date(s) of continuing calibration: 11/9 11/12
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration:
SVOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: Calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS/D 280-436980 LCS 280-427213

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR Confirmed

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116270

Analysis: SVOC/PAH

Method: 8270/SIM

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/28/18

QA Reviewed by: Richman Stark Date: 01/05/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
FWGmw-018-181001-GW								51			
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: See ADR Output

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: No discrepancies, ~~ADR Confirmed~~ (ADR does not evaluate ISTD, assessed during manual validation)

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes / No)
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: See ADR Output for contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration:
VOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: 11/12 10/29
SVOC - Date(s) of continuing calibration: 11/13 11/1
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: Calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-435687 LCS 280-435408

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR Confirmed

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116270

Analysis: Pesticides/PCB

Method: 8081/8082

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/28/18

QA Reviewed by: Richmond Beach Date: 01/05/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

PCB

The following samples required a sulfuric acid clean-up, via EPA Method 3665A, to reduce matrix interferences:

FWGmw-018-181001-GW (280-116270-1), FWGmw-020-181001-GW (280-116270-9), (LCS 280-436278/2-A),

(MB 280-436278/1-A) and (280-116303-B-1-A). Acid Lot: 161554

The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur:

FWGmw-018-181001-GW (280-116270-1), FWGmw-020-181001-GW (280-116270-9), (LCS 280-436278/2-A),

(MB 280-436278/1-A) and (280-116303-B-1-A). The reagent lot number used was: T31E034.

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No discrepancies, ADR Confirmed

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: No discrepancies, A~~DR Confirmed~~

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes / No
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: No contamination, ADR Confirmed

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: _____
VOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: _____
SVOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: NA

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

%D

Compound	%RSD	~~RPD~~	Samples Affected
Toxaphene (Average)	-	32.56	ICV 433303 ~~All ND, no qual~~ neg ICV spls UJ C05
Toxaphene (Average)		- 26.34	ICV 433303/34 ~~All ND, no qual~~

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks:

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-435801 LCS 280-436278

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR Confirmed

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J116270 **Analysis:** Explosives

Method: 8330B

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DoD QSM

Some results were qualified as estimated due to calibration, confirmation column, and LCS discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/2/19

QA Reviewed by: Date: 01/05/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: LL3mw-244-181001-GW RPD 46.0, RDX qualified (J)

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes:
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be ≥ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be ≤ 20%
Continuing calibration %D must be within ± 15%

Deviations:

Compound	Correlation Coefficient	% RSD	%D	Samples Affected
2-nitrotoluene			-25.7	CCV 280-436121/39 116270-8, 11, 12, 13, 14
3-nitrotoluene			-24.9	↓

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks: Not confirmed in ADR output, see Form 1's

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected
FWGmw-018-181001-GW	1,2-Dinitrobenzene	82	83-119	Not included in ADR output, see Form 1's

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks:

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: No contamination, ADR Confirmed

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-435507, LCS 435841

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied
3-nitrotoluene		71	LCS 435507, SEE ADR OUTPUT

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks:

SAMPLES WERE PREPPED IN TWO BATCHES, ONLE ONE LCS WAS AFFECTED

LEIDOS
Metals Data Review Checklist

Project: RVAAP

SDG No: J116270

Analysis: Metals

Method: 6010, 6020, 7470

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on an examination of the following:

Case Narrative	MS/MSD Recoveries and Differences
Analytical Holding Times	Duplicate Relative Percent Differences
Sample Preservation	ICP Serial Dilution
Method Calibration	Furnace Atomic Absorption QC
Method and Project Blanks	Re-analysis and Secondary Dilution
LCS Recoveries	Internal Standard Performance (if applicable)

Project specific QA/QC or contract requirements may take priority over validation criteria in this proceudre.

Overall remarks: DoD QSM

Some results were qualified due to calibration discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/2/18

QA Reviewed by: Richman Stark Date: 01/05/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: Calibration discrepancies were not noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Metals - Waters - preserved to pH<2, 180 days from sample collection
Metals - Soils - 180 days from sample collection
Mercury - Waters - preserved to pH<2, 28 days from sample collection
Mercury - Soils - 28 days from sample collection

Deviations:

Sample #	Metals				Mercury			
	Date Collected	Date Analyzed	Days >HT	pH Check	Date Collected	Date Analyzed	Days >HT	pH Check

Actions:

1. If preserved samples exceed holding time, qualify all associated results as estimated (J/UJ).
2. If unpreserved samples exceed holding time, qualify all associated results as unusable (R).
3. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
4. If water samples are not acidified, use professional judgement. Minimally, qualify data as estimated (J) and non-detects unusable (R).
5. If soil samples exceed holding time, use professional judgement to qualify data.

Remarks: All holding times were met

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.)

Initial calibration linearity criteria is r ≥ 0.995
ICV and CCV criteria are ± 10% recovery, low level check standard allowed ± 30%
ICP inter-element check standard criteria ± 20%

Deviations:

Element	Date	Intial Calib.	ICV/ CCV	%R	Samples Affected	
Sodium			CCVL	128	436427/67	116270-1, 8, 9, 12, 13, 14
Beryllium			ICVL	75	437321/11	None
Cadmium			CCVL	121	437321/62	None
Nickel			CCVL	125	↓	
Nickel			CCVL	127	437281/58	None
Vanadium				126		
Nickel			CCVL	133	437281/70	None
Vanadium				133		

Actions:

1. If any elements initial claibration linearity is <0.995, qualify the data as estimated (J/UJ)
2. If any elements initial claibration linearity is <0.95, qualify the data as unusable (R)

3a. If any elements ICV or CCV recovery is <90%, qualify the data as estimated (J/UJ)

3b. If any elements ICV or CCV recovery is > 110%, qualify results ≥ MDL as estimated (J).
Do not qualify non-detects.

4a. If any elements ICV or CCV recovery is <75%, qualify the data as unusable (R)

4b. If any elements ICV or CCV recovery is > 125% qualify positive results as estimated (J) or non-detects as unusable (R).

4c. If any element ICV or CCV recovery is ≥ 160%, qualify positive results ≥ MDL as unusable (R).
Do not qualify non-detects.

5a. If any elements CRI recovery is 50 - 69% (30 - 49% for Sb, Pb, Tb), qualify results ≥ MDL (but < 2 times CRQL) as estimated (J/UJ) and results > 2 times CRQL are not qualified.

5b. If any elements CRI recovery is < 50% (<30% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) and non-detects as unusable (R). Results > 2 times CRQL are estimated (J).

5c. If any elements CRI recovery is > 130% but < 180% (>150% but ≤ 200% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) as esimated (J). And non-detects and results ≥ 2x CRQL are not qualified.

5d. If CRI or (R) > 180% (> 200% for Sb, Pb, Ti), qualify results that are ≥ MDL as unusable (R).

Remarks: Not included in the ADR output, see Form 1's

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.) (continued)

Analytical Sequence and MS Tune	(Y/N)
1. Were the appropriate number of ICP standards used?	Y
2. Were the appropriate number of AA standards used?	Y
3. Was calibration performed and documented at the beginning of each run?	Y
4. Were calibration check standards run at 10% frequency or every two hours?	Y
5. Were low level standard checks analyzed at approximately 2X the PQL?	Y
6. Was ICP-MS mass calibration within 0.1 AMU?	Y
7. Was ICP-MS % RSD of the aboslute signals for all analytes < 5%?	Y

Deviations:

Element	Deviation	Samples Affected

Actions:

1. If instrument calibration is questionable, use professional judgement, qualify the data as estimated (J/UJ)
2. If instrument calibration documentation can not be obtained or is inadequate, qualify the data as unusable (R)
3. If mass calibration for ICP-MS was not within 0.1 AMU qualify analyte results as estimated (J/UJ)
4. If % RSD for ICP-MS was > 5% for any analyte in the tuning solution, qualify associated results as estimated (J/UJ).

Results:

V. Blanks (ICB, CCB, Method Blank, Equipment Rinsate Blank)

A. Blank Results

If the blank level is > CRQL for any analyte, check that the analyte's concentration in the samples is > 10 times the blank value. The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account when applying the action level.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
CCB 436427-52	Sodium	221 ug/L	2210 ug/L	116270-1, 8, 9, 12, 13, 14
CCB 436427/66	Sodium	207 ug/L	2070 ug/L	116270-1, 8, 9, 12, 13, 14
ICB 437321/10	Vanadium	0.856 ug/L	8.56ug/L	None
CCB 437321/61	Antimony	0.471 ug/L	4.71 ug/L	None
CCB437281/57	Vanadium	1.90 ug/L	19 ug/L	None
CCB 437281/69	Antimony	0.525 ug/L	5.25 ug/L	None
	Vanadium	2.14 ug/L	21.4 ug/L	None
MB 435538	Vanadium	0.572 ug/L	5.72 ug/L	116270-1, 8, 9, 12, 13, 14 All ND, no qual

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Actions:

1. For blank results ≥ MDL but ≤ CRQL, qualify samples ≥ MDL but < CRQL as CRQL U.
   Use proffessional judgement to qualify sample results exceeding the CRQL.

2a. If blank results are > CRQL: For sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < 10 times the blank qualify results as unusable (R) or estimated (J). No action is taken for sample results ≥ 10 times the blank levels.

2b. If ICB/ CCB results are > CRQL; for sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < blank results, qualify results as not detected (U) at the level of the blank or unusable (R). Use professional judgement for sample results > blank results.

Remarks: A MB is not present for 6020A, the lab was notified, resubmitted on 1/3/2019

Not included in the ADR output, see Form 1's

V. Blanks (continued)

The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected

V. Blanks (continued)

B. Frequency Requirements (Y/N)

1. Was a method (preparation) blank analyzed for each matrix? Y
2. Was a method blank processed for every analytical batch (20 samples)? Y
3. Was a calibration blank analyzed at 10% frequency or every two hours? Y

Deviations:

Element	Deviation	Samples Affected

Remarks:

C. Baseline Shift Evaluation

List the highest negative blank concentration for each analyte observed in laboratory or project blanks.

Deviations:

Blank ID	Element	Max. Neg Conc.	Action Level	Samples Affected

Actions:

1. If the absolute value of the maximum negative blank result is > the CRQL, qualify positive results as estimated (J) and non-detects as estimated (UJ).

Remarks:

VI. Laboratory Control Sample Evaluation

All LCS recovery criteria are set at 80-120%
An LCS must be analyzed for each matrix and for each digestion batch or set of twenty samples

Deviations:

Element	Date	%R	Matrix	Samples Affected

Actions:

1. If any element's LCS recovery is >120%, qualify positive results as (J).
2. If any element's LCS recovery is 50-79%, qualify positive results as (J) and non-detect results as (UJ)

3a. If any element's LCS recovery is <50%, qualify positive results as (J) and non-detect results as (R)
3b. If the LCS recovery is > 150%, qualify all results as unusable (R).

4. For soil LCS recovery > upper limit, qualify samples results ≥ MDL as estimated (J).
5. For soil LCS recovery < lower limit, qualify results ≥ MDL as esimated (J) and non-detected estimated (UJ).
6. Use professional judgement to qualify data if the LCS frequency criteria are not met.

Remarks: LCS was not submitted for 6020A, submitted on 1/3/19
No discrepancies, ~~ADR Confirmed~~

VII. Matrix Spike Evaluation

All MS recovery criteria are set at 75-125%
An MS must be analyzed for each matrix and for each digestion batch or set of twenty samples
Verify that a field blank or PE sample was not used for spiked sample analysis
Verify that a post-digestion spike was analyzed for those anlytes where the pre-digestion spike recovery is outside control limits and the sample result is < 4 times the spike added.

Project Sample(s) Spiked: FWGmw-020-181001-GW

Deviations:

Element	Spiked Sample Result	Sample Result	Spike Amount	%R	Samples Affected

Actions:

1. If the sample concentration exceeds the spiking level by a factor of 4X or more, do not qualify the data
2. If the spike recovery is >125%, qualify all positive values as (J).
3. If the spike recovery is between 30-74%, qualify positive values as (J) and non-detect values as estimated (UJ)
4. If the spike recovery is <30%, qualify positive values as (J) and non-detects are qualified unusable (R)
if the post-digestion spike recovery is < 75% (or none was performed); non-detects are qualified as estimated (UJ)
If the post-digestion spike reocvery is ≥ 75%. There is no post-digestion spike performed for mercury.
5. Qualify all samples of similar matrix to the spiked sample in the same manner
6. Use professional judgement to qualify data if the MS frequency criteria are not met.
7. Use professional judgement for qualification of data for unspiked elements

Remarks: No discrepancies, ADR Confirmed

VIII. Laboratory Duplicate Evaluation

Duplicate relative percent difference (RPD) for water is 20% (both results > 5 times CDRL) or < CRDL difference (if either result is < 5 times CRDL) and RPD for soil is 35% (if both results are > 5 times CRDL or < 2 times CRDL if either result is < 5 times CRDL).
When duplicate sample values are both less than the reporting level they are considered acceptable
When dupicate sample values are within 5X the reporting level they are acceptable if their absolute difference is within 3X the reporting level
Verify that a field blank on PE sample was not used for duplicate analysis.

Deviations: ____

Element	Sample #	Duplicate #	RPD	Samples Affected

Actions:

1. If an element's RPD is >20% (water) / >35% (soil), qualify positive results as (J) and non-detect results as (UJ)
2. For low concentrations, if an element's duplicate absolute difference is > 3X the reporting level, qualify positive results as (J) and non-detect results as (UJ)
3. Use professional judgement to qualify data if the duplicate frequency criteria are not met.

Remarks: NA

IX. Inductively Coupled Plasma (ICP) Serial Dilution Analysis

Verify that a field blank or PE sample was not used for serial dilution.
Serial dilution of positive results are performed when values exceed 50X the IDL
Results from serial dilutions should agree within 10% of the original undiluted analysis

Deviations:

Element	Sample #	Sample Result	Serial Dilution	%D	Action

Actions:

1. If the serial dilution %D is >10 and the analyte results are >50X the IDL, qualify all positive results as estimated (J) and non-detects as estimated (UJ).

Remarks: No discrepancies, A~~DR Confirmed~~

X. Furnace Atomic Absorption QC

A. Duplicate Precision (Y/N)

1. Were duplicate injections performed for all samples? _____
2. Were one point analytical spikes performed for all samples? _____
3. Did duplicate injections agree within ± 20%? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If duplicate injection results are outside ± 20%, qualify positive results as (J) and non-detect results as (UJ)

Remarks: NA

B. Post Digestion Spike Recoveries (Y/N)

1. Did post digestion spike recoveries meet an 85-115% recovery criteria? Y
2. If spike recoveries did not meet recovery criteria were samples analyzed by MSA? Y
3. If MSA was used to analyze samples, was its' correlation coefficient ≥ 0.995? Y

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If post digestion spike recoveries are >115%, qualify positive results as (J) and non-detect results as (U)
2. If post digestion spike recoveries are 11-84%, qualify positive results as (J) and non-detect results as (UJ)
3. If post digestion spike recoveries are <10%, qualify positive results as (R) and non-detect results as (R)
4. If MSA was used to quantitate values and the correlation coefficient was <0.995, qualify data as (J or UJ)
5. If MSA was used to quantitate values and the correlation coefficient was <0.95, qualify data as (R)

Remarks: No discrepancies, ADR Confirmed

XI. Inductively Coupled Plasma (ICP) Interference Check Sample Evaluation

Interference check samples should be analyzed at the beginning and end of each analysis run, or at a minimum of twice per 8 hour working shift.
Results for the ICS solution AB must fall within control limits of 20% for analytes included in the solution.
Evaluate the ICS A solution raw data for results with an absolute value ≥ MDL for analytes that are not present in the ICS A solution.

Deviations:

Element	Sample #	Sample Result	Interferent Result	Action

Actions:

1. If the ICS AB %R for an analyte is > 120%, qualify sample results ≥ MDL as estimated (J) and non-detects should not be qualified.
2. If the ICS AB %R for an analyte is 50-79%, qualify sample results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ).
3. If the ICS AB %R for an analyte is <50%, qualify all sample results that are ≥ MDL and all non-detects as as unusable (R).
4. If results ≥ MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents and with analyte concentration that approximate those levels in the ICS A, sample results ≥ MDL should be qualified as estimated (J) and non-detects should not be qualified.
5. If negative results with absolute values > MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents, affected sample results > MDL should be qualified as estimated (J) and non-detects (UJ).

Remarks: ICP results met control limits

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116270 **Analysis:** Cyanide

Method: 9012

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/2/18

QA Reviewed by: Date: 01/05/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be ≥ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: All calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: MB and CCBs were free from contamination

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS %R met control limits

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: MS/MSD %R and RPD results met control limits

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116270-2

Analysis: Hexa Chrom

Method: 7196

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: Laboratory limits

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/2/19

QA Reviewed by: Date: 01/05/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: Holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: MB and CCB were free from contamination

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R met control limits

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: NA

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

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

Client Sample ID: FWGmw-018-181001-GW **Lab Sample ID: 280-116270-1**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		11/09/18 17:02	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/09/18 17:02	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/09/18 17:02	1
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		11/09/18 17:02	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		11/09/18 17:02	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/09/18 17:02	1
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/09/18 17:02	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/09/18 17:02	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/09/18 17:02	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/09/18 17:02	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/09/18 17:02	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/09/18 17:02	1
Acetone	6.4	U	10	6.4	1.9	ug/L		11/09/18 17:02	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/09/18 17:02	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/09/18 17:02	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/09/18 17:02	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/09/18 17:02	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/09/18 17:02	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/09/18 17:02	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		11/09/18 17:02	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/09/18 17:02	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/09/18 17:02	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/09/18 17:02	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/09/18 17:02	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/09/18 17:02	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/09/18 17:02	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/09/18 17:02	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/09/18 17:02	1
Methylene Chloride	0.80	U	5.0	0.80	0.32	ug/L		11/09/18 17:02	1
Styrene	0.40	U	1.0	0.40	0.17	ug/L		11/09/18 17:02	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/09/18 17:02	1
Toluene	**0.68**	**J**	1.0	0.40	0.17	ug/L		11/09/18 17:02	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/09/18 17:02	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/09/18 17:02	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/09/18 17:02	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/09/18 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*81 - 118*		*11/09/18 17:02*	*1*
4-Bromofluorobenzene (Surr)	*85*		*85 - 114*		*11/09/18 17:02*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 119*		*11/09/18 17:02*	*1*
Toluene-d8 (Surr)	*90*		*89 - 112*		*11/09/18 17:02*	*1*

Client Sample ID: FWGTB-181006 TB **Lab Sample ID: 280-116270-2**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U H UJ A03	1.0	0.40	0.16	ug/L		11/12/18 16:37	1
1,1,2,2-Tetrachloroethane	0.80	U H UJ A03	1.0	0.80	0.21	ug/L		11/12/18 16:37	1
1,1,2-Trichloroethane	0.80	U H UJ A03	1.0	0.80	0.27	ug/L		11/12/18 16:37	1

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

Client Sample ID: FWGTB-181006 TB **Lab Sample ID: 280-116270-2**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethane	0.80	U H	1.0	0.80	0.22	ug/L		11/12/18 16:37	1
1,1-Dichloroethene	0.80	U H	1.0	0.80	0.23	ug/L		11/12/18 16:37	1
1,2-Dibromoethane	0.40	U H	1.0	0.40	0.18	ug/L		11/12/18 16:37	1
1,2-Dichloroethane	0.40	U H	1.0	0.40	0.13	ug/L		11/12/18 16:37	1
1,2-Dichloroethene, Total	0.20	U H	1.0	0.20	0.24	ug/L		11/12/18 16:37	1
1,2-Dichloropropane	0.40	U H	1.0	0.40	0.18	ug/L		11/12/18 16:37	1
2-Butanone (MEK)	4.0	U H	6.0	4.0	2.0	ug/L		11/12/18 16:37	1
2-Hexanone	4.0	U H	5.0	4.0	1.7	ug/L		11/12/18 16:37	1
4-Methyl-2-pentanone (MIBK)	3.2	U H	5.0	3.2	0.98	ug/L		11/12/18 16:37	1
Acetone	6.4	U H	10	6.4	1.9	ug/L		11/12/18 16:37	1
Benzene	0.40	U H	1.0	0.40	0.16	ug/L		11/12/18 16:37	1
Bromobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/12/18 16:37	1
Bromochloromethane	0.20	U H	1.0	0.20	0.10	ug/L		11/12/18 16:37	1
Bromodichloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/12/18 16:37	1
Bromoform	0.40	U H	1.0	0.40	0.19	ug/L		11/12/18 16:37	1
Bromomethane	0.80	U H	2.0	0.80	0.21	ug/L		11/12/18 16:37	1
Carbon disulfide	1.6	U H	2.0	1.6	0.45	ug/L		11/12/18 16:37	1
Carbon tetrachloride	0.40	U H	2.0	0.40	0.19	ug/L		11/12/18 16:37	1
Chlorobenzene	0.40	U H	1.0	0.40	0.17	ug/L		11/12/18 16:37	1
Chloroethane	1.6	U H	2.0	1.6	0.41	ug/L		11/12/18 16:37	1
Chloroform	0.40	U H	1.0	0.40	0.16	ug/L		11/12/18 16:37	1
Chloromethane	0.80	U H	2.0	0.80	0.30	ug/L		11/12/18 16:37	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.16	ug/L		11/12/18 16:37	1
Dibromochloromethane	0.40	U H	1.0	0.40	0.17	ug/L		11/12/18 16:37	1
Ethylbenzene	0.40	U H	1.0	0.40	0.16	ug/L		11/12/18 16:37	1
Methylene Chloride	**0.33**	**J H**	5.0	0.80	0.32	ug/L		11/12/18 16:37	1
Styrene	0.40	U H	1.0	0.40	0.17	ug/L		11/12/18 16:37	1
Tetrachloroethene	0.40	U H	1.0	0.40	0.20	ug/L		11/12/18 16:37	1
Toluene	0.40	U H	1.0	0.40	0.17	ug/L		11/12/18 16:37	1
trans-1,3-Dichloropropene	0.40	U H	1.0	0.40	0.19	ug/L		11/12/18 16:37	1
Trichloroethene	0.40	U H	1.0	0.40	0.16	ug/L		11/12/18 16:37	1
Vinyl chloride	0.20	U H	1.5	0.20	0.10	ug/L		11/12/18 16:37	1
Xylenes, Total	0.80	U H	1.0	0.80	0.19	ug/L		11/12/18 16:37	1

UJ A03
J A03
UJ A03

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*81 - 118*		*11/12/18 16:37*	*1*
4-Bromofluorobenzene (Surr)	*93*		*85 - 114*		*11/12/18 16:37*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 119*		*11/12/18 16:37*	*1*
Toluene-d8 (Surr)	*97*		*89 - 112*		*11/12/18 16:37*	*1*

Client Sample ID: FWGmw-020-181001-GW **Lab Sample ID: 280-116270-9**
Date Collected: 10/26/18 10:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		11/09/18 17:39	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/09/18 17:39	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/09/18 17:39	1
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		11/09/18 17:39	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		11/09/18 17:39	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/09/18 17:39	1

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

Client Sample ID: FWGmw-020-181001-GW **Lab Sample ID: 280-116270-9**
Date Collected: 10/26/18 10:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/09/18 17:39	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/09/18 17:39	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/09/18 17:39	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/09/18 17:39	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/09/18 17:39	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/09/18 17:39	1
Acetone	6.4	U M U	10	6.4	1.9	ug/L		11/09/18 17:39	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/09/18 17:39	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/09/18 17:39	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/09/18 17:39	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/09/18 17:39	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/09/18 17:39	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/09/18 17:39	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		11/09/18 17:39	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/09/18 17:39	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/09/18 17:39	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/09/18 17:39	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/09/18 17:39	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/09/18 17:39	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/09/18 17:39	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/09/18 17:39	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/09/18 17:39	1
Methylene Chloride	0.80	U	5.0	0.80	0.32	ug/L		11/09/18 17:39	1
Styrene	0.40	U	1.0	0.40	0.17	ug/L		11/09/18 17:39	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/09/18 17:39	1
Toluene	**0.45**	**J**	1.0	0.40	0.17	ug/L		11/09/18 17:39	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/09/18 17:39	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/09/18 17:39	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/09/18 17:39	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/09/18 17:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*81 - 118*		*11/09/18 17:39*	*1*
4-Bromofluorobenzene (Surr)	*92*		*85 - 114*		*11/09/18 17:39*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 119*		*11/09/18 17:39*	*1*
Toluene-d8 (Surr)	*92*		*89 - 112*		*11/09/18 17:39*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: FWGmw-018-181001-GW **Lab Sample ID: 280-116270-1**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.013	U	0.11	0.013	0.0062	ug/L		11/02/18 04:25	1
2-Methylnaphthalene	0.013	U	0.11	0.013	0.0063	ug/L		11/02/18 04:25	1
Acenaphthene	0.042	U Q U	0.11	0.042	0.0044	ug/L		11/02/18 04:25	1
Acenaphthylene	0.042	U Q U	0.11	0.042	0.0054	ug/L		11/02/18 04:25	1
Anthracene	0.042	U Q U	0.11	0.042	0.0059	ug/L		11/02/18 04:25	1
Benzo[a]anthracene	0.013	U	0.11	0.013	0.0044	ug/L		11/02/18 04:25	1
Benzo[a]pyrene	0.013	U	0.11	0.013	0.0073	ug/L		11/02/18 04:25	1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: FWGmw-018-181001-GW **Lab Sample ID: 280-116270-1**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Benzo[b]fluoranthene	0.013	U	0.11	0.013	0.0033	ug/L		11/02/18 04:25	1
Benzo[g,h,i]perylene	0.013	U	0.11	0.013	0.0065	ug/L		11/02/18 04:25	1
Benzo[k]fluoranthene	0.013	U	0.11	0.013	0.0066	ug/L		11/02/18 04:25	1
Chrysene	0.013	U	0.11	0.013	0.0035	ug/L		11/02/18 04:25	1
Dibenz(a,h)anthracene	0.013	U	0.11	0.013	0.0043	ug/L		11/02/18 04:25	1
Fluoranthene	0.013	U Q U	0.11	0.013	0.0051	ug/L		11/02/18 04:25	1
Fluorene	0.042	U Q U	0.11	0.042	0.0058	ug/L		11/02/18 04:25	1
Indeno[1,2,3-cd]pyrene	0.042	U	0.11	0.042	0.0047	ug/L		11/02/18 04:25	1
Naphthalene	0.013	U	0.11	0.013	0.0084	ug/L		11/02/18 04:25	1
Phenanthrene	0.021	U Q U	0.11	0.021	0.0098	ug/L		11/02/18 04:25	1
Pyrene	0.021	U Q U	0.11	0.021	0.0064	ug/L		11/02/18 04:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*51*	*Q*	*53 - 106*	*10/29/18 21:02*	*11/02/18 04:25*	*1*
Nitrobenzene-d5	*57*		*55 - 111*	*10/29/18 21:02*	*11/02/18 04:25*	*1*
Terphenyl-d14	*78*		*58 - 132*	*10/29/18 21:02*	*11/02/18 04:25*	*1*

Client Sample ID: FWGmw-020-181001-GW **Lab Sample ID: 280-116270-9**
Date Collected: 10/26/18 10:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.014	U	0.12	0.014	0.0068	ug/L		11/02/18 04:54	1
2-Methylnaphthalene	0.014	U	0.12	0.014	0.0069	ug/L		11/02/18 04:54	1
Acenaphthene	0.046	U	0.12	0.046	0.0048	ug/L		11/02/18 04:54	1
Acenaphthylene	0.046	U	0.12	0.046	0.0059	ug/L		11/02/18 04:54	1
Anthracene	0.046	U	0.12	0.046	0.0064	ug/L		11/02/18 04:54	1
Benzo[a]anthracene	0.014	U	0.12	0.014	0.0048	ug/L		11/02/18 04:54	1
Benzo[a]pyrene	0.014	U M U	0.12	0.014	0.0079	ug/L		11/02/18 04:54	1
Benzo[b]fluoranthene	0.014	U	0.12	0.014	0.0036	ug/L		11/02/18 04:54	1
Benzo[g,h,i]perylene	0.014	U	0.12	0.014	0.0071	ug/L		11/02/18 04:54	1
Benzo[k]fluoranthene	0.014	U	0.12	0.014	0.0073	ug/L		11/02/18 04:54	1
Chrysene	0.014	U	0.12	0.014	0.0038	ug/L		11/02/18 04:54	1
Dibenz(a,h)anthracene	0.014	U	0.12	0.014	0.0047	ug/L		11/02/18 04:54	1
Fluoranthene	0.014	U	0.12	0.014	0.0055	ug/L		11/02/18 04:54	1
Fluorene	0.046	U	0.12	0.046	0.0063	ug/L		11/02/18 04:54	1
Indeno[1,2,3-cd]pyrene	0.046	U	0.12	0.046	0.0052	ug/L		11/02/18 04:54	1
Naphthalene	0.014	U	0.12	0.014	0.0092	ug/L		11/02/18 04:54	1
Phenanthrene	0.023	U	0.12	0.023	0.011	ug/L		11/02/18 04:54	1
Pyrene	0.023	U	0.12	0.023	0.0070	ug/L		11/02/18 04:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*56*		*53 - 106*	*10/29/18 21:02*	*11/02/18 04:54*	*1*
Nitrobenzene-d5	*59*		*55 - 111*	*10/29/18 21:02*	*11/02/18 04:54*	*1*
Terphenyl-d14	*81*		*58 - 132*	*10/29/18 21:02*	*11/02/18 04:54*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: FWGmw-018-181001-GW **Lab Sample ID: 280-116270-1**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	1.1	U	11	1.1	0.30	ug/L		11/13/18 17:00	1
1,2-Dichlorobenzene	0.54	U	11	0.54	0.25	ug/L		11/13/18 17:00	1
1,3-Dichlorobenzene	1.1	U	11	1.1	0.32	ug/L		11/13/18 17:00	1
1,4-Dichlorobenzene	1.1	U	11	1.1	0.34	ug/L		11/13/18 17:00	1
1,4-Dioxane	4.7	U	19	4.7	1.8	ug/L		11/13/18 17:00	1
2,4,5-Trichlorophenol	1.1	U	21	1.1	0.48	ug/L		11/13/18 17:00	1
2,4,6-Trichlorophenol	1.1	U	21	1.1	0.31	ug/L		11/13/18 17:00	1
2,4-Dichlorophenol	2.1	U	11	2.1	0.68	ug/L		11/13/18 17:00	1
2,4-Dimethylphenol	2.1	U	11	2.1	0.62	ug/L		11/13/18 17:00	1
2,4-Dinitrophenol	32	U	86	32	11	ug/L		11/13/18 17:00	1
2,4-Dinitrotoluene	4.7	U	21	4.7	1.8	ug/L		11/13/18 17:00	1
2,6-Dinitrotoluene	4.7	U	21	4.7	2.0	ug/L		11/13/18 17:00	1
2-Chloronaphthalene	1.1	U	11	1.1	0.28	ug/L		11/13/18 17:00	1
2-Chlorophenol	4.7	U	11	4.7	2.1	ug/L		11/13/18 17:00	1
2-Methylphenol	2.1	U	11	2.1	1.0	ug/L		11/13/18 17:00	1
2-Nitroaniline	4.7	U	54	4.7	1.9	ug/L		11/13/18 17:00	1
2-Nitrophenol	1.1	U	21	1.1	0.42	ug/L		11/13/18 17:00	1
3 & 4 Methylphenol	0.54	U	21	0.54	0.27	ug/L		11/13/18 17:00	1
3,3'-Dichlorobenzidine	4.7	U	54	4.7	2.1	ug/L		11/13/18 17:00	1
3-Nitroaniline	4.7	U	54	4.7	2.1	ug/L		11/13/18 17:00	1
4,6-Dinitro-2-methylphenol	9.4	U	86	9.4	4.3	ug/L		11/13/18 17:00	1
4-Bromophenyl phenyl ether	1.1	U	11	1.1	0.46	ug/L		11/13/18 17:00	1
4-Chloro-3-methylphenol	5.4	U	21	5.4	2.6	ug/L		11/13/18 17:00	1
4-Chloroaniline	4.7	U	27	4.7	2.3	ug/L		11/13/18 17:00	1
4-Chlorophenyl phenyl ether	4.7	U	11	4.7	1.8	ug/L		11/13/18 17:00	1
4-Nitroaniline	4.7	U	54	4.7	2.1	ug/L		11/13/18 17:00	1
4-Nitrophenol	4.3	U	54	4.3	1.3	ug/L		11/13/18 17:00	1
Benzoic acid	32	U	86	32	11	ug/L		11/13/18 17:00	1
Benzyl alcohol	0.54	U	27	0.54	0.25	ug/L		11/13/18 17:00	1
bis (2-chloroisopropyl) ether	1.1	U	11	1.1	0.30	ug/L		11/13/18 17:00	1
Bis(2-chloroethoxy)methane	2.1	U	11	2.1	1.0	ug/L		11/13/18 17:00	1
Bis(2-chloroethyl)ether	1.1	U	21	1.1	0.44	ug/L		11/13/18 17:00	1
Bis(2-ethylhexyl) phthalate	2.1	U	11	2.1	0.60	ug/L		11/13/18 17:00	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.1	ug/L		11/13/18 17:00	1
Carbazole	1.1	U	11	1.1	0.46	ug/L		11/13/18 17:00	1
Dibenzofuran	1.1	U	11	1.1	0.31	ug/L		11/13/18 17:00	1
Diethyl phthalate	1.1	U	21	1.1	0.41	ug/L		11/13/18 17:00	1
Dimethyl phthalate	0.54	U	21	0.54	0.22	ug/L		11/13/18 17:00	1
Di-n-butyl phthalate	4.7	U	21	4.7	1.2	ug/L		11/13/18 17:00	1
Di-n-octyl phthalate	1.1	U	21	1.1	0.37	ug/L		11/13/18 17:00	1
Hexachlorobenzene	2.1	U	11	2.1	0.71	ug/L		11/13/18 17:00	1
Hexachlorobutadiene	11	U	32	11	3.5	ug/L		11/13/18 17:00	1
Hexachlorocyclopentadiene	32	U	54	32	11	ug/L		11/13/18 17:00	1
Hexachloroethane	4.7	U	11	4.7	2.2	ug/L		11/13/18 17:00	1
Isophorone	0.54	U	11	0.54	0.22	ug/L		11/13/18 17:00	1
Nitrobenzene	2.1	U	21	2.1	0.87	ug/L		11/13/18 17:00	1
N-Nitrosodi-n-propylamine	1.1	U	21	1.1	0.37	ug/L		11/13/18 17:00	1
N-Nitrosodiphenylamine	1.1	U	11	1.1	0.47	ug/L		11/13/18 17:00	1
Pentachlorophenol	64	U	86	64	21	ug/L		11/13/18 17:00	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: FWGmw-018-181001-GW **Lab Sample ID: 280-116270-1**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Phenol	4.7	U	11	4.7	2.1	ug/L		11/13/18 17:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*85*		*43 - 140*	*10/31/18 10:52*	*11/13/18 17:00*	*1*
2-Fluorobiphenyl	*82*		*44 - 119*	*10/31/18 10:52*	*11/13/18 17:00*	*1*
2-Fluorophenol (Surr)	*86*		*19 - 119*	*10/31/18 10:52*	*11/13/18 17:00*	*1*
Nitrobenzene-d5 (Surr)	*88*		*44 - 120*	*10/31/18 10:52*	*11/13/18 17:00*	*1*
Phenol-d5 (Surr)	*83*		*10 - 115*	*10/31/18 10:52*	*11/13/18 17:00*	*1*
Terphenyl-d14 (Surr)	*88*		*50 - 134*	*10/31/18 10:52*	*11/13/18 17:00*	*1*

Client Sample ID: FWGmw-016-181001-GW **Lab Sample ID: 280-116270-8**
Date Collected: 10/25/18 15:40 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.2	U	11	2.2	0.62	ug/L		11/13/18 17:29	1
Butyl benzyl phthalate	2.2	U	22	2.2	1.1	ug/L		11/13/18 17:29	1
Diethyl phthalate	1.1	U	22	1.1	0.42	ug/L		11/13/18 17:29	1
Dimethyl phthalate	0.55	U	22	0.55	0.23	ug/L		11/13/18 17:29	1
Di-n-butyl phthalate	4.9	U	22	4.9	1.3	ug/L		11/13/18 17:29	1
Di-n-octyl phthalate	1.1	U	22	1.1	0.39	ug/L		11/13/18 17:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*76*		*43 - 140*	*10/31/18 10:52*	*11/13/18 17:29*	*1*
2-Fluorobiphenyl	*77*		*44 - 119*	*10/31/18 10:52*	*11/13/18 17:29*	*1*
2-Fluorophenol (Surr)	*84*		*19 - 119*	*10/31/18 10:52*	*11/13/18 17:29*	*1*
Nitrobenzene-d5 (Surr)	*84*		*44 - 120*	*10/31/18 10:52*	*11/13/18 17:29*	*1*
Phenol-d5 (Surr)	*85*		*10 - 115*	*10/31/18 10:52*	*11/13/18 17:29*	*1*
Terphenyl-d14 (Surr)	*90*		*50 - 134*	*10/31/18 10:52*	*11/13/18 17:29*	*1*

Client Sample ID: FWGmw-020-181001-GW **Lab Sample ID: 280-116270-9**
Date Collected: 10/26/18 10:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	1.0	U	10	1.0	0.28	ug/L		11/13/18 17:58	1
1,2-Dichlorobenzene	0.50	U	10	0.50	0.23	ug/L		11/13/18 17:58	1
1,3-Dichlorobenzene	1.0	U	10	1.0	0.30	ug/L		11/13/18 17:58	1
1,4-Dichlorobenzene	1.0	U	10	1.0	0.32	ug/L		11/13/18 17:58	1
1,4-Dioxane	4.4	U	18	4.4	1.7	ug/L		11/13/18 17:58	1
2,4,5-Trichlorophenol	1.0	U	20	1.0	0.45	ug/L		11/13/18 17:58	1
2,4,6-Trichlorophenol	1.0	U	20	1.0	0.29	ug/L		11/13/18 17:58	1
2,4-Dichlorophenol	2.0	U	10	2.0	0.64	ug/L		11/13/18 17:58	1
2,4-Dimethylphenol	2.0	U	10	2.0	0.58	ug/L		11/13/18 17:58	1
2,4-Dinitrophenol	30	U	80	30	10	ug/L		11/13/18 17:58	1
2,4-Dinitrotoluene	4.4	U	20	4.4	1.7	ug/L		11/13/18 17:58	1
2,6-Dinitrotoluene	4.4	U	20	4.4	1.9	ug/L		11/13/18 17:58	1
2-Chloronaphthalene	1.0	U	10	1.0	0.26	ug/L		11/13/18 17:58	1
2-Chlorophenol	4.4	U	10	4.4	2.0	ug/L		11/13/18 17:58	1
2-Methylphenol	2.0	U	10	2.0	0.98	ug/L		11/13/18 17:58	1
2-Nitroaniline	4.4	U	50	4.4	1.7	ug/L		11/13/18 17:58	1
2-Nitrophenol	1.0	U	20	1.0	0.39	ug/L		11/13/18 17:58	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: FWGmw-020-181001-GW **Lab Sample ID: 280-116270-9**
Date Collected: 10/26/18 10:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
3 & 4 Methylphenol	0.50	U	20	0.50	0.25	ug/L		11/13/18 17:58	1
3,3'-Dichlorobenzidine	4.4	U	50	4.4	2.0	ug/L		11/13/18 17:58	1
3-Nitroaniline	4.4	U	50	4.4	2.0	ug/L		11/13/18 17:58	1
4,6-Dinitro-2-methylphenol	8.8	U	80	8.8	4.0	ug/L		11/13/18 17:58	1
4-Bromophenyl phenyl ether	1.0	U	10	1.0	0.43	ug/L		11/13/18 17:58	1
4-Chloro-3-methylphenol	5.0	U	20	5.0	2.4	ug/L		11/13/18 17:58	1
4-Chloroaniline	4.4	U	25	4.4	2.1	ug/L		11/13/18 17:58	1
4-Chlorophenyl phenyl ether	4.4	U	10	4.4	1.7	ug/L		11/13/18 17:58	1
4-Nitroaniline	4.4	U	50	4.4	2.0	ug/L		11/13/18 17:58	1
4-Nitrophenol	4.0	U	50	4.0	1.2	ug/L		11/13/18 17:58	1
Benzoic acid	30	U	80	30	10	ug/L		11/13/18 17:58	1
Benzyl alcohol	0.50	U	25	0.50	0.23	ug/L		11/13/18 17:58	1
bis (2-chloroisopropyl) ether	1.0	U	10	1.0	0.28	ug/L		11/13/18 17:58	1
Bis(2-chloroethoxy)methane	2.0	U	10	2.0	0.97	ug/L		11/13/18 17:58	1
Bis(2-chloroethyl)ether	1.0	U	20	1.0	0.41	ug/L		11/13/18 17:58	1
Bis(2-ethylhexyl) phthalate	2.0	U	10	2.0	0.56	ug/L		11/13/18 17:58	1
Butyl benzyl phthalate	2.0	U	20	2.0	1.0	ug/L		11/13/18 17:58	1
Carbazole	1.0	U	10	1.0	0.43	ug/L		11/13/18 17:58	1
Dibenzofuran	1.0	U	10	1.0	0.29	ug/L		11/13/18 17:58	1
Diethyl phthalate	1.0	U	20	1.0	0.38	ug/L		11/13/18 17:58	1
Dimethyl phthalate	0.50	U	20	0.50	0.21	ug/L		11/13/18 17:58	1
Di-n-butyl phthalate	4.4	U	20	4.4	1.2	ug/L		11/13/18 17:58	1
Di-n-octyl phthalate	1.0	U	20	1.0	0.35	ug/L		11/13/18 17:58	1
Hexachlorobenzene	2.0	U	10	2.0	0.66	ug/L		11/13/18 17:58	1
Hexachlorobutadiene	10	U	30	10	3.3	ug/L		11/13/18 17:58	1
Hexachlorocyclopentadiene	30	U	50	30	10	ug/L		11/13/18 17:58	1
Hexachloroethane	4.4	U	10	4.4	2.1	ug/L		11/13/18 17:58	1
Isophorone	0.50	U	10	0.50	0.21	ug/L		11/13/18 17:58	1
Nitrobenzene	2.0	U	20	2.0	0.81	ug/L		11/13/18 17:58	1
N-Nitrosodi-n-propylamine	1.0	U	20	1.0	0.35	ug/L		11/13/18 17:58	1
N-Nitrosodiphenylamine	1.0	U	10	1.0	0.44	ug/L		11/13/18 17:58	1
Pentachlorophenol	60	U	80	60	20	ug/L		11/13/18 17:58	1
Phenol	4.4	U	10	4.4	2.0	ug/L		11/13/18 17:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*79*		*43 - 140*	*10/31/18 10:52*	*11/13/18 17:58*	*1*
2-Fluorobiphenyl	*77*		*44 - 119*	*10/31/18 10:52*	*11/13/18 17:58*	*1*
2-Fluorophenol (Surr)	*80*		*19 - 119*	*10/31/18 10:52*	*11/13/18 17:58*	*1*
Nitrobenzene-d5 (Surr)	*82*		*44 - 120*	*10/31/18 10:52*	*11/13/18 17:58*	*1*
Phenol-d5 (Surr)	*82*		*10 - 115*	*10/31/18 10:52*	*11/13/18 17:58*	*1*
Terphenyl-d14 (Surr)	*97*		*50 - 134*	*10/31/18 10:52*	*11/13/18 17:58*	*1*

Client Sample ID: LL3mw-244-181001-GW **Lab Sample ID: 280-116270-12**
Date Collected: 10/26/18 08:50 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.0	U	10	2.0	0.56	ug/L		11/13/18 18:27	1
Butyl benzyl phthalate	2.0	U	20	2.0	1.0	ug/L		11/13/18 18:27	1
Diethyl phthalate	1.0	U	20	1.0	0.38	ug/L		11/13/18 18:27	1
Dimethyl phthalate	0.50	U	20	0.50	0.21	ug/L		11/13/18 18:27	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: LL3mw-244-181001-GW **Lab Sample ID: 280-116270-12**
Date Collected: 10/26/18 08:50 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Di-n-butyl phthalate	4.4	U	20	4.4	1.2	ug/L		11/13/18 18:27	1
Di-n-octyl phthalate	1.0	U	20	1.0	0.35	ug/L		11/13/18 18:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*78*		*43 - 140*	*10/31/18 10:52*	*11/13/18 18:27*	*1*
2-Fluorobiphenyl	*78*		*44 - 119*	*10/31/18 10:52*	*11/13/18 18:27*	*1*
2-Fluorophenol (Surr)	*82*		*19 - 119*	*10/31/18 10:52*	*11/13/18 18:27*	*1*
Nitrobenzene-d5 (Surr)	*84*		*44 - 120*	*10/31/18 10:52*	*11/13/18 18:27*	*1*
Phenol-d5 (Surr)	*85*		*10 - 115*	*10/31/18 10:52*	*11/13/18 18:27*	*1*
Terphenyl-d14 (Surr)	*95*		*50 - 134*	*10/31/18 10:52*	*11/13/18 18:27*	*1*

Client Sample ID: SCFmw-004-181001-GW **Lab Sample ID: 280-116270-13**
Date Collected: 10/26/18 13:35 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.0	U	10	2.0	0.56	ug/L		11/13/18 18:56	1
Butyl benzyl phthalate	2.0	U	20	2.0	1.0	ug/L		11/13/18 18:56	1
Diethyl phthalate	1.0	U	20	1.0	0.38	ug/L		11/13/18 18:56	1
Dimethyl phthalate	0.50	U	20	0.50	0.21	ug/L		11/13/18 18:56	1
Di-n-butyl phthalate	4.4	U	20	4.4	1.2	ug/L		11/13/18 18:56	1
Di-n-octyl phthalate	1.0	U	20	1.0	0.35	ug/L		11/13/18 18:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*85*		*43 - 140*	*10/31/18 10:52*	*11/13/18 18:56*	*1*
2-Fluorobiphenyl	*83*		*44 - 119*	*10/31/18 10:52*	*11/13/18 18:56*	*1*
2-Fluorophenol (Surr)	*86*		*19 - 119*	*10/31/18 10:52*	*11/13/18 18:56*	*1*
Nitrobenzene-d5 (Surr)	*85*		*44 - 120*	*10/31/18 10:52*	*11/13/18 18:56*	*1*
Phenol-d5 (Surr)	*88*		*10 - 115*	*10/31/18 10:52*	*11/13/18 18:56*	*1*
Terphenyl-d14 (Surr)	*94*		*50 - 134*	*10/31/18 10:52*	*11/13/18 18:56*	*1*

Client Sample ID: LL1mw-087-181001-GW **Lab Sample ID: 280-116270-14**
Date Collected: 10/26/18 13:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.2	U	11	2.2	0.62	ug/L		11/13/18 19:25	1
Butyl benzyl phthalate	2.2	U	22	2.2	1.1	ug/L		11/13/18 19:25	1
Diethyl phthalate	1.1	U	22	1.1	0.42	ug/L		11/13/18 19:25	1
Dimethyl phthalate	0.55	U	22	0.55	0.23	ug/L		11/13/18 19:25	1
Di-n-butyl phthalate	4.9	U	22	4.9	1.3	ug/L		11/13/18 19:25	1
Di-n-octyl phthalate	1.1	U	22	1.1	0.39	ug/L		11/13/18 19:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*84*		*43 - 140*	*10/31/18 10:52*	*11/13/18 19:25*	*1*
2-Fluorobiphenyl	*85*		*44 - 119*	*10/31/18 10:52*	*11/13/18 19:25*	*1*
2-Fluorophenol (Surr)	*89*		*19 - 119*	*10/31/18 10:52*	*11/13/18 19:25*	*1*
Nitrobenzene-d5 (Surr)	*90*		*44 - 120*	*10/31/18 10:52*	*11/13/18 19:25*	*1*
Phenol-d5 (Surr)	*89*		*10 - 115*	*10/31/18 10:52*	*11/13/18 19:25*	*1*
Terphenyl-d14 (Surr)	*97*		*50 - 134*	*10/31/18 10:52*	*11/13/18 19:25*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Client Sample ID: LL3mw-244-181001-GW **Lab Sample ID: 280-116270-12**
Date Collected: 10/26/18 08:50 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.020	U	0.050	0.020	0.0078	ug/L		11/14/18 23:24	1
4,4'-DDE	0.020	U	0.050	0.020	0.0076	ug/L		11/14/18 23:24	1
4,4'-DDT	0.050	U	0.050	0.050	0.015	ug/L		11/14/18 23:24	1
Aldrin	0.020	U	0.050	0.020	0.0060	ug/L		11/14/18 23:24	1
alpha-BHC	0.020	U	0.050	0.020	0.0054	ug/L		11/14/18 23:24	1
alpha-Chlordane	0.020	U	0.050	0.020	0.0054	ug/L		11/14/18 23:24	1
beta-BHC	0.020	U	0.050	0.020	0.0088	ug/L		11/14/18 23:24	1
delta-BHC	0.020	U	0.050	0.020	0.0059	ug/L		11/14/18 23:24	1
Dieldrin	0.020	U	0.050	0.020	0.0064	ug/L		11/14/18 23:24	1
Endosulfan I	0.020	U	0.050	0.020	0.0059	ug/L		11/14/18 23:24	1
Endosulfan II	0.020	U	0.050	0.020	0.0071	ug/L		11/14/18 23:24	1
Endosulfan sulfate	0.020	U	0.050	0.020	0.0058	ug/L		11/14/18 23:24	1
Endrin	0.020	U	0.050	0.020	0.0080	ug/L		11/14/18 23:24	1
Endrin aldehyde	0.020	U	0.050	0.020	0.0089	ug/L		11/14/18 23:24	1
Endrin ketone	0.020	U	0.050	0.020	0.0071	ug/L		11/14/18 23:24	1
gamma-BHC (Lindane)	0.020	U	0.050	0.020	0.0070	ug/L		11/14/18 23:24	1
gamma-Chlordane	0.020	U	0.050	0.020	0.0092	ug/L		11/14/18 23:24	1
Heptachlor	0.020	U	0.050	0.020	0.0078	ug/L		11/14/18 23:24	1
Heptachlor epoxide	0.020	U	0.050	0.020	0.0076	ug/L		11/14/18 23:24	1
Methoxychlor	0.050	U	0.050	0.050	0.013	ug/L		11/14/18 23:24	1
Toxaphene	0.81	U UJ C05	2.0	0.81	0.37	ug/L		11/14/18 23:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*75*		*34 - 122*	*11/01/18 08:30*	*11/14/18 23:24*	*1*
Tetrachloro-m-xylene	*58*		*44 - 124*	*11/01/18 08:30*	*11/14/18 23:24*	*1*

Client Sample ID: SCFmw-004-181001-GW **Lab Sample ID: 280-116270-13**
Date Collected: 10/26/18 13:35 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.020	U	0.049	0.020	0.0076	ug/L		11/14/18 23:06	1
4,4'-DDE	0.020	U	0.049	0.020	0.0074	ug/L		11/14/18 23:06	1
4,4'-DDT	0.049	U	0.049	0.049	0.015	ug/L		11/14/18 23:06	1
Aldrin	0.020	U	0.049	0.020	0.0058	ug/L		11/14/18 23:06	1
alpha-BHC	0.020	U	0.049	0.020	0.0052	ug/L		11/14/18 23:06	1
alpha-Chlordane	0.020	U	0.049	0.020	0.0052	ug/L		11/14/18 23:06	1
beta-BHC	0.020	U	0.049	0.020	0.0086	ug/L		11/14/18 23:06	1
delta-BHC	0.020	U	0.049	0.020	0.0057	ug/L		11/14/18 23:06	1
Dieldrin	0.020	U	0.049	0.020	0.0062	ug/L		11/14/18 23:06	1
Endosulfan I	0.020	U	0.049	0.020	0.0057	ug/L		11/14/18 23:06	1
Endosulfan II	0.020	U	0.049	0.020	0.0069	ug/L		11/14/18 23:06	1
Endosulfan sulfate	0.020	U	0.049	0.020	0.0056	ug/L		11/14/18 23:06	1
Endrin	0.020	U	0.049	0.020	0.0078	ug/L		11/14/18 23:06	1
Endrin aldehyde	0.020	U	0.049	0.020	0.0087	ug/L		11/14/18 23:06	1
Endrin ketone	0.020	U	0.049	0.020	0.0069	ug/L		11/14/18 23:06	1
gamma-BHC (Lindane)	0.020	U	0.049	0.020	0.0068	ug/L		11/14/18 23:06	1
gamma-Chlordane	0.020	U	0.049	0.020	0.0090	ug/L		11/14/18 23:06	1
Heptachlor	0.020	U	0.049	0.020	0.0076	ug/L		11/14/18 23:06	1
Heptachlor epoxide	0.020	U	0.049	0.020	0.0074	ug/L		11/14/18 23:06	1
Methoxychlor	0.049	U	0.049	0.049	0.013	ug/L		11/14/18 23:06	1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: SCFmw-004-181001-GW **Lab Sample ID: 280-116270-13**
Date Collected: 10/26/18 13:35 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Toxaphene	0.79	U UJ C05	2.0	0.79	0.36	ug/L		11/14/18 23:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*78*		*34 - 122*	*11/01/18 08:30*	*11/14/18 23:06*	*1*
Tetrachloro-m-xylene	*58*		*44 - 124*	*11/01/18 08:30*	*11/14/18 23:06*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: FWGmw-018-181001-GW **Lab Sample ID: 280-116270-1**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.42	U M U	1.0	0.42	0.13	ug/L		11/27/18 03:04	1
PCB-1221	0.26	U M	1.0	0.26	0.22	ug/L		11/27/18 03:04	1
PCB-1232	0.63	U M	1.0	0.63	0.17	ug/L		11/27/18 03:04	1
PCB-1242	0.31	U M	1.0	0.31	0.11	ug/L		11/27/18 03:04	1
PCB-1248	0.31	U Q M	1.0	0.31	0.096	ug/L		11/27/18 03:04	1
PCB-1254	0.26	U M	1.0	0.26	0.12	ug/L		11/27/18 03:04	1
PCB-1260	0.42	U M	1.0	0.42	0.17	ug/L		11/27/18 03:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*71*		*25 - 120*	*11/05/18 09:12*	*11/27/18 03:04*	*1*
DCB Decachlorobiphenyl	*91*	*Q*	*30 - 136*	*11/05/18 09:12*	*11/27/18 03:04*	*1*

Client Sample ID: FWGmw-020-181001-GW **Lab Sample ID: 280-116270-9**
Date Collected: 10/26/18 10:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.42	U M U	1.0	0.42	0.13	ug/L		11/27/18 07:39	1
PCB-1221	0.26	U M	1.0	0.26	0.22	ug/L		11/27/18 07:39	1
PCB-1232	0.63	U M	1.0	0.63	0.17	ug/L		11/27/18 07:39	1
PCB-1242	0.31	U M	1.0	0.31	0.11	ug/L		11/27/18 07:39	1
PCB-1248	0.31	U Q M	1.0	0.31	0.096	ug/L		11/27/18 07:39	1
PCB-1254	0.26	U M	1.0	0.26	0.12	ug/L		11/27/18 07:39	1
PCB-1260	0.42	U M	1.0	0.42	0.17	ug/L		11/27/18 07:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*93*		*25 - 120*	*11/05/18 09:12*	*11/27/18 07:39*	*1*
DCB Decachlorobiphenyl	*91*	*Q*	*30 - 136*	*11/05/18 09:12*	*11/27/18 07:39*	*1*

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: FWGmw-018-181001-GW **Lab Sample ID: 280-116270-1**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.42	U	1.0	0.42	0.21	ug/L		11/06/18 17:22	1
1,3-Dinitrobenzene	0.21	U	0.42	0.21	0.093	ug/L		11/06/18 17:22	1
2,4,6-Trinitrotoluene	0.21	U	0.42	0.21	0.076	ug/L		11/06/18 17:22	1
2,4-Dinitrotoluene	0.21	U	0.42	0.21	0.088	ug/L		11/06/18 17:22	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.067	ug/L		11/06/18 17:22	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: FWGmw-018-181001-GW **Lab Sample ID: 280-116270-1**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Amino-4,6-dinitrotoluene	0.13	U	0.21	0.13	0.053	ug/L		11/06/18 17:22	1
2-Nitrotoluene	0.21	U Q UJ G02	0.42	0.21	0.089	ug/L		11/07/18 19:28	1
3-Nitrotoluene	0.21	U	0.42	0.21	0.087	ug/L		11/06/18 17:22	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.21	0.13	0.060	ug/L		11/06/18 17:22	1
4-Nitrotoluene	0.42	U	1.0	0.42	0.21	ug/L		11/06/18 17:22	1
HMX	0.21	U M U	0.42	0.21	0.092	ug/L		11/06/18 17:22	1
Nitrobenzene	0.21	U	0.42	0.21	0.095	ug/L		11/06/18 17:22	1
Nitroglycerin	2.1	U	3.1	2.1	0.96	ug/L		11/06/18 17:22	1
PETN	1.3	U	2.1	1.3	0.43	ug/L		11/06/18 17:22	1
RDX	0.13	U	0.21	0.13	0.055	ug/L		11/06/18 17:22	1
Tetryl	0.21	U	0.25	0.21	0.083	ug/L		11/06/18 17:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*95*		*83 - 119*	*11/01/18 12:42*	*11/06/18 17:22*	*1*
1,2-Dinitrobenzene	*82*	*Q*	*83 - 119*	*11/01/18 12:42*	*11/07/18 19:28*	*1*

Client Sample ID: FWGmw-016-181001-GW **Lab Sample ID: 280-116270-8**
Date Collected: 10/25/18 15:40 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.44	U	1.1	0.44	0.22	ug/L		11/02/18 05:27	1
1,3-Dinitrobenzene	0.22	U	0.44	0.22	0.098	ug/L		11/02/18 05:27	1
2,4,6-Trinitrotoluene	0.22	U	0.44	0.22	0.080	ug/L		11/02/18 05:27	1
2,4-Dinitrotoluene	0.22	U	0.44	0.22	0.093	ug/L		11/02/18 05:27	1
2,6-Dinitrotoluene	0.22	U	0.22	0.22	0.072	ug/L		11/02/18 05:27	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.22	0.13	0.056	ug/L		11/02/18 05:27	1
2-Nitrotoluene	0.22	U UJ C05	0.44	0.22	0.095	ug/L		11/02/18 05:27	1
3-Nitrotoluene	0.22	U Q UJ C05 P02	0.44	0.22	0.093	ug/L		11/02/18 05:27	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.22	0.13	0.064	ug/L		11/02/18 05:27	1
4-Nitrotoluene	0.44	U	1.1	0.44	0.22	ug/L		11/02/18 05:27	1
HMX	0.22	U M U	0.44	0.22	0.097	ug/L		11/02/18 05:27	1
Nitrobenzene	0.22	U	0.44	0.22	0.10	ug/L		11/02/18 05:27	1
Nitroglycerin	2.2	U	3.3	2.2	1.0	ug/L		11/02/18 05:27	1
PETN	1.3	U	2.2	1.3	0.46	ug/L		11/02/18 05:27	1
RDX	0.13	U	0.22	0.13	0.058	ug/L		11/02/18 05:27	1
Tetryl	0.22	U M U	0.27	0.22	0.088	ug/L		11/02/18 05:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*102*		*83 - 119*	*10/30/18 13:27*	*11/02/18 05:27*	*1*

Client Sample ID: FWGmw-020-181001-GW **Lab Sample ID: 280-116270-9**
Date Collected: 10/26/18 10:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.44	U	1.1	0.44	0.22	ug/L		11/06/18 17:45	1
1,3-Dinitrobenzene	0.22	U	0.44	0.22	0.098	ug/L		11/06/18 17:45	1
2,4,6-Trinitrotoluene	0.22	U	0.44	0.22	0.080	ug/L		11/06/18 17:45	1
2,4-Dinitrotoluene	0.22	U	0.44	0.22	0.093	ug/L		11/06/18 17:45	1
2,6-Dinitrotoluene	0.22	U	0.22	0.22	0.071	ug/L		11/06/18 17:45	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.22	0.13	0.056	ug/L		11/06/18 17:45	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: FWGmw-020-181001-GW **Lab Sample ID: 280-116270-9**
Date Collected: 10/26/18 10:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrotoluene	0.22	U M U	0.44	0.22	0.095	ug/L		11/06/18 17:45	1
3-Nitrotoluene	0.22	U	0.44	0.22	0.092	ug/L		11/06/18 17:45	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.22	0.13	0.064	ug/L		11/06/18 17:45	1
4-Nitrotoluene	0.44	U	1.1	0.44	0.22	ug/L		11/06/18 17:45	1
HMX	0.22	U M U	0.44	0.22	0.097	ug/L		11/06/18 17:45	1
Nitrobenzene	0.22	U	0.44	0.22	0.10	ug/L		11/06/18 17:45	1
Nitroglycerin	2.2	U	3.3	2.2	1.0	ug/L		11/06/18 17:45	1
PETN	1.3	U	2.2	1.3	0.46	ug/L		11/06/18 17:45	1
RDX	0.13	U	0.22	0.13	0.058	ug/L		11/06/18 17:45	1
Tetryl	0.22	U	0.27	0.22	0.088	ug/L		11/06/18 17:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*97*		*83 - 119*	*11/01/18 12:42*	*11/06/18 17:45*	*1*

Client Sample ID: LL3mw-237-181001-GW **Lab Sample ID: 280-116270-11**
Date Collected: 10/26/18 13:10 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.43	U	1.1	0.43	0.22	ug/L		11/02/18 05:50	1
1,3-Dinitrobenzene	0.22	U	0.43	0.22	0.096	ug/L		11/02/18 05:50	1
2,4,6-Trinitrotoluene	0.22	U	0.43	0.22	0.078	ug/L		11/02/18 05:50	1
2,4-Dinitrotoluene	0.22	U	0.43	0.22	0.090	ug/L		11/02/18 05:50	1
2,6-Dinitrotoluene	0.22	U	0.22	0.22	0.070	ug/L		11/02/18 05:50	1
2-Amino-4,6-dinitrotoluene	**0.26**		0.22	0.13	0.055	ug/L		11/02/18 05:50	1
2-Nitrotoluene	0.22	U UJ C05	0.43	0.22	0.092	ug/L		11/02/18 05:50	1
3-Nitrotoluene	0.22	U Q UJ C05 P02	0.43	0.22	0.090	ug/L		11/02/18 05:50	1
4-Amino-2,6-dinitrotoluene	**0.37**		0.22	0.13	0.062	ug/L		11/02/18 05:50	1
4-Nitrotoluene	0.43	U	1.1	0.43	0.22	ug/L		11/02/18 05:50	1
HMX	0.22	U M U	0.43	0.22	0.094	ug/L		11/02/18 05:50	1
Nitrobenzene	0.22	U	0.43	0.22	0.098	ug/L		11/03/18 08:19	1
Nitroglycerin	2.2	U	3.2	2.2	0.99	ug/L		11/02/18 05:50	1
PETN	1.3	U	2.2	1.3	0.45	ug/L		11/02/18 05:50	1
RDX	0.13	U	0.22	0.13	0.056	ug/L		11/02/18 05:50	1
Tetryl	0.22	U M U	0.26	0.22	0.086	ug/L		11/02/18 05:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*96*		*83 - 119*	*10/30/18 13:27*	*11/02/18 05:50*	*1*
1,2-Dinitrobenzene	*85*		*83 - 119*	*10/30/18 13:27*	*11/03/18 08:19*	*1*

Client Sample ID: LL3mw-244-181001-GW **Lab Sample ID: 280-116270-12**
Date Collected: 10/26/18 08:50 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.42	U	1.0	0.42	0.21	ug/L		11/02/18 06:13	1
1,3-Dinitrobenzene	0.21	U	0.42	0.21	0.092	ug/L		11/02/18 06:13	1
2,4,6-Trinitrotoluene	0.21	U	0.42	0.21	0.075	ug/L		11/02/18 06:13	1
2,4-Dinitrotoluene	0.21	U	0.42	0.21	0.087	ug/L		11/02/18 06:13	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.067	ug/L		11/02/18 06:13	1
2-Amino-4,6-dinitrotoluene	**0.38**		0.21	0.13	0.053	ug/L		11/02/18 06:13	1
2-Nitrotoluene	0.21	U UJ C05	0.42	0.21	0.089	ug/L		11/02/18 06:13	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: LL3mw-244-181001-GW **Lab Sample ID: 280-116270-12**
Date Collected: 10/26/18 08:50 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
3-Nitrotoluene	0.21	U Q UJ C05 P02	0.42	0.21	0.087	ug/L		11/02/18 06:13	1
4-Amino-2,6-dinitrotoluene	**0.33**		0.21	0.13	0.060	ug/L		11/02/18 06:13	1
4-Nitrotoluene	0.42	U	1.0	0.42	0.21	ug/L		11/02/18 06:13	1
HMX	0.21	U	0.42	0.21	0.091	ug/L		11/02/18 06:13	1
Nitrobenzene	0.21	U	0.42	0.21	0.095	ug/L		11/02/18 06:13	1
Nitroglycerin	2.1	U	3.1	2.1	0.96	ug/L		11/02/18 06:13	1
PETN	1.3	U	2.1	1.3	0.43	ug/L		11/02/18 06:13	1
RDX	**0.084**	**J M J1** *	0.21	0.13	0.054	ug/L		11/02/18 06:13	1
RDX	**0.14**	**J J1** J M08	0.21	0.13	0.054	ug/L		11/03/18 08:54	1
Tetryl	0.21	U M U	0.25	0.21	0.083	ug/L		11/02/18 06:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*101*		*83 - 119*	*10/30/18 13:27*	*11/02/18 06:13*	*1*
1,2-Dinitrobenzene	*84*		*83 - 119*	*10/30/18 13:27*	*11/03/18 08:54*	*1*

Client Sample ID: SCFmw-004-181001-GW **Lab Sample ID: 280-116270-13**
Date Collected: 10/26/18 13:35 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.43	U	1.1	0.43	0.21	ug/L		11/02/18 06:36	1
1,3-Dinitrobenzene	0.21	U	0.43	0.21	0.095	ug/L		11/02/18 06:36	1
2,4,6-Trinitrotoluene	0.21	U	0.43	0.21	0.077	ug/L		11/02/18 06:36	1
2,4-Dinitrotoluene	0.21	U	0.43	0.21	0.089	ug/L		11/02/18 06:36	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.069	ug/L		11/02/18 06:36	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.21	0.13	0.054	ug/L		11/02/18 06:36	1
2-Nitrotoluene	0.21	U UJ C05	0.43	0.21	0.091	ug/L		11/02/18 06:36	1
3-Nitrotoluene	0.21	U Q UJ C05 P02	0.43	0.21	0.089	ug/L		11/02/18 06:36	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.21	0.13	0.062	ug/L		11/02/18 06:36	1
4-Nitrotoluene	0.43	U	1.1	0.43	0.21	ug/L		11/02/18 06:36	1
HMX	0.21	U M U	0.43	0.21	0.093	ug/L		11/02/18 06:36	1
Nitrobenzene	0.21	U	0.43	0.21	0.097	ug/L		11/02/18 06:36	1
Nitroglycerin	2.1	U	3.2	2.1	0.98	ug/L		11/02/18 06:36	1
PETN	1.3	U	2.1	1.3	0.44	ug/L		11/02/18 06:36	1
RDX	0.13	U	0.21	0.13	0.056	ug/L		11/02/18 06:36	1
Tetryl	0.21	U	0.26	0.21	0.085	ug/L		11/02/18 06:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*102*		*83 - 119*	*10/30/18 13:27*	*11/02/18 06:36*	*1*

Client Sample ID: LL1mw-087-181001-GW **Lab Sample ID: 280-116270-14**
Date Collected: 10/26/18 13:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.47	U	1.2	0.47	0.23	ug/L		11/02/18 06:59	1
1,3-Dinitrobenzene	0.23	U	0.47	0.23	0.10	ug/L		11/02/18 06:59	1
2,4,6-Trinitrotoluene	0.23	U	0.47	0.23	0.084	ug/L		11/02/18 06:59	1
2,4-Dinitrotoluene	0.23	U	0.47	0.23	0.098	ug/L		11/02/18 06:59	1
2,6-Dinitrotoluene	0.23	U	0.23	0.23	0.075	ug/L		11/02/18 06:59	1
2-Amino-4,6-dinitrotoluene	0.14	U	0.23	0.14	0.059	ug/L		11/02/18 06:59	1
2-Nitrotoluene	0.23	U UJ C05	0.47	0.23	0.10	ug/L		11/02/18 06:59	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: LL1mw-087-181001-GW **Lab Sample ID: 280-116270-14**
Date Collected: 10/26/18 13:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
3-Nitrotoluene	0.23	U Q UJ C05	0.47	0.23	0.097	ug/L		11/02/18 06:59	1
4-Amino-2,6-dinitrotoluene	0.14	U	0.23	0.14	0.067	ug/L		11/02/18 06:59	1
4-Nitrotoluene	0.47	U	1.2	0.47	0.23	ug/L		11/02/18 06:59	1
HMX	0.23	U M U	0.47	0.23	0.10	ug/L		11/02/18 06:59	1
Nitrobenzene	0.23	U	0.47	0.23	0.11	ug/L		11/02/18 06:59	1
Nitroglycerin	2.3	U	3.5	2.3	1.1	ug/L		11/02/18 06:59	1
PETN	1.4	U	2.3	1.4	0.49	ug/L		11/02/18 06:59	1
RDX	0.14	U	0.23	0.14	0.061	ug/L		11/02/18 06:59	1
Tetryl	0.23	U	0.28	0.23	0.093	ug/L		11/02/18 06:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*101*		*83 - 119*	*10/30/18 13:27*	*11/02/18 06:59*	*1*

Method: 6010C - Metals (ICP)

Client Sample ID: FWGmw-018-181001-GW **Lab Sample ID: 280-116270-1**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		11/05/18 23:09	1
Calcium	**91000**		1000	140	35	ug/L		11/05/18 23:09	1
Iron	**540**		100	85	22	ug/L		11/05/18 23:09	1
Magnesium	**27000**		500	40	11	ug/L		11/05/18 23:09	1
Potassium	**2200**	**J**	3000	940	240	ug/L		11/05/18 23:09	1
Sodium	**16000**	J D05	5000	350	120	ug/L		11/06/18 19:44	1

Client Sample ID: FWGmw-016-181001-GW **Lab Sample ID: 280-116270-8**
Date Collected: 10/25/18 15:40 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		11/05/18 23:12	1
Calcium	**100000**		1000	140	35	ug/L		11/05/18 23:12	1
Iron	**680**		100	85	22	ug/L		11/05/18 23:12	1
Magnesium	**28000**		500	40	11	ug/L		11/05/18 23:12	1
Potassium	**2200**	**J**	3000	940	240	ug/L		11/05/18 23:12	1
Sodium	**11000**	J D05	5000	350	120	ug/L		11/06/18 19:48	1

Client Sample ID: FWGmw-020-181001-GW **Lab Sample ID: 280-116270-9**
Date Collected: 10/26/18 10:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		11/05/18 23:16	1
Calcium	**100000**		1000	140	35	ug/L		11/05/18 23:16	1
Iron	**890**		100	85	22	ug/L		11/05/18 23:16	1
Magnesium	**34000**		500	40	11	ug/L		11/05/18 23:16	1
Potassium	**4400**		3000	940	240	ug/L		11/05/18 23:16	1
Sodium	**16000**	J D05	5000	350	120	ug/L		11/06/18 19:51	1

Method: 6010C - Metals (ICP)

Client Sample ID: LL3mw-244-181001-GW **Lab Sample ID: 280-116270-12**
Date Collected: 10/26/18 08:50 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		11/05/18 23:19	1
Calcium	**23000**		1000	140	35	ug/L		11/05/18 23:19	1
Iron	85	U	100	85	22	ug/L		11/05/18 23:19	1
Magnesium	**7400**		500	40	11	ug/L		11/05/18 23:19	1
Potassium	**1300**	**J**	3000	940	240	ug/L		11/05/18 23:19	1
Sodium	**3200**	**J** J D05	5000	350	120	ug/L		11/06/18 19:54	1

Client Sample ID: SCFmw-004-181001-GW **Lab Sample ID: 280-116270-13**
Date Collected: 10/26/18 13:35 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**31**	**J**	300	70	18	ug/L		11/05/18 23:23	1
Calcium	**170000**		1000	140	35	ug/L		11/05/18 23:23	1
Iron	**38**	**J**	100	85	22	ug/L		11/05/18 23:23	1
Magnesium	**67000**		500	40	11	ug/L		11/05/18 23:23	1
Potassium	**2800**	**J**	3000	940	240	ug/L		11/05/18 23:23	1
Sodium	**13000**	J D05	5000	350	120	ug/L		11/06/18 19:58	1

Client Sample ID: LL1mw-087-181001-GW **Lab Sample ID: 280-116270-14**
Date Collected: 10/26/18 13:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**55**	**J**	300	70	18	ug/L		11/05/18 23:26	1
Calcium	**130000**		1000	140	35	ug/L		11/05/18 23:26	1
Iron	**140**		100	85	22	ug/L		11/05/18 23:26	1
Magnesium	**42000**		500	40	11	ug/L		11/05/18 23:26	1
Potassium	**920**	**J**	3000	940	240	ug/L		11/05/18 23:26	1
Sodium	**14000**	J D05	5000	350	120	ug/L		11/06/18 20:01	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: FWGmw-018-181001-GW **Lab Sample ID: 280-116270-1**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/12/18 16:35	1
Arsenic	**23**		5.0	1.0	0.33	ug/L		11/12/18 16:35	1
Barium	**70**		3.0	0.95	0.29	ug/L		11/12/18 16:35	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/12/18 16:35	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/12/18 16:35	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/12/18 16:35	1
Cobalt	**2.3**		1.0	0.20	0.054	ug/L		11/12/18 16:35	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/12/18 16:35	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/12/18 16:35	1
Manganese	**170**		3.5	0.95	0.31	ug/L		11/12/18 16:35	1
Nickel	**3.2**		3.0	1.0	0.30	ug/L		11/12/18 16:35	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/12/18 16:35	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/12/18 16:35	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/12/18 16:35	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/12/18 16:35	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: FWGmw-018-181001-GW **Lab Sample ID: 280-116270-1**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Zinc	8.0	U	20	8.0	2.0	ug/L		11/12/18 16:35	1

Client Sample ID: FWGmw-016-181001-GW **Lab Sample ID: 280-116270-8**
Date Collected: 10/25/18 15:40 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/12/18 16:39	1
Arsenic	**4.0**	**J**	5.0	1.0	0.33	ug/L		11/12/18 16:39	1
Barium	**49**		3.0	0.95	0.29	ug/L		11/12/18 16:39	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/12/18 16:39	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/12/18 16:39	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/12/18 16:39	1
Cobalt	0.20	U	1.0	0.20	0.054	ug/L		11/12/18 16:39	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/12/18 16:39	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/12/18 16:39	1
Manganese	**200**		3.5	0.95	0.31	ug/L		11/12/18 16:39	1
Nickel	**0.88**	**J**	3.0	1.0	0.30	ug/L		11/12/18 16:39	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/12/18 16:39	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/12/18 16:39	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/12/18 16:39	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/12/18 16:39	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/12/18 16:39	1

Client Sample ID: FWGmw-020-181001-GW **Lab Sample ID: 280-116270-9**
Date Collected: 10/26/18 10:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/12/18 16:42	1
Arsenic	**27**		5.0	1.0	0.33	ug/L		11/12/18 16:42	1
Barium	**81**		3.0	0.95	0.29	ug/L		11/12/18 16:42	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/12/18 16:42	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/12/18 16:42	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/12/18 16:42	1
Cobalt	**3.8**		1.0	0.20	0.054	ug/L		11/12/18 16:42	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/12/18 16:42	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/12/18 16:42	1
Manganese	**72**		3.5	0.95	0.31	ug/L		11/12/18 16:42	1
Nickel	**2.3**	**J**	3.0	1.0	0.30	ug/L		11/12/18 16:42	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/12/18 16:42	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/12/18 16:42	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/12/18 16:42	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/12/18 16:42	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/12/18 16:42	1

Client Sample ID: LL3mw-244-181001-GW **Lab Sample ID: 280-116270-12**
Date Collected: 10/26/18 08:50 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	**0.54**	**J**	6.0	1.0	0.40	ug/L		11/12/18 16:46	1
Arsenic	1.0	U	5.0	1.0	0.33	ug/L		11/12/18 16:46	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: LL3mw-244-181001-GW **Lab Sample ID: 280-116270-12**
Date Collected: 10/26/18 08:50 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**17**		3.0	0.95	0.29	ug/L		11/12/18 16:46	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/12/18 16:46	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/12/18 16:46	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/12/18 16:46	1
Cobalt	0.20	U	1.0	0.20	0.054	ug/L		11/12/18 16:46	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/12/18 16:46	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/12/18 16:46	1
Manganese	**0.50**	**J**	3.5	0.95	0.31	ug/L		11/12/18 16:46	1
Nickel	**3.6**		3.0	1.0	0.30	ug/L		11/12/18 16:46	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/12/18 16:46	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/12/18 16:46	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/12/18 16:46	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/12/18 16:46	1
Zinc	**3.0**	**J**	20	8.0	2.0	ug/L		11/12/18 16:46	1

Client Sample ID: SCFmw-004-181001-GW **Lab Sample ID: 280-116270-13**
Date Collected: 10/26/18 13:35 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/12/18 16:50	1
Arsenic	1.0	U	5.0	1.0	0.33	ug/L		11/12/18 16:50	1
Barium	**56**		3.0	0.95	0.29	ug/L		11/12/18 16:50	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/12/18 16:50	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/12/18 16:50	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/12/18 16:50	1
Cobalt	0.20	U	1.0	0.20	0.054	ug/L		11/12/18 16:50	1
Copper	**7.6**		2.0	1.8	0.56	ug/L		11/12/18 16:50	1
Lead	**2.1**	**J**	3.0	0.70	0.18	ug/L		11/12/18 16:50	1
Manganese	**780**		3.5	0.95	0.31	ug/L		11/12/18 16:50	1
Nickel	1.0	U	3.0	1.0	0.30	ug/L		11/12/18 16:50	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/12/18 16:50	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/12/18 16:50	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/12/18 16:50	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/12/18 16:50	1
Zinc	**42**		20	8.0	2.0	ug/L		11/12/18 16:50	1

Client Sample ID: LL1mw-087-181001-GW **Lab Sample ID: 280-116270-14**
Date Collected: 10/26/18 13:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/12/18 16:54	1
Arsenic	1.0	U	5.0	1.0	0.33	ug/L		11/12/18 16:54	1
Barium	**24**		3.0	0.95	0.29	ug/L		11/12/18 16:54	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/12/18 16:54	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/12/18 16:54	1
Chromium	**0.50**	**J**	10	1.8	0.50	ug/L		11/12/18 16:54	1
Cobalt	**0.45**	**J**	1.0	0.20	0.054	ug/L		11/12/18 16:54	1
Copper	**0.72**	**J**	2.0	1.8	0.56	ug/L		11/12/18 16:54	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/12/18 16:54	1
Manganese	**140**		3.5	0.95	0.31	ug/L		11/12/18 16:54	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: LL1mw-087-181001-GW **Lab Sample ID: 280-116270-14**
Date Collected: 10/26/18 13:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nickel	**2.1**	**J**	3.0	1.0	0.30	ug/L		11/12/18 16:54	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/12/18 16:54	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/12/18 16:54	1
Thallium	**0.069**	**J**	1.0	0.20	0.050	ug/L		11/12/18 16:54	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/12/18 16:54	1
Zinc	**3.5**	**J**	20	8.0	2.0	ug/L		11/12/18 16:54	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: FWGmw-018-181001-GW **Lab Sample ID: 280-116270-1**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/12/18 15:04	1

Client Sample ID: FWGmw-016-181001-GW **Lab Sample ID: 280-116270-8**
Date Collected: 10/25/18 15:40 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/12/18 15:07	1

Client Sample ID: FWGmw-020-181001-GW **Lab Sample ID: 280-116270-9**
Date Collected: 10/26/18 10:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/12/18 15:09	1

Client Sample ID: LL3mw-244-181001-GW **Lab Sample ID: 280-116270-12**
Date Collected: 10/26/18 08:50 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/12/18 15:20	1

Client Sample ID: SCFmw-004-181001-GW **Lab Sample ID: 280-116270-13**
Date Collected: 10/26/18 13:35 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/12/18 15:22	1

Client Sample ID: LL1mw-087-181001-GW **Lab Sample ID: 280-116270-14**
Date Collected: 10/26/18 13:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/12/18 15:29	1

General Chemistry

Client Sample ID: FWGmw-018-181001-GW **Lab Sample ID: 280-116270-1**
Date Collected: 10/26/18 09:30 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/08/18 16:31	1

Client Sample ID: LL2mw-264-181001-GW **Lab Sample ID: 280-116270-4**
Date Collected: 10/26/18 14:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/08/18 16:43	1

Client Sample ID: CBPmw-008-181001-GW **Lab Sample ID: 280-116270-5**
Date Collected: 10/26/18 10:25 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/08/18 16:44	1

Client Sample ID: CBPmw-009-181001-GW **Lab Sample ID: 280-116270-6**
Date Collected: 10/26/18 08:50 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	**0.0022**	**J**	0.010	0.0050	0.0020	mg/L		11/08/18 16:46	1

Client Sample ID: LL1mw-089-181001-GW **Lab Sample ID: 280-116270-7**
Date Collected: 10/26/18 12:25 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/08/18 16:47	1

Client Sample ID: FWGmw-020-181001-GW **Lab Sample ID: 280-116270-9**
Date Collected: 10/26/18 10:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/08/18 16:49	1

Client Sample ID: LL3mw-234-181001-GW **Lab Sample ID: 280-116270-10**
Date Collected: 10/26/18 11:15 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	**0.0023**	**J**	0.010	0.0050	0.0020	mg/L		11/08/18 16:50	1

Client Sample ID: LL4mw-200-181001-GW **Lab Sample ID: 280-116270-15**
Date Collected: 10/26/18 14:50 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/08/18 16:52	1

General Chemistry

Client Sample ID: FWGmw-020-181001-GW **Lab Sample ID: 280-116270-9**
Date Collected: 10/26/18 10:00 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Hexavalent chromium	0.010	U	0.020	0.010	0.0030	mg/L		10/26/18 16:46	1

Client Sample ID: LL3mw-244-181001-GW **Lab Sample ID: 280-116270-12**
Date Collected: 10/26/18 08:50 **Matrix: Water**
Date Received: 10/27/18 08:50

Analyte	Result	Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Hexavalent chromium	0.010	U	0.020	0.010	0.0030	mg/L		10/26/18 16:45	1

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116270-1						
Method: 6010C						
FWGmw-016-181001-GW	280-116270-8	AQ	N	3010A	10/25/2018 3:40:00 PM	S2AVE
FWGmw-018-181001-GW	280-116270-1	AQ	N	3010A	10/26/2018 9:30:00 AM	S2AVE
FWGmw-020-181001-GW	280-116270-9	AQ	N	3010A	10/26/2018 10:00:00 AM	S2AVE
LL1mw-087-181001-GW	280-116270-14	AQ	N	3010A	10/26/2018 1:30:00 PM	S2AVE
LL3mw-244-181001-GW	280-116270-12	AQ	N	3010A	10/26/2018 8:50:00 AM	S2AVE
SCFmw-004-181001-GW	280-116270-13	AQ	N	3010A	10/26/2018 1:35:00 PM	S2AVE
Method: 6010C-KNA						
FWGmw-016-181001-GW	280-116270-8	AQ	N	3010A	10/25/2018 3:40:00 PM	S2AVE
FWGmw-018-181001-GW	280-116270-1	AQ	N	3010A	10/26/2018 9:30:00 AM	S2AVE
FWGmw-020-181001-GW	280-116270-9	AQ	N	3010A	10/26/2018 10:00:00 AM	S2AVE
LL1mw-087-181001-GW	280-116270-14	AQ	N	3010A	10/26/2018 1:30:00 PM	S2AVE
LL3mw-244-181001-GW	280-116270-12	AQ	N	3010A	10/26/2018 8:50:00 AM	S2AVE
SCFmw-004-181001-GW	280-116270-13	AQ	N	3010A	10/26/2018 1:35:00 PM	S2AVE
Method: 6020A						
FWGmw-016-181001-GW	280-116270-8	AQ	N	3020A	10/25/2018 3:40:00 PM	S2AVE
FWGmw-018-181001-GW	280-116270-1	AQ	N	3020A	10/26/2018 9:30:00 AM	S2AVE
FWGmw-020-181001-GW	280-116270-9	AQ	N	3020A	10/26/2018 10:00:00 AM	S2AVE
LL1mw-087-181001-GW	280-116270-14	AQ	N	3020A	10/26/2018 1:30:00 PM	S2AVE
LL3mw-244-181001-GW	280-116270-12	AQ	N	3020A	10/26/2018 8:50:00 AM	S2AVE
SCFmw-004-181001-GW	280-116270-13	AQ	N	3020A	10/26/2018 1:35:00 PM	S2AVE
Method: 7470A						
FWGmw-016-181001-GW	280-116270-8	AQ	N	7470A	10/25/2018 3:40:00 PM	S2AVE
FWGmw-018-181001-GW	280-116270-1	AQ	N	7470A	10/26/2018 9:30:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 7470A						
FWGmw-020-181001-GW	280-116270-9	AQ	N	7470A	10/26/2018 10:00:00 AM	S2AVE
FWGmw-020-181001-GWMS	280-116270-9MS	AQ	MS	7470A	10/26/2018 10:00:00 AM	S2AVE
FWGmw-020-181001-GWMSD	280-116270-9MSD	AQ	MSD	7470A	10/26/2018 10:00:00 AM	S2AVE
LL1mw-087-181001-GW	280-116270-14	AQ	N	7470A	10/26/2018 1:30:00 PM	S2AVE
LL3mw-244-181001-GW	280-116270-12	AQ	N	7470A	10/26/2018 8:50:00 AM	S2AVE
SCFmw-004-181001-GW	280-116270-13	AQ	N	7470A	10/26/2018 1:35:00 PM	S2AVE
Method: 8081B						
LL3mw-244-181001-GW	280-116270-12	AQ	N	3510C	10/26/2018 8:50:00 AM	S2AVE
SCFmw-004-181001-GW	280-116270-13	AQ	N	3510C	10/26/2018 1:35:00 PM	S2AVE
Method: 8082A						
FWGmw-018-181001-GW	280-116270-1	AQ	N	3510C	10/26/2018 9:30:00 AM	S2AVE
FWGmw-020-181001-GW	280-116270-9	AQ	N	3510C	10/26/2018 10:00:00 AM	S2AVE
Method: 8260B						
FWGmw-018-181001-GW	280-116270-1	AQ	N	METHOD	10/26/2018 9:30:00 AM	S2AVE
FWGmw-020-181001-GW	280-116270-9	AQ	N	METHOD	10/26/2018 10:00:00 AM	S2AVE
FWGTB-181006 TB	280-116270-2	AQ	TB	METHOD	10/26/2018 9:30:00 AM	S2AVE
Method: 8270D						
FWGmw-016-181001-GW	280-116270-8	AQ	N	3520C	10/25/2018 3:40:00 PM	S2AVE
FWGmw-018-181001-GW	280-116270-1	AQ	N	3520C	10/26/2018 9:30:00 AM	S2AVE
FWGmw-020-181001-GW	280-116270-9	AQ	N	3520C	10/26/2018 10:00:00 AM	S2AVE
LL1mw-087-181001-GW	280-116270-14	AQ	N	3520C	10/26/2018 1:30:00 PM	S2AVE
LL3mw-244-181001-GW	280-116270-12	AQ	N	3520C	10/26/2018 8:50:00 AM	S2AVE
SCFmw-004-181001-GW	280-116270-13	AQ	N	3520C	10/26/2018 1:35:00 PM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method		Collection Date	Validation Code
Method: 8270D-SIM							
FWGmw-018-181001-GW	280-116270-1	AQ	N	3510C		10/26/2018 9:30:00 AM	S2AVE
FWGmw-020-181001-GW	280-116270-9	AQ	N	3510C		10/26/2018 10:00:00 AM	S2AVE
Method: 8330B							
FWGmw-016-181001-GW	280-116270-8	AQ	N		3535	10/25/2018 3:40:00 PM	S2AVE
FWGmw-018-181001-GW	280-116270-1	AQ	N		3535	10/26/2018 9:30:00 AM	S2AVE
FWGmw-020-181001-GW	280-116270-9	AQ	N		3535	10/26/2018 10:00:00 AM	S2AVE
LL1mw-087-181001-GW	280-116270-14	AQ	N		3535	10/26/2018 1:30:00 PM	S2AVE
LL3mw-237-181001-GW	280-116270-11	AQ	N		3535	10/26/2018 1:10:00 PM	S2AVE
LL3mw-244-181001-GW	280-116270-12	AQ	N		3535	10/26/2018 8:50:00 AM	S2AVE
SCFmw-004-181001-GW	280-116270-13	AQ	N		3535	10/26/2018 1:35:00 PM	S2AVE
Method: 9012B							
CBPmw-008-181001-GW	280-116270-5	AQ	N	Gen Prep		10/26/2018 10:25:00 AM	S2AVE
CBPmw-009-181001-GW	280-116270-6	AQ	N	Gen Prep		10/26/2018 8:50:00 AM	S2AVE
FWGmw-018-181001-GW	280-116270-1	AQ	N	Gen Prep		10/26/2018 9:30:00 AM	S2AVE
FWGmw-018-181001-GWMS	280-116270-1MS	AQ	MS	Gen Prep		10/26/2018 9:30:00 AM	S2AVE
FWGmw-018-181001-GWMSD	280-116270-1MSD	AQ	MSD	Gen Prep		10/26/2018 9:30:00 AM	S2AVE
FWGmw-020-181001-GW	280-116270-9	AQ	N	Gen Prep		10/26/2018 10:00:00 AM	S2AVE
LL1mw-089-181001-GW	280-116270-7	AQ	N	Gen Prep		10/26/2018 12:25:00 PM	S2AVE
LL2mw-264-181001-GW	280-116270-4	AQ	N	Gen Prep		10/26/2018 2:00:00 PM	S2AVE
LL3mw-234-181001-GW	280-116270-10	AQ	N	Gen Prep		10/26/2018 11:15:00 AM	S2AVE
LL4mw-200-181001-GW	280-116270-15	AQ	N	Gen Prep		10/26/2018 2:50:00 PM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116270-1
EDD Filename: 280-116270-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times NOTE: ADR missed holding time noncompliance for TB sample date 10/26/18, analysis date 11/12 HT+3 days.	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes OUTLIER 8330 SURROGATE NOT FLAGGED BY ADR	SR
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	SR
Compound Quantitation	SR
Field Duplicates	N
Field Triplicates	N
Field Blanks	A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116270-1 **Laboratory: TA DEN**

EDD Filename: 280-116270-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: **8270D-SIM**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-435408/1-A	11/1/2018 11:01:00 PM	PHENANTHRENE	0.0181 ug/L	FWGmw-018-181001-GW FWGmw-020-181001-GW

* confirmed

SAMPLES = U

****METALS MB WAS NOT INCLUDED IN ORIGIANLLY SUBMITTED DATA PACAKGE OR EDD....SEE VALIDATION AND FORM I's

Surrogate Outlier Report

Lab Reporting Batch ID: 280-116270-1 **Laboratory: TA DEN**

EDD Filename: 280-116270-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8270D-SIM
Matrix: AQ

Sample ID (Analysis Type)	Surrogate	Sample % Recovery	% Recovery Limits	Affected Compounds	Flag
FWGmw-018-181001-GW	2-FLUOROBIPHENYL	51	53.00-106.00	No Affected Compounds	

*CONFIRMED

OUTLIER SURROGATE FOR 8330 ANALYSIS OF FWGmw-018-181001-GW NOT FLAGGED BY ADR; QUALIFIERS MANUALLY APPLIED DURING VALIDATION

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-116270-1 **Laboratory: TA DEN**

EDD Filename: 280-116270-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8330B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCS 280-435507/2-A (FWGmw-016-181001-GW LL1mw-087-181001-GW LL3mw-237-181001-GW LL3mw-244-181001-GW SCFmw-004-181001-GW)	3-NITROTOLUENE	71	-	73.00-125.00	-	3-NITROTOLUENE	J (all detects) UJ (all non-detects)

*CONFIRMED

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116270-1 **Laboratory: TA DEN**

EDD Filename: 280-116270-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL1mw-087-181001-GW	ALUMINUM	J	55	300	LOQ	ug/L	J (all detects)
SCFmw-004-181001-GW	ALUMINUM	J	31	300	LOQ	ug/L	J (all detects)
	IRON	J	38	100	LOQ	ug/L	

Method: 6010C-KNA

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-016-181001-GW	POTASSIUM	J	2200	3000	LOQ	ug/L	J (all detects)
FWGmw-018-181001-GW	POTASSIUM	J	2200	3000	LOQ	ug/L	J (all detects)
LL1mw-087-181001-GW	POTASSIUM	J	920	3000	LOQ	ug/L	J (all detects)
LL3mw-244-181001-GW	POTASSIUM	J	1300	3000	LOQ	ug/L	J (all detects)
	SODIUM	J	3200	5000	LOQ	ug/L	
SCFmw-004-181001-GW	POTASSIUM	J	2800	3000	LOQ	ug/L	J (all detects)

Method: 6020A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-016-181001-GW	ARSENIC	J	4.0	5.0	LOQ	ug/L	J (all detects)
	NICKEL	J	0.88	3.0	LOQ	ug/L	
FWGmw-020-181001-GW	NICKEL	J	2.3	3.0	LOQ	ug/L	J (all detects)
LL1mw-087-181001-GW	CHROMIUM	J	0.50	10	LOQ	ug/L	J (all detects)
	COBALT	J	0.45	1.0	LOQ	ug/L	
	COPPER	J	0.72	2.0	LOQ	ug/L	
	NICKEL	J	2.1	3.0	LOQ	ug/L	
	THALLIUM	J	0.069	1.0	LOQ	ug/L	
	ZINC	J	3.5	20	LOQ	ug/L	
LL3mw-244-181001-GW	ANTIMONY	J	0.54	6.0	LOQ	ug/L	J (all detects)
	MANGANESE	J	0.50	3.5	LOQ	ug/L	
	ZINC	J	3.0	20	LOQ	ug/L	
SCFmw-004-181001-GW	LEAD	J	2.1	3.0	LOQ	ug/L	J (all detects)

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-018-181001-GW	TOLUENE	J	0.68	1.0	LOQ	ug/L	J (all detects)
FWGmw-020-181001-GW	TOLUENE	J	0.45	1.0	LOQ	ug/L	J (all detects)
FWGTB-181006 TB	METHYLENE CHLORIDE	J H	0.33	5.0	LOQ	ug/L	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116270-1 **Laboratory: TA DEN**

EDD Filename: 280-116270-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag

Method: 8330B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL3mw-244-181001-GW	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	J J1	0.14	0.21	LOQ	ug/L	J (all detects)

Method: 9012B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
CBPmw-009-181001-GW	Cyanide, Total	J	0.0022	0.010	LOQ	mg/L	J (all detects)
LL3mw-234-181001-GW	Cyanide, Total	J	0.0023	0.010	LOQ	mg/L	J (all detects)

MANUALLY ADDED VOC QUALIFIERS DUE TO HOLD TIME, SEE FORM 1s

Data Qualifier Summary

Lab Reporting Batch ID: 280-116270-1 **Laboratory: TA DEN**

EDD Filename: 280-116270-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: GENCHEM
Method: 9012B **Matrix:** AQ

Sample ID: CBPmw-009-181001-GW **Collected:** 10/26/2018 8:50:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Cyanide, Total	0.0022	J	0.0050	LOD	0.010	LOQ	mg/L	J	RI

Sample ID: LL3mw-234-181001-GW **Collected:** 10/26/2018 11:15:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Cyanide, Total	0.0023	J	0.0050	LOD	0.010	LOQ	mg/L	J	RI

Method Category: METALS
Method: 6010C **Matrix:** AQ

Sample ID: LL1mw-087-181001-GW **Collected:** 10/26/2018 1:30:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	55	J	70	LOD	300	LOQ	ug/L	J	RI

Sample ID: SCFmw-004-181001-GW **Collected:** 10/26/2018 1:35:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	31	J	70	LOD	300	LOQ	ug/L	J	RI
IRON	38	J	85	LOD	100	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6010C-KNA **Matrix:** AQ

Sample ID: FWGmw-016-181001-GW **Collected:** 10/25/2018 3:40:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	2200	J	940	LOD	3000	LOQ	ug/L	J	RI

ADD QUALIFIERS FOR SAMPLE FWGTB-181006 TB DUE TO MISSED HOLD TIME: J / UJ

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116270-1 **Laboratory: TA DEN**

EDD Filename: 280-116270-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6010C-KNA **Matrix:** AQ

Sample ID: FWGmw-018-181001-GW **Collected:** 10/26/2018 9:30:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	2200	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: LL1mw-087-181001-GW **Collected:** 10/26/2018 1:30:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	920	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: LL3mw-244-181001-GW **Collected:** 10/26/2018 8:50:00 AM **Analysis Type:** RE/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SODIUM	3200	J	350	LOD	5000	LOQ	ug/L	J	RI

Sample ID: LL3mw-244-181001-GW **Collected:** 10/26/2018 8:50:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1300	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: SCFmw-004-181001-GW **Collected:** 10/26/2018 1:35:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	2800	J	940	LOD	3000	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: FWGmw-016-181001-GW **Collected:** 10/25/2018 3:40:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	4.0	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
NICKEL	0.88	J	1.0	LOD	3.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116270-1 **Laboratory: TA DEN**

EDD Filename: 280-116270-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 6020A **Matrix:** AQ

Sample ID: FWGmw-020-181001-GW **Collected:** 10/26/2018 10:00:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NICKEL	2.3	J	1.0	LOD	3.0	LOQ	ug/L	J	RI

Sample ID: LL1mw-087-181001-GW **Collected:** 10/26/2018 1:30:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHROMIUM	0.50	J	1.8	LOD	10	LOQ	ug/L	J	RI
COBALT	0.45	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
COPPER	0.72	J	1.8	LOD	2.0	LOQ	ug/L	J	RI
NICKEL	2.1	J	1.0	LOD	3.0	LOQ	ug/L	J	RI
THALLIUM	0.069	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
ZINC	3.5	J	8.0	LOD	20	LOQ	ug/L	J	RI

Sample ID: LL3mw-244-181001-GW **Collected:** 10/26/2018 8:50:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.54	J	1.0	LOD	6.0	LOQ	ug/L	J	RI
MANGANESE	0.50	J	0.95	LOD	3.5	LOQ	ug/L	J	RI
ZINC	3.0	J	8.0	LOD	20	LOQ	ug/L	J	RI

Sample ID: SCFmw-004-181001-GW **Collected:** 10/26/2018 1:35:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
LEAD	2.1	J	0.70	LOD	3.0	LOQ	ug/L	J	RI

Method Category: SVOA

Method: 8330B **Matrix:** AQ

Sample ID: FWGmw-016-181001-GW **Collected:** 10/25/2018 3:40:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
3-NITROTOLUENE	0.22	U Q	0.22	LOD	0.44	LOQ	ug/L	UJ	Lcs

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116270-1 **Laboratory: TA DEN**

EDD Filename: 280-116270-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: SVOA

Method: 8330B **Matrix: AQ**

Sample ID: LL1mw-087-181001-GW **Collected:** 10/26/2018 1:30:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
3-NITROTOLUENE	0.23	U Q	0.23	LOD	0.47	LOQ	ug/L	UJ	Lcs

Sample ID: LL3mw-237-181001-GW **Collected:** 10/26/2018 1:10:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
3-NITROTOLUENE	0.22	U Q	0.22	LOD	0.43	LOQ	ug/L	UJ	Lcs

Sample ID: LL3mw-244-181001-GW **Collected:** 10/26/2018 8:50:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
3-NITROTOLUENE	0.21	U Q	0.21	LOD	0.42	LOQ	ug/L	UJ	Lcs
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.084	J M J1	0.13	LOD	0.21	LOQ	ug/L	J	RI

Sample ID: SCFmw-004-181001-GW **Collected:** 10/26/2018 1:35:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
3-NITROTOLUENE	0.21	U Q	0.21	LOD	0.43	LOQ	ug/L	UJ	Lcs

Method Category: VOA

Method: 8260B **Matrix: AQ**

Sample ID: FWGmw-018-181001-GW **Collected:** 10/26/2018 9:30:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TOLUENE	0.68	J	0.40	LOD	1.0	LOQ	ug/L	J	RI

Sample ID: FWGmw-020-181001-GW **Collected:** 10/26/2018 10:00:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TOLUENE	0.45	J	0.40	LOD	1.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116270-1 **Laboratory: TA DEN**

EDD Filename: 280-116270-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: VOA

Method: 8260B **Matrix:** AQ

Sample ID: FWGTB-181006 TB **Collected:** 10/26/2018 9:30:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.33	J H	0.80	LOD	5.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116270-1 **Laboratory: TA DEN**

EDD Filename: 280-116270-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
Lcs	Laboratory Control Spike Lower Estimation
Mb	Method Blank Contamination
RI	Reporting Limit Trace Value
Surr	Surrogate/Tracer Recovery Lower Estimation

* denotes a non-reportable result

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA CAN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116270-2						
Method: 7196A						
FWGmw-020-181001-GW	280-116270-9	AQ	N	METHOD	10/26/2018 10:00:00 AM	S2AVE
LL3mw-244-181001-GW	280-116270-12	AQ	N	METHOD	10/26/2018 8:50:00 AM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116270-2
EDD Filename: 280-116270-2

Laboratory: TA CAN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	A
Surrogate/Tracer Spikes	N
Matrix Spike/Matrix Spike Duplicates	N
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	A
Field Duplicates	N
Field Triplicates	N
Field Blanks	N

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review; manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

LEIDOS
Laboratory Data Verification Checklist

Project: RVAAP

SDG No: J116303

Analyte Group: VOC, SVOC, PCB, Explosives, Metals, Cyanide

Sample Matrix: Water

EDD (Y/N):

Disposition of Data Package:

NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)		Y
Check for LCS results (e.g., org. form III, inorg. form XII)		Y
Check for method blank results (e.g., org. form IV, inorg. form III)		Y
Check for MS/MSD results (e.g., inorg. form V)		Y
Check for laboratory duplicate results (e.g., inorg. form VI)		NA
Check for Method Calibration and Run Documentation		
organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	method linear range	Y
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	Y
other:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	sample run sequence	Y

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Brooke Francis Date: 1/2/19

QA Review By: Date: 01/07/2019

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: J116303

Analyte Group: VOC, SVOC, PCB, Explosives, Metals

SEE ATTACHED

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:

Comments:

Sample Summary

Client: Leidos, Inc. TestAmerica Job ID: 280-116303-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-116303-1	FWGmw-019-181001-GW	Water	10/29/18 09:50	10/30/18 08:45
280-116303-2	FWGmw-019-181002-GW	Water	10/29/18 09:50	10/30/18 08:45
280-116303-3	FWGTB-184003-TB	Water	10/29/18 09:50	10/30/18 08:45
280-116303-4	FWGmw-022-181001-GW	Water	10/29/18 10:00	10/30/18 08:45
280-116303-5	LL10mw-003-181001-GW	Water	10/29/18 12:11	10/30/18 08:45
280-116303-6	LL10mw-003-181002-GW	Water	10/29/18 12:11	10/30/18 08:45
280-116303-7	FWGTB-181008-TB	Water	10/29/18 12:11	10/30/18 08:45
280-116303-8	LL10mw-005-181001-GW	Water	10/29/18 14:45	10/30/18 08:45
280-116303-9	LL12mw-185-181001-GW	Water	10/29/18 09:50	10/30/18 08:45
280-116303-10	LL12mw-247-181001-GW	Water	10/29/18 11:05	10/30/18 08:45
280-116303-11	LL12mw-247-181002-GW	Water	10/29/18 11:05	10/30/18 08:45

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116303

Analysis: VOC

Method: 8260B

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/2/19

QA Reviewed by: Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: Holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: Surrogates met control limits, ADR agree

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: _____

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)
11/10	MB 280-437124/4		Toluene	0.375 ug/L

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: TB free from contamination, see ADR....confirmed

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: 10/22/19
VOC - Date(s) of continuing calibration: 11/2/18
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration:
SVOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks:

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-437124

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R met control limits, ADR Agree

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116303

Analysis: SVOC phthalates only

Method: 8270D

Laboratory: Test America

Matrix: water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooks Francis Date: 1/2/19

QA Reviewed by: Richmond Stark Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No discrepancies, confirmed with ADR

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: No discrepancies, confirmed with ADR

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: No discrepancies, confirmed with ADR

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration:
VOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: 11/12/19
SVOC - Date(s) of continuing calibration: 11/13/19
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: All ICAL results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: LL10mw-003-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: No discrepancies, confirmed with ADR

X. Laboratory Control Sample Information

General LCS Criteria: percent recovery (%R)	VOC	SVOC	Pest	PCB
	80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-435687

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, confirmed with ADR

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116303

Analysis: PCB

Method: 8082

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/2/19

QA Reviewed by: Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

The following samples required a sulfuric acid clean-up, via EPA Method 3665A, to reduce matrix interferences:
FWGmw-019-181001-GW (280-116303-1), FWGmw-022-181001-GW (280-116303-4), (LCS 280-436278/2-A) and (MB 280-436278/1-A).
Acid Lot: 161554
The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur:
FWGmw-019-181001-GW (280-116303-1), FWGmw-022-181001-GW (280-116303-4), (LCS 280-436278/2-A) and (MB 280-436278/1-A).
The reagent lot number used was: T31E034.

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No results were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: Holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No discrepancies, confirmed with ADR

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: NA

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: No discrepancies, confirmed with ADR

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: _____
VOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: _____
SVOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: NA

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: _____

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: FWGmw-019-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: No discrepancies, confirmed with ADR

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-436278

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, confirmed with ADR

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J116303 **Analysis:** Explosives

Method: 8330B

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/2/19

QA Reviewed by: Richman Stark Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes:
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be $\leq$ 20%
Continuing calibration %D must be within $\pm$ 15%

Deviations:

Compound	Correlation Coefficient	% RSD	%D	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks: Calibration results met control limits

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks: No discrepancies, confirmed with ADR

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: No discrepancies, confirmed with ADR

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: LL12mw-247-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks: No discrepancies, confirmed with ADR

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-435841

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, confirmed with ADR

LEIDOS
Metals Data Review Checklist

Project: RVAAP

SDG No: J116303

Analysis: Metals

Method: 6010/6020/7470

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on an examination of the following:

Case Narrative	MS/MSD Recoveries and Differences
Analytical Holding Times	Duplicate Relative Percent Differences
Sample Preservation	ICP Serial Dilution
Method Calibration	Furnace Atomic Absorption QC
Method and Project Blanks	Re-analysis and Secondary Dilution
LCS Recoveries	Internal Standard Performance (if applicable)

Project specific QA/QC or contract requirements may take priority over validation criteria in this proceudre.

Overall remarks: DoD QSM

Some results were qualified as non-detect due to calibration blank discrepancies and CCV discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/2/19

QA Reviewed by: [signature] Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Metals - Waters - preserved to pH<2, 180 days from sample collection
Metals - Soils - 180 days from sample collection
Mercury - Waters - preserved to pH<2, 28 days from sample collection
Mercury - Soils - 28 days from sample collection

Deviations:

Sample #	Metals				Mercury			
	Date Collected	Date Analyzed	Days >HT	pH Check	Date Collected	Date Analyzed	Days >HT	pH Check

Actions:

1. If preserved samples exceed holding time, qualify all associated results as estimated (J/UJ).
2. If unpreserved samples exceed holding time, qualify all associated results as unusable (R).
3. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
4. If water samples are not acidified, use professional judgement. Minimally, qualify data as estimated (J) and non-detects unusable (R).
5. If soil samples exceed holding time, use professional judgement to qualify data.

Remarks: No holding times were met

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.)

Initial calibration linearity criteria is r ≥ 0.995
ICV and CCV criteria are ± 10% recovery, low level check standard allowed ± 30%
ICP inter-element check standard criteria ± 20%

Deviations:

Element	Date	Intial Calib.	ICV/ CCV	%R	Samples Affected	
Sodium	11/6		CCVL	130	436427-81	116303-5
Sodium	11/6		CCVL	123	436427-95	116305-5, 6, 8, 10
Sodium	11/6		CCVL	121	436427-109	116303-6, 8, 10
Vanadium	11/15		CCVL	122	437779-131	none
Barium	11/16		ICVL	78	438041-12	None
Vanadium	11/18		CCVL	79	438079-100	116303-10 only Be reported from this sequence

Actions:

1. If any elements initial claibration linearity is <0.995, qualify the data as estimated (J/UJ)
2. If any elements initial claibration linearity is <0.95, qualify the data as unusable (R)

3a. If any elements ICV or CCV recovery is <90%, qualify the data as estimated (J/UJ)

3b. If any elements ICV or CCV recovery is > 110%, qualify results ≥ MDL as estimated (J). Do not qualify non-detects.

4a. If any elements ICV or CCV recovery is <75%, qualify the data as unusable (R)

4b. If any elements ICV or CCV recovery is > 125% qualify positive results as estimated (J) or non-detects as unusable (R).

4c. If any element ICV or CCV recovery is ≥ 160%, qualify positive results ≥ MDL as unusable (R). Do not qualify non-detects.

5a. If any elements CRI recovery is 50 - 69% (30 - 49% for Sb, Pb, Tb), qualify results ≥ MDL (but < 2 times CRQL) as estimated (J/UJ) and results > 2 times CRQL are not qualified.

5b. If any elements CRI recovery is < 50% (<30% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) and non-detects as unusable (R). Results > 2 times CRQL are estimated (J).

5c. If any elements CRI recovery is > 130% but < 180% (>150% but ≤ 200% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) as esimated (J). And non-detects and results ≥ 2x CRQL are not qualified.

5d. If CRI or (R) > 180% (> 200% for Sb, Pb, Ti), qualify results that are ≥ MDL as unusable (R).

Remarks: _____

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.) (continued)

Analytical Sequence and MS Tune	(Y/N)
1. Were the appropriate number of ICP standards used?	Y
2. Were the appropriate number of AA standards used?	Y
3. Was calibration performed and documented at the beginning of each run?	Y
4. Were calibration check standards run at 10% frequency or every two hours?	Y
5. Were low level standard checks analyzed at approximately 2X the PQL?	Y
6. Was ICP-MS mass calibration within 0.1 AMU?	Y
7. Was ICP-MS % RSD of the aboslute signals for all analytes < 5%?	Y

Deviations:

Element	Deviation	Samples Affected

Actions:

1. If instrument calibration is questionable, use professional judgement, qualify the data as estimated (J/UJ)
2. If instrument calibration documentation can not be obtained or is inadequate, qualify the data as unusable (R)
3. If mass calibration for ICP-MS was not within 0.1 AMU qualify analyte results as estimated (J/UJ)
4. If % RSD for ICP-MS was > 5% for any analyte in the tuning solution, qualify associated results as estimated (J/UJ).

Results:

V. Blanks (ICB, CCB, Method Blank, Equipment Rinsate Blank)

A. Blank Results

If the blank level is > CRQL for any analyte, check that the analyte's concentration in the samples is > 10 times the blank value. The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account when applying the action level.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
ccb 436427-80	Sodium	156 ug/L	1560	116303-5
CCB 436427-94	Sodium	137 ug/L	1370	116303-5, 6, 8, 10
CCB 436427-108	Sodium	135 ug/L	1350	116303-6, 8, 10
ICB 437779-14	Vanadium	0.547 ug/L		None
CCB 437779-110	Antimony	0.471 ug/L		None
	Vanadium	1.15 ug/L		
CCB 437779-130	Vanadium	1.22 ug/L		None
CCB 437779-141	Beryllium	0.114 ug/L	1.14	116303-5, 6, 8, 9, 10 Be not reported from this sequence
	Arntimony	0.724 ug/L	7.24	" samples all U
ICB 438041/11	Antimony	0.447 ug/L		None
	Vanadium	0.745u g/L		

If additional space is required, use next page

Actions:

1. For blank results ≥ MDL but ≤ CRQL, qualify samples ≥ MDL but < CRQL as CRQL U.
   Use proffessional judgement to qualify sample results exceeding the CRQL.

2a. If blank results are > CRQL: For sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < 10 times the blank qualify results as unusable (R) or estimated (J). No action is taken for sample results ≥ 10 times the blank levels.

2b. If ICB/ CCB results are > CRQL; for sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < blank results, qualify results as not detected (U) at the level of the blank or unusable (R). Use professional judgement for sample results > blank results.

Remarks: See ADR for MB contamination, no further qualification

CCB contamination was not qualified, see form I's

V. Blanks (continued)

The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
CCB 438041/22	Beryllium	0.164 ug/L		116303-5, 6, 8 used for qual
	Vanadium	1.06 ug/L		
CCB 438041/35	Antimony	0.607 ug/L		116303-5, 6, 8 not reported from this sequence
	Vanadium	1.29 ug/L		
ICB 438079/7	Antimony	0.400 ug/L		None
	Vanadium	0.534 ug/L		

V. Blanks (continued)

B. Frequency Requirements (Y/N)

1. Was a method (preparation) blank analyzed for each matrix? Y
2. Was a method blank processed for every analytical batch (20 samples)? Y
3. Was a calibration blank analyzed at 10% frequency or every two hours? Y

Deviations:

Element	Deviation	Samples Affected

Remarks:

C. Baseline Shift Evaluation

List the highest negative blank concentration for each analyte observed in laboratory or project blanks.

Deviations:

Blank ID	Element	Max. Neg Conc.	Action Level	Samples Affected

Actions:

1. If the absolute value of the maximum negative blank result is > the CRQL, qualify positive results as estimated (J) and non-detects as estimated (UJ).

Remarks:

VI. Laboratory Control Sample Evaluation

All LCS recovery criteria are set at 80-120%
An LCS must be analyzed for each matrix and for each digestion batch or set of twenty samples

Deviations:

Element	Date	%R	Matrix	Samples Affected

Actions:

1. If any element's LCS recovery is >120%, qualify positive results as (J).
2. If any element's LCS recovery is 50-79%, qualify positive results as (J) and non-detect results as (UJ)

3a. If any element's LCS recovery is <50%, qualify positive results as (J) and non-detect results as (R)
3b. If the LCS recovery is > 150%, qualify all results as unusable (R).

4. For soil LCS recovery > upper limit, qualify samples results ≥ MDL as estimated (J).
5. For soil LCS recovery < lower limit, qualify results ≥ MDL as esimated (J) and non-detected estimated (UJ).
6. Use professional judgement to qualify data if the LCS frequency criteria are not met.

Remarks: No discrepancies, confirmed with ADR

VII. Matrix Spike Evaluation

All MS recovery criteria are set at 75-125%
An MS must be analyzed for each matrix and for each digestion batch or set of twenty samples
Verify that a field blank or PE sample was not used for spiked sample analysis
Verify that a post-digestion spike was analyzed for those anlytes where the pre-digestion spike recovery is outside control limits and the sample result is < 4 times the spike added.

Project Sample(s) Spiked: LL10mw-003-181001-GW

Deviations:

Element	Spiked Sample Result	Sample Result	Spike Amount	%R	Samples Affected

Actions:

1. If the sample concentration exceeds the spiking level by a factor of 4X or more, do not qualify the data
2. If the spike recovery is >125%, qualify all positive values as (J).
3. If the spike recovery is between 30-74%, qualify positive values as (J) and non-detect values as estimated (UJ)
4. If the spike recovery is <30%, qualify positive values as (J) and non-detects are qualified unusable (R)

if the post-digestion spike recovery is < 75% (or none was performed); non-detects are qualified as estimated (UJ)
If the post-digestion spike reocvery is ≥ 75%. There is no post-digestion spike performed for mercury.

5. Qualify all samples of similar matrix to the spiked sample in the same manner
6. Use professional judgement to qualify data if the MS frequency criteria are not met.
7. Use professional judgement for qualification of data for unspiked elements

Remarks: No discrepancies, confirmed with ADR

VIII. Laboratory Duplicate Evaluation

Duplicate relative percent difference (RPD) for water is 20% (both results > 5 times CDRL) or < CRDL difference (if either result is < 5 times CRDL) and RPD for soil is 35% (if both results are > 5 times CRDL or < 2 times CRDL if either result is < 5 times CRDL).
When duplicate sample values are both less than the reporting level they are considered acceptable
When dupicate sample values are within 5X the reporting level they are acceptable if their absolute difference is within 3X the reporting level
Verify that a field blank on PE sample was not used for duplicate analysis.

Deviations:

Element	Sample #	Duplicate #	RPD	Samples Affected

Actions:

1. If an element's RPD is >20% (water) / >35% (soil), qualify positive results as (J) and non-detect results as (UJ)
2. For low concentrations, if an element's duplicate absolute difference is > 3X the reporting level, qualify positive results as (J) and non-detect results as (UJ)
3. Use professional judgement to qualify data if the duplicate frequency criteria are not met.

Remarks: NA

IX. Inductively Coupled Plasma (ICP) Serial Dilution Analysis

Verify that a field blank or PE sample was not used for serial dilution.
Serial dilution of positive results are performed when values exceed 50X the IDL
Results from serial dilutions should agree within 10% of the original undiluted analysis

Deviations:

Element	Sample #	Sample Result	Serial Dilution	%D	Action

Actions:

1. If the serial dilution %D is >10 and the analyte results are >50X the IDL, qualify all positive results as estimated (J) and non-detects as estimated (UJ).

Remarks: No discrepancies, confirmed with ADR

X. Furnace Atomic Absorption QC

A. Duplicate Precision (Y/N)

1. Were duplicate injections performed for all samples? _____
2. Were one point analytical spikes performed for all samples? _____
3. Did duplicate injections agree within ± 20%? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If duplicate injection results are outside ± 20%, qualify positive results as (J) and non-detect results as (UJ)

Remarks: NA

B. Post Digestion Spike Recoveries (Y/N)

1. Did post digestion spike recoveries meet an 85-115% recovery criteria? Y
2. If spike recoveries did not meet recovery criteria were samples analyzed by MSA? Y
3. If MSA was used to analyze samples, was its' correlation coefficient ≥ 0.995? Y

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If post digestion spike recoveries are >115%, qualify positive results as (J) and non-detect results as (U)
2. If post digestion spike recoveries are 11-84%, qualify positive results as (J) and non-detect results as (UJ)
3. If post digestion spike recoveries are <10%, qualify positive results as (R) and non-detect results as (R)
4. If MSA was used to quantitate values and the correlation coefficient was <0.995, qualify data as (J or UJ)
5. If MSA was used to quantitate values and the correlation coefficient was <0.95, qualify data as (R)

Remarks: No discrepancies, confirmed with ADR

XI. Inductively Coupled Plasma (ICP) Interference Check Sample Evaluation

Interference check samples should be analyzed at the beginning and end of each analysis run, or at a minimum of twice per 8 hour working shift.
Results for the ICS solution AB must fall within control limits of 20% for analytes included in the solution.
Evaluate the ICS A solution raw data for results with an absolute value ≥ MDL for analytes that are not present in the ICS A solution.

Deviations:

Element	Sample #	Sample Result	Interferent Result	Action

Actions:

1. If the ICS AB %R for an analyte is > 120%, qualify sample results ≥ MDL as estimated (J) and non-detects should not be qualified.
2. If the ICS AB %R for an analyte is 50-79%, qualify sample results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ).
3. If the ICS AB %R for an analyte is <50%, qualify all sample results that are ≥ MDL and all non-detects as as unusable (R).
4. If results ≥ MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents and with analyte concentration that approximate those levels in the ICS A, sample results ≥ MDL should be qualified as estimated (J) and non-detects should not be qualified.
5. If negative results with absolute values > MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents, affected sample results > MDL should be qualified as estimated (J) and non-detects (UJ).

Remarks: No ICS discrepancies

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116303 **Analysis:** Cyanide, Nitrate

Method: 9012/9056

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/2/19

QA Reviewed by: [signature] Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: One nitrate result was reported at a dilution

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: Holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Cali9bration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: No discrepancies, confirmed with ADR

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, confirmed with ADR

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: No discrepancies, confirmed with ADR

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116303

Analysis: Hexa Chromium

Method: 7196

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: Laboratory limits

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooks Francis Date: 1/2/19

QA Reviewed by: Richman Stark Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: Holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be ≥ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: No discrepancies, confirmed with ADR

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, confirmed with ADR

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: No discrepancies, confirmed with ADR

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

Client Sample ID: LL12mw-247-181001-GW — Lab Sample ID: 280-116303-10

Date Collected: 10/29/18 11:05 **Matrix: Water**
Date Received: 10/30/18 08:45

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexavalent chromium	ND	U	0.020	0.0030	mg/L			10/30/18 09:26	1

Client Sample ID: LL12mw-247-181002-GW — Lab Sample ID: 280-116303-11

Date Collected: 10/29/18 11:05 **Matrix: Water**
Date Received: 10/30/18 08:45

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexavalent chromium	ND	U	0.020	0.0030	mg/L			10/30/18 09:29	1

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116303-1						
Method: 6010C						
LL10mw-003-181001-GW	280-116303-5	AQ	N	3010A	10/29/2018 12:11:00 PM	S2AVE
LL10mw-003-181001-GWMS	280-116303-5MS	AQ	MS	3010A	10/29/2018 12:11:00 PM	S2AVE
LL10mw-003-181001-GWMSD	280-116303-5MSD	AQ	MSD	3010A	10/29/2018 12:11:00 PM	S2AVE
LL10mw-003-181002-GW	280-116303-6	AQ	FD	3010A	10/29/2018 12:11:00 PM	S2AVE
LL10mw-005-181001-GW	280-116303-8	AQ	N	3010A	10/29/2018 2:45:00 PM	S2AVE
LL12mw-247-181001-GW	280-116303-10	AQ	N	3010A	10/29/2018 11:05:00 AM	S2AVE
Method: 6010C-KNA						
LL10mw-003-181001-GW	280-116303-5	AQ	N	3010A	10/29/2018 12:11:00 PM	S2AVE
LL10mw-003-181001-GWMS	280-116303-5MS	AQ	MS	3010A	10/29/2018 12:11:00 PM	S2AVE
LL10mw-003-181001-GWMSD	280-116303-5MSD	AQ	MSD	3010A	10/29/2018 12:11:00 PM	S2AVE
LL10mw-003-181002-GW	280-116303-6	AQ	FD	3010A	10/29/2018 12:11:00 PM	S2AVE
LL10mw-005-181001-GW	280-116303-8	AQ	N	3010A	10/29/2018 2:45:00 PM	S2AVE
LL12mw-247-181001-GW	280-116303-10	AQ	N	3010A	10/29/2018 11:05:00 AM	S2AVE
Method: 6020A						
LL10mw-003-181001-GW	280-116303-5	AQ	N	3020A	10/29/2018 12:11:00 PM	S2AVE
LL10mw-003-181002-GW	280-116303-6	AQ	FD	3020A	10/29/2018 12:11:00 PM	S2AVE
LL10mw-005-181001-GW	280-116303-8	AQ	N	3020A	10/29/2018 2:45:00 PM	S2AVE
LL12mw-185-181001-GW	280-116303-9	AQ	N	3020A	10/29/2018 9:50:00 AM	S2AVE
LL12mw-247-181001-GW	280-116303-10	AQ	N	3020A	10/29/2018 11:05:00 AM	S2AVE
Method: 7470A						
LL10mw-003-181001-GW	280-116303-5	AQ	N	7470A	10/29/2018 12:11:00 PM	S2AVE
LL10mw-003-181002-GW	280-116303-6	AQ	FD	7470A	10/29/2018 12:11:00 PM	S2AVE
LL10mw-005-181001-GW	280-116303-8	AQ	N	7470A	10/29/2018 2:45:00 PM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 7470A						
LL12mw-247-181001-GW	280-116303-10	AQ	N	7470A	10/29/2018 11:05:00 AM	S2AVE
Method: 8082A						
FWGmw-019-181001-GW	280-116303-1	AQ	N	3510C	10/29/2018 9:50:00 AM	S2AVE
FWGmw-019-181001-GWMS	280-116303-1MS	AQ	MS	3510C	10/29/2018 9:50:00 AM	S2AVE
FWGmw-019-181001-GWMSD	280-116303-1MSD	AQ	MSD	3510C	10/29/2018 9:50:00 AM	S2AVE
FWGmw-022-181001-GW	280-116303-4	AQ	N	3510C	10/29/2018 10:00:00 AM	S2AVE
Method: 8260B						
FWGmw-019-181001-GW	280-116303-1	AQ	N	METHOD	10/29/2018 9:50:00 AM	S2AVE
FWGmw-022-181001-GW	280-116303-4	AQ	N	METHOD	10/29/2018 10:00:00 AM	S2AVE
FWGTB-181008-TB	280-116303-7	AQ	TB	METHOD	10/29/2018 12:11:00 PM	S2AVE
FWGTB-184003-TB	280-116303-3	AQ	TB	METHOD	10/29/2018 9:50:00 AM	S2AVE
LL10mw-003-181001-GW	280-116303-5	AQ	N	METHOD	10/29/2018 12:11:00 PM	S2AVE
LL10mw-003-181002-GW	280-116303-6	AQ	FD	METHOD	10/29/2018 12:11:00 PM	S2AVE
LL10mw-005-181001-GW	280-116303-8	AQ	N	METHOD	10/29/2018 2:45:00 PM	S2AVE
Method: 8270D						
LL10mw-003-181001-GW	280-116303-5	AQ	N	3520C	10/29/2018 12:11:00 PM	S2AVE
LL10mw-003-181001-GWMS	280-116303-5MS	AQ	MS	3520C	10/29/2018 12:11:00 PM	S2AVE
LL10mw-003-181001-GWMSD	280-116303-5MSD	AQ	MSD	3520C	10/29/2018 12:11:00 PM	S2AVE
LL10mw-003-181002-GW	280-116303-6	AQ	FD	3520C	10/29/2018 12:11:00 PM	S2AVE
LL10mw-005-181001-GW	280-116303-8	AQ	N	3520C	10/29/2018 2:45:00 PM	S2AVE
LL12mw-247-181001-GW	280-116303-10	AQ	N	3520C	10/29/2018 11:05:00 AM	S2AVE
Method: 8330B						
LL12mw-247-181001-GW	280-116303-10	AQ	N	3535	10/29/2018 11:05:00 AM	S2AVE
LL12mw-247-181001-GWMS	280-116303-10MS	AQ	MS	3535	10/29/2018 11:05:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method		Collection Date	Validation Code
Method: 8330B							
LL12mw-247-181001-GWMSD	280-116303-10MSD	AQ	MSD		3535	10/29/2018 11:05:00 AM	S2AVE
LL12mw-247-181002-GW	280-116303-11	AQ	FD		3535	10/29/2018 11:05:00 AM	S2AVE
Method: 9012B							
FWGmw-019-181001-GW	280-116303-1	AQ	N	Gen Prep		10/29/2018 9:50:00 AM	S2AVE
FWGmw-019-181002-GW	280-116303-2	AQ	FD	Gen Prep		10/29/2018 9:50:00 AM	S2AVE
FWGmw-022-181001-GW	280-116303-4	AQ	N	Gen Prep		10/29/2018 10:00:00 AM	S2AVE
LL12mw-185-181001-GW	280-116303-9	AQ	N	Gen Prep		10/29/2018 9:50:00 AM	S2AVE
LL12mw-247-181001-GW	280-116303-10	AQ	N	Gen Prep		10/29/2018 11:05:00 AM	S2AVE
LL12mw-247-181002-GW	280-116303-11	AQ	FD	Gen Prep		10/29/2018 11:05:00 AM	S2AVE
LL12mw-247-181002-GWMS	280-116303-11MS	AQ	MS	Gen Prep		10/29/2018 11:05:00 AM	S2AVE
LL12mw-247-181002-GWMSD	280-116303-11MSD	AQ	MSD	Gen Prep		10/29/2018 11:05:00 AM	S2AVE
Method: 9056A							
LL12mw-185-181001-GW	280-116303-9	AQ	N	METHOD		10/29/2018 9:50:00 AM	S2AVE
LL12mw-247-181001-GW	280-116303-10	AQ	N	METHOD		10/29/2018 11:05:00 AM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116303-1
EDD Filename: 280-116303-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	A
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	A
Field Triplicates	N
Field Blanks	A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered Please refer to the Overall Qualifier Summary report for manual qualifiers

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116303-1 **Laboratory: TA DEN**

EDD Filename: 280-116303-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Action limit	Associated Samples
MB 280-435829/1-A	11/6/2018 12:45:00 AM	CALCIUM	43.6 ug/L	436	LL10mw-003-181001-GW
		IRON	33.6 ug/L	336	LL10mw-003-181002-GW
		MAGNESIUM	29.3 ug/L	29.3	LL10mw-005-181001-GW
				293	LL12mw-247-181001-GW

**CONFIRMED no qual

Method: 6010C-KNA
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result		Associated Samples
MB 280-435829/1-A	11/6/2018 12:45:00 AM	SODIUM	165 ug/L	1650	LL10mw-003-181001-GW LL10mw-003-181002-GW LL10mw-005-181001-GW LL12mw-247-181001-GW

**CONFIRMED no qual

Method: 8260B
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-437124/4	11/10/2018 11:23:00 AM	TOLUENE	0.375 ug/L	FWGmw-019-181001-GW FWGmw-022-181001-GW FWGTB-181008-TB FWGTB-184003-TB LL10mw-003-181001-GW LL10mw-003-181002-GW LL10mw-005-181001-GW

**CONFIRMED, no detection, no qual

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116303-1 **Laboratory: TA DEN**

EDD Filename: 280-116303-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL10mw-003-181001-GW	ALUMINUM	J	21	300	LOQ	ug/L	J (all detects)
LL10mw-003-181002-GW	ALUMINUM	J	22	300	LOQ	ug/L	J (all detects)
LL12mw-247-181001-GW	ALUMINUM	J	290	300	LOQ	ug/L	J (all detects)

Method: 6010C-KNA

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL10mw-003-181001-GW	POTASSIUM	J	500	3000	LOQ	ug/L	J (all detects)
LL10mw-003-181002-GW	POTASSIUM	J	650	3000	LOQ	ug/L	J (all detects)
LL10mw-005-181001-GW	POTASSIUM	J	580	3000	LOQ	ug/L	J (all detects)
	SODIUM	J	4400	5000	LOQ	ug/L	
LL12mw-247-181001-GW	POTASSIUM	J	2700	3000	LOQ	ug/L	J (all detects)

Method: 6020A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL10mw-003-181001-GW	BARIUM	J	2.2	3.0	LOQ	ug/L	J (all detects)
	BERYLLIUM	J	0.081	1.0	LOQ	ug/L	
LL10mw-003-181002-GW	BARIUM	J	1.9	3.0	LOQ	ug/L	J (all detects)
	CHROMIUM	J	0.50	10	LOQ	ug/L	
LL10mw-005-181001-GW	COBALT	J	0.065	1.0	LOQ	ug/L	J (all detects)
	NICKEL	J	0.95	3.0	LOQ	ug/L	
LL12mw-185-181001-GW	ARSENIC	J	0.70	5.0	LOQ	ug/L	J (all detects)
LL12mw-247-181001-GW	BERYLLIUM	J	0.16	1.0	LOQ	ug/L	J (all detects)
	CHROMIUM	J	0.90	10	LOQ	ug/L	
	COBALT	J	0.97	1.0	LOQ	ug/L	
	LEAD	J	0.44	3.0	LOQ	ug/L	
	NICKEL	J	1.4	3.0	LOQ	ug/L	
	ZINC	J	4.4	20	LOQ	ug/L	

Method: 7470A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL10mw-003-181001-GW	MERCURY	J	0.045	0.20	LOQ	ug/L	J (all detects)
LL10mw-003-181002-GW	MERCURY	J	0.048	0.20	LOQ	ug/L	J (all detects)
LL10mw-005-181001-GW	MERCURY	J	0.050	0.20	LOQ	ug/L	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116303-1 **Laboratory: TA DEN**

EDD Filename: 280-116303-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 7470A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL12mw-247-181001-GW	MERCURY	J	0.042	0.20	LOQ	ug/L	J (all detects)

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-019-181001-GW	ACETONE	J	6.9	10	LOQ	ug/L	J (all detects)
	METHYLENE CHLORIDE	J	0.48	5.0	LOQ	ug/L	
FWGmw-022-181001-GW	ACETONE	J	2.3	10	LOQ	ug/L	J (all detects)
	METHYLENE CHLORIDE	J	1.2	5.0	LOQ	ug/L	
LL10mw-003-181001-GW	CHLOROFORM	J	0.77	1.0	LOQ	ug/L	J (all detects)
LL10mw-003-181002-GW	ACETONE	J	8.1	10	LOQ	ug/L	J (all detects)
	CHLOROFORM	J	0.72	1.0	LOQ	ug/L	
	METHYLENE CHLORIDE	J	0.44	5.0	LOQ	ug/L	
LL10mw-005-181001-GW	ACETONE	J	7.0	10	LOQ	ug/L	J (all detects)
	METHYLENE CHLORIDE	J	0.70	5.0	LOQ	ug/L	

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-116303-1 **Laboratory: TA DEN**

EDD Filename: 280-116303-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 6010C
Matrix: AQ

Analyte	Concentration (ug/L) LL10mw-003-181001-GW (TOT)	Concentration (ug/L) LL10mw-003-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
ALUMINUM	21	22	5	50.00	
CALCIUM	61000	62000	2	50.00	No Qualifiers Applied
MAGNESIUM	17000	17000	0	50.00	

Method: 6010C-KNA
Matrix: AQ

Analyte	Concentration (ug/L) LL10mw-003-181001-GW (TOT)	Concentration (ug/L) LL10mw-003-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
POTASSIUM	500	650	26	50.00	
SODIUM	8200	8400	2	50.00	No Qualifiers Applied

Method: 6020A
Matrix: AQ

Analyte	Concentration (ug/L) LL10mw-003-181001-GW (TOT)	Concentration (ug/L) LL10mw-003-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
BARIUM	2.2	1.9	15	50.00	
BERYLLIUM	0.081	1.0 U	200	50.00	No Qualifiers Applied
CHROMIUM	10 U	0.50	200	50.00	

Method: 7470A
Matrix: AQ

Analyte	Concentration (ug/L) LL10mw-003-181001-GW (TOT)	Concentration (ug/L) LL10mw-003-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
MERCURY	0.045	0.048	6	50.00	No Qualifiers Applied

Method: 8260B
Matrix: AQ

Analyte	Concentration (ug/L) LL10mw-003-181001-GW	Concentration (ug/L) LL10mw-003-181002-GW	Sample RPD	eQAPP RPD	Flag
ACETONE	10 U M	8.1	200	50.00	
CARBON TETRACHLORIDE	6.7	6.3	6	50.00	No Qualifiers Applied
CHLOROFORM	0.77	0.72	7	50.00	
METHYLENE CHLORIDE	5.0 U	0.44	200	50.00	

Data Qualifier Summary

Lab Reporting Batch ID: 280-116303-1 **Laboratory: TA DEN**

EDD Filename: 280-116303-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6010C **Matrix:** AQ

Sample ID: LL10mw-003-181001-GW **Collected:** 10/29/2018 12:11:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	21	J	70	LOD	300	LOQ	ug/L	J	RI

Sample ID: LL10mw-003-181002-GW **Collected:** 10/29/2018 12:11:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	22	J	70	LOD	300	LOQ	ug/L	J	RI

Sample ID: LL12mw-247-181001-GW **Collected:** 10/29/2018 11:05:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	290	J	70	LOD	300	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6010C-KNA **Matrix:** AQ

Sample ID: LL10mw-003-181001-GW **Collected:** 10/29/2018 12:11:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	500	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: LL10mw-003-181002-GW **Collected:** 10/29/2018 12:11:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	650	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: LL10mw-005-181001-GW **Collected:** 10/29/2018 2:45:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	580	J	940	LOD	3000	LOQ	ug/L	J	RI
SODIUM	4400	J	350	LOD	5000	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116303-1 **Laboratory: TA DEN**

EDD Filename: 280-116303-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6010C-KNA **Matrix:** AQ

Sample ID: LL12mw-247-181001-GW **Collected:** 10/29/2018 11:05:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	2700	J	940	LOD	3000	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: LL10mw-003-181001-GW **Collected:** 10/29/2018 12:11:00 PM **Analysis Type:** RE/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.081	J	0.30	LOD	1.0	LOQ	ug/L	J	RI

Sample ID: LL10mw-003-181001-GW **Collected:** 10/29/2018 12:11:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	2.2	J	0.95	LOD	3.0	LOQ	ug/L	J	RI

Sample ID: LL10mw-003-181002-GW **Collected:** 10/29/2018 12:11:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	1.9	J	0.95	LOD	3.0	LOQ	ug/L	J	RI
CHROMIUM	0.50	J	1.8	LOD	10	LOQ	ug/L	J	RI

Sample ID: LL10mw-005-181001-GW **Collected:** 10/29/2018 2:45:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
COBALT	0.065	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
NICKEL	0.95	J	1.0	LOD	3.0	LOQ	ug/L	J	RI

Sample ID: LL12mw-185-181001-GW **Collected:** 10/29/2018 9:50:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	0.70	J	1.0	LOD	5.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116303-1 **Laboratory: TA DEN**

EDD Filename: 280-116303-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: LL12mw-247-181001-GW **Collected:** 10/29/2018 11:05:00 AM **Analysis Type:** RE/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.16	J	0.30	LOD	1.0	LOQ	ug/L	J	RI

Sample ID: LL12mw-247-181001-GW **Collected:** 10/29/2018 11:05:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHROMIUM	0.90	J	1.8	LOD	10	LOQ	ug/L	J	RI
COBALT	0.97	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
LEAD	0.44	J	0.70	LOD	3.0	LOQ	ug/L	J	RI
NICKEL	1.4	J	1.0	LOD	3.0	LOQ	ug/L	J	RI
ZINC	4.4	J	8.0	LOD	20	LOQ	ug/L	J	RI

Method Category: METALS
Method: 7470A **Matrix:** AQ

Sample ID: LL10mw-003-181001-GW **Collected:** 10/29/2018 12:11:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.045	J	0.080	LOD	0.20	LOQ	ug/L	J	RI

Sample ID: LL10mw-003-181002-GW **Collected:** 10/29/2018 12:11:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.048	J	0.080	LOD	0.20	LOQ	ug/L	J	RI

Sample ID: LL10mw-005-181001-GW **Collected:** 10/29/2018 2:45:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.050	J	0.080	LOD	0.20	LOQ	ug/L	J	RI

Sample ID: LL12mw-247-181001-GW **Collected:** 10/29/2018 11:05:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.042	J	0.080	LOD	0.20	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116303-1 **Laboratory: TA DEN**

EDD Filename: 280-116303-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 7470A **Matrix:** AQ

Method Category: VOA
Method: 8260B **Matrix:** AQ

Sample ID: FWGmw-019-181001-GW **Collected:** 10/29/2018 9:50:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	6.9	J	6.4	LOD	10	LOQ	ug/L	J	RI
METHYLENE CHLORIDE	0.48	J	0.80	LOD	5.0	LOQ	ug/L	J	RI

Sample ID: FWGmw-022-181001-GW **Collected:** 10/29/2018 10:00:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	2.3	J	6.4	LOD	10	LOQ	ug/L	J	RI
METHYLENE CHLORIDE	1.2	J	0.80	LOD	5.0	LOQ	ug/L	J	RI

Sample ID: LL10mw-003-181001-GW **Collected:** 10/29/2018 12:11:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	0.77	J	0.40	LOD	1.0	LOQ	ug/L	J	RI

Sample ID: LL10mw-003-181002-GW **Collected:** 10/29/2018 12:11:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	8.1	J	6.4	LOD	10	LOQ	ug/L	J	RI
CHLOROFORM	0.72	J	0.40	LOD	1.0	LOQ	ug/L	J	RI
METHYLENE CHLORIDE	0.44	J	0.80	LOD	5.0	LOQ	ug/L	J	RI

Sample ID: LL10mw-005-181001-GW **Collected:** 10/29/2018 2:45:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	7.0	J	6.4	LOD	10	LOQ	ug/L	J	RI
METHYLENE CHLORIDE	0.70	J	0.80	LOD	5.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116303-1 **Laboratory: TA DEN**

EDD Filename: 280-116303-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
Mb	Method Blank Contamination
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA CAN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116303-2						
Method: 7196A						
LL12mw-247-181001-GW	280-116303-10	AQ	N	METHOD	10/29/2018 11:05:00 ΔM	S2AVE
LL12mw-247-181001-GWMS	280-116303-10MS	AQ	MS	METHOD	10/29/2018 11:05:00 ΔM	S2AVE
LL12mw-247-181001-GWMSD	280-116303-10MSD	AQ	MSD	METHOD	10/29/2018 11:05:00 ΔM	S2AVE
LL12mw-247-181002-GW	280-116303-11	AQ	FD	METHOD	10/29/2018 11:05:00 ΔM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116303-2
EDD Filename: 280-116303-2

Laboratory: TA CAN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	A
Surrogate/Tracer Spikes	N
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	A
Field Duplicates	A
Field Triplicates	N
Field Blanks	N

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

LEIDOS
Laboratory Data Verification Checklist

Project: RVAAP

SDG No: J116336

Analyte Group: VOC, SVOC, Explosives, Metals, Wet Chem

Sample Matrix: Water

EDD (Y/N):

Disposition of Data Package:

NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)		Y
Check for LCS results (e.g., org. form III, inorg. form XII)		Y
Check for method blank results (e.g., org. form IV, inorg. form III)		Y
Check for MS/MSD results (e.g., inorg. form V)		NA
Check for laboratory duplicate results (e.g., inorg. form VI)		NA
Check for Method Calibration and Run Documentation		
organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	method linear range	Y
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	Y
other:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	sample run sequence	Y

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Brooke Francis Date: 1/4/19

QA Review By: Date: 01/08/2019

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: J116336

Analyte Group: VOC, SVOC, Explosives, Metals, Wet Chem

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:

Comments:

Sample Summary

Client: Leidos, Inc. TestAmerica Job ID: 280-116336-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-116336-1	FBQmw-171-181001-GW	Water	10/30/18 13:25	10/31/18 13:19
280-116336-2	FBQmw-172-181001-GW	Water	10/30/18 14:55	10/31/18 13:19
280-116336-3	FWGmw-007-181001-GW	Water	10/30/18 09:55	10/31/18 13:19
280-116336-4	FWGmw-023-181001-GW	Water	10/30/18 09:25	10/31/18 13:19
280-116336-5	LL11mw-005-181001-GW	Water	10/30/18 14:45	10/31/18 13:19
280-116336-6	LL12mw-242-181001-GW	Water	10/29/18 15:25	10/31/18 13:19
280-116336-7	LL7mw-001-181001-GW	Water	10/30/18 13:10	10/31/18 13:19
280-116336-8	FWGTB-181010-TB	Water	10/30/18 13:10	10/31/18 13:19
280-116336-9	LL7mw-006-181001-GW	Water	10/30/18 11:37	10/31/18 13:19
280-116336-10	NTAmw-117-181001-GW	Water	10/30/18 09:30	10/31/18 13:19
280-116336-11	NTAmw-118-181001-GW	Water	10/30/18 11:30	10/31/18 13:19
280-116336-12	NTAmw-119-181001-GW	Water	10/30/18 10:10	10/31/18 13:19
280-116336-13	NTAmw-119-181002-GW	Water	10/30/18 10:10	10/31/18 13:19
280-116336-14	FWGTB-181007-TB	Water	10/30/18 10:10	10/31/18 13:19

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116336

Analysis: VOC

Method: 8260B

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francois Date: 1/4/19

QA Reviewed by: Date: 01/08/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No discrepancies, ADR confirmed

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: No discrepancies, ~~ADR confirmed~~ ISTD not evaluated by ADR, verified manually

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)
10/30/18	FWGTB-181010-TB		Carbon Disulfide	0.93 ug/L

Remarks: No MB contamination, ADR confirmed

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected
Carbon Disulfide	0.93 ug/L	4.65 ug/L	Associations were non-detect

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks:

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: 10/29
VOC - Date(s) of continuing calibration: 11/112
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration:
SVOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: No calibration discrepancies for target analytes

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-437294

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116336 **Analysis:** SVOC/PAH

Method: 8270/SIM

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM 1 sample PAHs, 5 samples phthalates or phthalates/nitroaromatics

No sample results were ~~reported~~ qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/4/19

QA Reviewed by: Date: 01/08/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No discrepancies, ADR confirmed

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: No discrepancies, ADR confirmed ISTD not evaluated by ADR, verified manually

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: See ADR for MB contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration:
VOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: 10/17/18 11/7/18
SVOC - Date(s) of continuing calibration: 11/7/18 11/8/18
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: All calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS/D 280-436047 L:CS 280-436346

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J116336 **Analysis:** Explosives

Method: 8330B

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DoD QSM

One sample result was qualified as estimated due to column comparison discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooks Francis Date: 1/4/19

QA Reviewed by: Richman Stark Date: 01/08/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: LL7mw-001-181001-GW RDX column comparison RPD is 118%, qualified J

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes:
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be $\leq$ 20%
Continuing calibration %D must be within $\pm$ 15%

Deviations:

Compound	Correlation Coefficient	% RSD	%D	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks: Calibration results met control limits

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks: No discrepancies, confirmed with ADR

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: See ADR for MB contamination

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-435841, LCS 280-436019

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

LEIDOS
Metals Data Review Checklist

Project: RVAAP

SDG No: J116336

Analysis: Metals

Method: 6010, 6020, 7470

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on an examination of the following:

Case Narrative	MS/MSD Recoveries and Differences
Analytical Holding Times	Duplicate Relative Percent Differences
Sample Preservation	ICP Serial Dilution
Method Calibration	Furnace Atomic Absorption QC
Method and Project Blanks	Re-analysis and Secondary Dilution
LCS Recoveries	Internal Standard Performance (if applicable)

Project specific QA/QC or contract requirements may take priority over validation criteria in this proceudre.

Overall remarks: DoD QSM

Some results were qualified as non-detect due to blank contamination

Some results were qualified as estimated due to calibration discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/4/19

QA Reviewed by: Richman Stark Date: 01/08/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Metals - Waters - preserved to pH<2, 180 days from sample collection
Metals - Soils - 180 days from sample collection
Mercury - Waters - preserved to pH<2, 28 days from sample collection
Mercury - Soils - 28 days from sample collection

Deviations:

Sample #	Metals				Mercury			
	Date Collected	Date Analyzed	Days >HT	pH Check	Date Collected	Date Analyzed	Days >HT	pH Check

Actions:

1. If preserved samples exceed holding time, qualify all associated results as estimated (J/UJ).
2. If unpreserved samples exceed holding time, qualify all associated results as unusable (R).
3. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
4. If water samples are not acidified, use professional judgement. Minimally, qualify data as estimated (J) and non-detects unusable (R).
5. If soil samples exceed holding time, use professional judgement to qualify data.

Remarks: All holding times were met

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.)

Initial calibration linearity criteria is r ≥ 0.995
ICV and CCV criteria are ± 10% recovery, low level check standard allowed ± 30%
ICP inter-element check standard criteria ± 20%

Deviations:

Element	Date	Intial Calib.	ICV/ CCV	%R	Samples Affected	
Calcium	11/7/18		CCVL	172	436619/26	None
Sodium				127		
Aluminum				123		
Sodium	11/7/18		CCVL	122	436619/40	None
Aluminum				121		
Sodium	11/7/18		CCVL	122	436619/52	116336-6
Sodium	11/7/18		CCVL	121	436619/65	116336-6
Magnesium	11/7/18		ICVL	126	436767/11	None

Actions:

1. If any elements initial claibration linearity is <0.995, qualify the data as estimated (J/UJ)
2. If any elements initial claibration linearity is <0.95, qualify the data as unusable (R)

3a. If any elements ICV or CCV recovery is <90%, qualify the data as estimated (J/UJ)

3b. If any elements ICV or CCV recovery is > 110%, qualify results ≥ MDL as estimated (J).
Do not qualify non-detects.

4a. If any elements ICV or CCV recovery is <75%, qualify the data as unusable (R)

4b. If any elements ICV or CCV recovery is > 125% qualify positive results as estimated (J) or non-detects as unusable (R).

4c. If any element ICV or CCV recovery is ≥ 160%, qualify positive results ≥ MDL as unusable (R).
Do not qualify non-detects.

5a. If any elements CRI recovery is 50 - 69% (30 - 49% for Sb, Pb, Tb), qualify results ≥ MDL (but < 2 times CRQL) as estimated (J/UJ) and results > 2 times CRQL are not qualified.

5b. If any elements CRI recovery is < 50% (<30% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) and non-detects as unusable (R). Results > 2 times CRQL are estimated (J).

5c. If any elements CRI recovery is > 130% but < 180% (>150% but ≤ 200% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) as esimated (J). And non-detects and results ≥ 2x CRQL are not qualified.

5d. If CRI or (R) > 180% (> 200% for Sb, Pb, Ti), qualify results that are ≥ MDL as unusable (R).

Remarks: _____

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.) (continued)

Analytical Sequence and MS Tune	(Y/N)
1. Were the appropriate number of ICP standards used?	Y
2. Were the appropriate number of AA standards used?	Y
3. Was calibration performed and documented at the beginning of each run?	Y
4. Were calibration check standards run at 10% frequency or every two hours?	Y
5. Were low level standard checks analyzed at approximately 2X the PQL?	Y
6. Was ICP-MS mass calibration within 0.1 AMU?	Y
7. Was ICP-MS % RSD of the aboslute signals for all analytes < 5%?	Y

Deviations:

Element	Deviation	Samples Affected	
Sodium	130%	CCVL 436427/81	None
Sodium	123%	CCVL 436427/95	116336-3, 6, 7, 12
Sodium	121%	CCVL 436427/109	116336-3, 6, 7, 12, 13
Sodium	125%	CCVL 436427/123	116336-13
Vanadium	130%	CCVL 436784/178	116336-6
Barium	121%	ICVL 437566/9	None
Manganese	126%	CCVL 437566/148	116336-3, 6, 7, 12, 13

Actions:

1. If instrument calibration is questionable, use professional judgement, qualify the data as estimated (J/UJ)
2. If instrument calibration documentation can not be obtained or is inadequate, qualify the data as unusable (R)
3. If mass calibration for ICP-MS was not within 0.1 AMU qualify analyte results as estimated (J/UJ)
4. If % RSD for ICP-MS was > 5% for any analyte in the tuning solution, qualify associated results as estimated (J/UJ).

Results:

V. Blanks (ICB, CCB, Method Blank, Equipment Rinsate Blank)

A. Blank Results

If the blank level is > CRQL for any analyte, check that the analyte's concentration in the samples is > 10 times the blank value. The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account when applying the action level.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
CCB 436619/25	Calcium	43.7 ug/L		None
	Sodium	316 ug/L		
CCB436619/39	Sodium	173 ug/L		None
CCB 436619/51	Sodium	186 ug/L	1860	116336-6
CCB 436619/64	Sodium	197 ug/L	1970	116336-6
CCB 436427/80	Sodium	156 ug/L		None
CCB 436427/94	Sodium	137 ug/L	1370	116336-3, 6, 7, 12
CCB 436427/108	Sodium	135 ug/L	1350	116336-3, 6, 7, 12, 13
CCB 436427/122	Sodium	137 ug/L	1370	116336-13
ICB 436784/9	Vanadium	0.998 ug/L		None
CCB 436784/177	Beryllium	0.086 ug/L	0.86	116336-6
	Vanadium	1.84 ug/L	18.4	

If additional space is required, use next page

Actions:

1. For blank results ≥ MDL but ≤ CRQL, qualify samples ≥ MDL but < CRQL as CRQL U.
   Use proffessional judgement to qualify sample results exceeding the CRQL.

2a. If blank results are > CRQL: For sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < 10 times the blank qualify results as unusable (R) or estimated (J). No action is taken for sample results ≥ 10 times the blank levels.

2b. If ICB/ CCB results are > CRQL; for sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < blank results, qualify results as not detected (U) at the level of the blank or unusable (R). Use professional judgement for sample results > blank results.

Remarks: MB contamination included in the ADR report

CCV contamination was not qualified by ADR

V. Blanks (continued)

The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

reviewed total vs dissolved for qualifiers

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
CCB 436784/186	Beryllium	0.137 ug/L	1.37	116336-6
	Vanadium	1.98 ug/L	19.8	↓
CCB 436784/233	Beryllium	0.226 ug/L	2.26	116336-6
CCB 436784/242	Vanadium	1.16 ug/L	11.6	116336-6
ICB 437566/8	Vanadium	1.20 ug/L	—	None
CCB 437566/135	Antimony	0.541 ug/L	5.41	116336-3, 6 (11/13), 7, 12, 13
	Berylium	0.156 ug/L	1.56	↓
	Vanadium	0.789 ug/L	7.89	↓
CCB 437566/147	Antimony	0.405 ug/L	4.05	116336-3, 6 (11/13), 7, 12, 13
	Beryllium	0.139 ug/L	1.39	↓
	Vanadium	1.18 ug/L	11.8	↓
CCB 437566/158	Antimony	0.447 ug/L	—	None
	Beryllium	0.159 ug/L	1.59	↓
CCB 437490/13 11:42	Mercury	0.04 ug/L	0.40	116336-6 (11/13)

V. Blanks (continued)

B. Frequency Requirements (Y/N)

1. Was a method (preparation) blank analyzed for each matrix? Y
2. Was a method blank processed for every analytical batch (20 samples)? Y
3. Was a calibration blank analyzed at 10% frequency or every two hours? Y

Deviations:

Element	Deviation	Samples Affected

Remarks:

C. Baseline Shift Evaluation

List the highest negative blank concentration for each analyte observed in laboratory or project blanks.

Deviations:

Blank ID	Element	Max. Neg Conc.	Action Level	Samples Affected

Actions:

1. If the absolute value of the maximum negative blank result is > the CRQL, qualify positive results as estimated (J) and non-detects as estimated (UJ).

Remarks:

VI. Laboratory Control Sample Evaluation

All LCS recovery criteria are set at 80-120%
An LCS must be analyzed for each matrix and for each digestion batch or set of twenty samples

Deviations:

Element	Date	%R	Matrix	Samples Affected

Actions:

1. If any element's LCS recovery is >120%, qualify positive results as (J).
2. If any element's LCS recovery is 50-79%, qualify positive results as (J) and non-detect results as (UJ)

3a. If any element's LCS recovery is <50%, qualify positive results as (J) and non-detect results as (R)
3b. If the LCS recovery is > 150%, qualify all results as unusable (R).

4. For soil LCS recovery > upper limit, qualify samples results ≥ MDL as estimated (J).
5. For soil LCS recovery < lower limit, qualify results ≥ MDL as esimated (J) and non-detected estimated (UJ).
6. Use professional judgement to qualify data if the LCS frequency criteria are not met.

Remarks: No discrepancies, ADR Confirmed

VII. Matrix Spike Evaluation

All MS recovery criteria are set at 75-125%
An MS must be analyzed for each matrix and for each digestion batch or set of twenty samples
Verify that a field blank or PE sample was not used for spiked sample analysis
Verify that a post-digestion spike was analyzed for those anlytes where the pre-digestion spike recovery is outside control limits and the sample result is < 4 times the spike added.

Project Sample(s) Spiked: LL12mw-242-181001-GW

Deviations:

Element	Spiked Sample Result	Sample Result	Spike Amount	%R	Samples Affected

Actions:

1. If the sample concentration exceeds the spiking level by a factor of 4X or more, do not qualify the data
2. If the spike recovery is >125%, qualify all positive values as (J).
3. If the spike recovery is between 30-74%, qualify positive values as (J) and non-detect values as estimated (UJ)
4. If the spike recovery is <30%, qualify positive values as (J) and non-detects are qualified unusable (R)

if the post-digestion spike recovery is < 75% (or none was performed); non-detects are qualified as estimated (UJ)
If the post-digestion spike reocvery is ≥ 75%. There is no post-digestion spike performed for mercury.

5. Qualify all samples of similar matrix to the spiked sample in the same manner
6. Use professional judgement to qualify data if the MS frequency criteria are not met.
7. Use professional judgement for qualification of data for unspiked elements

Remarks: No discrepancies, ADR confirmed

VIII. Laboratory Duplicate Evaluation

Duplicate relative percent difference (RPD) for water is 20% (both results > 5 times CDRL) or < CRDL difference (if either result is < 5 times CRDL) and RPD for soil is 35% (if both results are > 5 times CRDL or < 2 times CRDL if either result is < 5 times CRDL).
When duplicate sample values are both less than the reporting level they are considered acceptable
When dupicate sample values are within 5X the reporting level they are acceptable if their absolute difference is within 3X the reporting level
Verify that a field blank on PE sample was not used for duplicate analysis.

Deviations:

Element	Sample #	Duplicate #	RPD	Samples Affected

Actions:

1. If an element's RPD is >20% (water) / >35% (soil), qualify positive results as (J) and non-detect results as (UJ)
2. For low concentrations, if an element's duplicate absolute difference is > 3X the reporting level, qualify positive results as (J) and non-detect results as (UJ)
3. Use professional judgement to qualify data if the duplicate frequency criteria are not met.

Remarks: NA

IX. Inductively Coupled Plasma (ICP) Serial Dilution Analysis

Verify that a field blank or PE sample was not used for serial dilution.
Serial dilution of positive results are performed when values exceed 50X the IDL
Results from serial dilutions should agree within 10% of the original undiluted analysis

Deviations:

Element	Sample #	Sample Result	Serial Dilution	%D	Action

Actions:

1. If the serial dilution %D is >10 and the analyte results are >50X the IDL, qualify all positive results as estimated (J) and non-detects as estimated (UJ).

Remarks: No serial dilutions calculated

X. Furnace Atomic Absorption QC

A. Duplicate Precision (Y/N)

1. Were duplicate injections performed for all samples? _____
2. Were one point analytical spikes performed for all samples? _____
3. Did duplicate injections agree within ± 20%? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If duplicate injection results are outside ± 20%, qualify positive results as (J) and non-detect results as (UJ)

Remarks: NA

B. Post Digestion Spike Recoveries (Y/N)

1. Did post digestion spike recoveries meet an 85-115% recovery criteria? _____
2. If spike recoveries did not meet recovery criteria were samples analyzed by MSA? _____
3. If MSA was used to analyze samples, was its' correlation coefficient ≥ 0.995? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If post digestion spike recoveries are >115%, qualify positive results as (J) and non-detect results as (U)
2. If post digestion spike recoveries are 11-84%, qualify positive results as (J) and non-detect results as (UJ)
3. If post digestion spike recoveries are <10%, qualify positive results as (R) and non-detect results as (R)
4. If MSA was used to quantitate values and the correlation coefficient was <0.995, qualify data as (J or UJ)
5. If MSA was used to quantitate values and the correlation coefficient was <0.95, qualify data as (R)

Remarks: No discrepancies, ADR confirmed

XI. Inductively Coupled Plasma (ICP) Interference Check Sample Evaluation

Interference check samples should be analyzed at the beginning and end of each analysis run, or at a minimum of twice per 8 hour working shift.
Results for the ICS solution AB must fall within control limits of 20% for analytes included in the solution.
Evaluate the ICS A solution raw data for results with an absolute value ≥ MDL for analytes that are not present in the ICS A solution.

Deviations:

Element	Sample #	Sample Result	Interferent Result	Action

Actions:

1. If the ICS AB %R for an analyte is > 120%, qualify sample results ≥ MDL as estimated (J) and non-detects should not be qualified.
2. If the ICS AB %R for an analyte is 50-79%, qualify sample results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ).
3. If the ICS AB %R for an analyte is <50%, qualify all sample results that are ≥ MDL and all non-detects as as unusable (R).
4. If results ≥ MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents and with analyte concentration that approximate those levels in the ICS A, sample results ≥ MDL should be qualified as estimated (J) and non-detects should not be qualified.
5. If negative results with absolute values > MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents, affected sample results > MDL should be qualified as estimated (J) and non-detects (UJ).

Remarks: All ICS results met control limits

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116336

Analysis: Wet Chemistry

Method: 9012, 9034, 9056, 2320

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: DoD QSM

One result was qualified as non-detect due to blank contamination
One result was qualified as estimated due to missed holding time

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francois Date: 1/7/19

QA Reviewed by: Richman Stark Date: 01/08/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: See ADR output for missed holding times

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected	
Nitrate	0.0433 mg/L	0.2165	ICB	
Nitrate	0.044 mg/L	0.220	CCB 11:11	
Nitrate	0.0433 mg/L	0.2165	CCB 21:18	
Sulfate	0.252 mg/L	1.260	ICB	No qual
Sulfate	0.245 mg/L	1.225	CCB 11:11	No qual

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: MB contamination included in ADR output
ADR did not qualify based on continuing calibration blank

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: No discrepancies, ADR confirmed

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116336

Analysis: Hexa Chromium

Method: 7196

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: Laboratory Control Limits

No results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/7/19

QA Reviewed by: Richman Stach Date: 01/08/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: Holding time was met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: MB was free from contamination

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R met control limits

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: NA

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

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

Client Sample ID: LL7mw-001-181001-GW **Lab Sample ID: 280-116336-7**
Date Collected: 10/30/18 13:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	**2.4**		1.0	0.40	0.16	ug/L		11/13/18 02:32	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/13/18 02:32	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/13/18 02:32	1
1,1-Dichloroethane	**1.0**		1.0	0.80	0.22	ug/L		11/13/18 02:32	1
1,1-Dichloroethene	**2.5**		1.0	0.80	0.23	ug/L		11/13/18 02:32	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/13/18 02:32	1
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/13/18 02:32	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/13/18 02:32	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/13/18 02:32	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/13/18 02:32	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/13/18 02:32	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/13/18 02:32	1
Acetone	**4.9**	**J**	10	6.4	1.9	ug/L		11/13/18 02:32	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 02:32	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 02:32	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/13/18 02:32	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 02:32	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/13/18 02:32	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/13/18 02:32	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		11/13/18 02:32	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/13/18 02:32	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 02:32	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/13/18 02:32	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 02:32	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/13/18 02:32	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 02:32	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 02:32	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 02:32	1
Methylene Chloride	0.80	U	5.0	0.80	0.32	ug/L		11/13/18 02:32	1
Styrene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 02:32	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/13/18 02:32	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 02:32	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/13/18 02:32	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 02:32	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/13/18 02:32	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/13/18 02:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*11/13/18 02:32*	*1*
4-Bromofluorobenzene (Surr)	*104*		*85 - 114*		*11/13/18 02:32*	*1*
Dibromofluoromethane (Surr)	*94*		*80 - 119*		*11/13/18 02:32*	*1*
Toluene-d8 (Surr)	*99*		*89 - 112*		*11/13/18 02:32*	*1*

Client Sample ID: FWGTB-181010-TB **Lab Sample ID: 280-116336-8**
Date Collected: 10/30/18 13:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 02:52	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/13/18 02:52	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/13/18 02:52	1

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

Client Sample ID: FWGTB-181010-TB **Lab Sample ID: 280-116336-8**
Date Collected: 10/30/18 13:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		11/13/18 02:52	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		11/13/18 02:52	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/13/18 02:52	1
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/13/18 02:52	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/13/18 02:52	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/13/18 02:52	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/13/18 02:52	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/13/18 02:52	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/13/18 02:52	1
Acetone	6.4	U	10	6.4	1.9	ug/L		11/13/18 02:52	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 02:52	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 02:52	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/13/18 02:52	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 02:52	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/13/18 02:52	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/13/18 02:52	1
Carbon disulfide	**0.93**	**J**	2.0	1.6	0.45	ug/L		11/13/18 02:52	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/13/18 02:52	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 02:52	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/13/18 02:52	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 02:52	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/13/18 02:52	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 02:52	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 02:52	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 02:52	1
Methylene Chloride	0.80	U	5.0	0.80	0.32	ug/L		11/13/18 02:52	1
Styrene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 02:52	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/13/18 02:52	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 02:52	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/13/18 02:52	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 02:52	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/13/18 02:52	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/13/18 02:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*81 - 118*		*11/13/18 02:52*	*1*
4-Bromofluorobenzene (Surr)	*101*		*85 - 114*		*11/13/18 02:52*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 119*		*11/13/18 02:52*	*1*
Toluene-d8 (Surr)	*100*		*89 - 112*		*11/13/18 02:52*	*1*

Client Sample ID: NTAmw-119-181001-GW **Lab Sample ID: 280-116336-12**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 03:12	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/13/18 03:12	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/13/18 03:12	1
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		11/13/18 03:12	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		11/13/18 03:12	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/13/18 03:12	1

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

Client Sample ID: NTAmw-119-181001-GW **Lab Sample ID: 280-116336-12**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/13/18 03:12	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/13/18 03:12	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/13/18 03:12	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/13/18 03:12	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/13/18 03:12	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/13/18 03:12	1
Acetone	**4.1**	**J**	10	6.4	1.9	ug/L		11/13/18 03:12	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 03:12	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 03:12	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/13/18 03:12	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 03:12	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/13/18 03:12	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/13/18 03:12	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		11/13/18 03:12	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/13/18 03:12	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 03:12	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/13/18 03:12	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 03:12	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/13/18 03:12	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 03:12	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 03:12	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 03:12	1
Methylene Chloride	**0.86**	**J**	5.0	0.80	0.32	ug/L		11/13/18 03:12	1
Styrene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 03:12	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/13/18 03:12	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 03:12	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/13/18 03:12	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 03:12	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/13/18 03:12	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/13/18 03:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*81 - 118*		*11/13/18 03:12*	*1*
4-Bromofluorobenzene (Surr)	*105*		*85 - 114*		*11/13/18 03:12*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*11/13/18 03:12*	*1*
Toluene-d8 (Surr)	*93*		*89 - 112*		*11/13/18 03:12*	*1*

Client Sample ID: FWGTB-181007-TB **Lab Sample ID: 280-116336-14**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 03:32	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/13/18 03:32	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/13/18 03:32	1
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		11/13/18 03:32	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		11/13/18 03:32	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/13/18 03:32	1
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/13/18 03:32	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/13/18 03:32	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/13/18 03:32	1

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

Client Sample ID: FWGTB-181007-TB **Lab Sample ID: 280-116336-14**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/13/18 03:32	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/13/18 03:32	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/13/18 03:32	1
Acetone	6.4	U	10	6.4	1.9	ug/L		11/13/18 03:32	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 03:32	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 03:32	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/13/18 03:32	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 03:32	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/13/18 03:32	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/13/18 03:32	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		11/13/18 03:32	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/13/18 03:32	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 03:32	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/13/18 03:32	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 03:32	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/13/18 03:32	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 03:32	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 03:32	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 03:32	1
Methylene Chloride	0.80	U	5.0	0.80	0.32	ug/L		11/13/18 03:32	1
Styrene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 03:32	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/13/18 03:32	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 03:32	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/13/18 03:32	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 03:32	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/13/18 03:32	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/13/18 03:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*81 - 118*		*11/13/18 03:32*	*1*
4-Bromofluorobenzene (Surr)	*99*		*85 - 114*		*11/13/18 03:32*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 119*		*11/13/18 03:32*	*1*
Toluene-d8 (Surr)	*99*		*89 - 112*		*11/13/18 03:32*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: NTAmw-119-181001-GW **Lab Sample ID: 280-116336-12**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.013	U	0.11	0.013	0.0062	ug/L		11/08/18 19:56	1
2-Methylnaphthalene	0.013	U	0.11	0.013	0.0064	ug/L		11/08/18 19:56	1
Acenaphthene	0.042	U M U	0.11	0.042	0.0044	ug/L		11/08/18 19:56	1
Acenaphthylene	0.042	U	0.11	0.042	0.0054	ug/L		11/08/18 19:56	1
Anthracene	0.042	U	0.11	0.042	0.0059	ug/L		11/08/18 19:56	1
Benzo[a]anthracene	0.013	U	0.11	0.013	0.0044	ug/L		11/08/18 19:56	1
Benzo[a]pyrene	0.013	U	0.11	0.013	0.0073	ug/L		11/08/18 19:56	1
Benzo[b]fluoranthene	0.013	U	0.11	0.013	0.0033	ug/L		11/08/18 19:56	1
Benzo[g,h,i]perylene	0.013	U	0.11	0.013	0.0066	ug/L		11/08/18 19:56	1
Benzo[k]fluoranthene	0.013	U	0.11	0.013	0.0067	ug/L		11/08/18 19:56	1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: NTAmw-119-181001-GW **Lab Sample ID: 280-116336-12**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chrysene	0.013	U	0.11	0.013	0.0035	ug/L		11/08/18 19:56	1
Dibenz(a,h)anthracene	0.013	U	0.11	0.013	0.0043	ug/L		11/08/18 19:56	1
Fluoranthene	0.013	U	0.11	0.013	0.0051	ug/L		11/08/18 19:56	1
Fluorene	0.042	U	0.11	0.042	0.0058	ug/L		11/08/18 19:56	1
Indeno[1,2,3-cd]pyrene	0.042	U	0.11	0.042	0.0048	ug/L		11/08/18 19:56	1
Naphthalene	0.013	U	0.11	0.013	0.0085	ug/L		11/08/18 19:56	1
Phenanthrene	0.021	U	0.11	0.021	0.0098	ug/L		11/08/18 19:56	1
Pyrene	0.021	U	0.11	0.021	0.0065	ug/L		11/08/18 19:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*75*		*53 - 106*	*11/05/18 13:07*	*11/08/18 19:56*	*1*
Nitrobenzene-d5	*69*		*55 - 111*	*11/05/18 13:07*	*11/08/18 19:56*	*1*
Terphenyl-d14	*78*		*58 - 132*	*11/05/18 13:07*	*11/08/18 19:56*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: FWGmw-007-181001-GW **Lab Sample ID: 280-116336-3**
Date Collected: 10/30/18 09:55 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.1	U	11	2.1	0.59	ug/L		11/07/18 20:44	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.1	ug/L		11/07/18 20:44	1
Diethyl phthalate	1.1	U	21	1.1	0.40	ug/L		11/07/18 20:44	1
Dimethyl phthalate	0.53	U	21	0.53	0.22	ug/L		11/07/18 20:44	1
Di-n-butyl phthalate	4.7	U	21	4.7	1.2	ug/L		11/07/18 20:44	1
Di-n-octyl phthalate	1.1	U	21	1.1	0.37	ug/L		11/07/18 20:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*92*		*43 - 140*	*11/02/18 10:41*	*11/07/18 20:44*	*1*
2-Fluorobiphenyl	*91*		*44 - 119*	*11/02/18 10:41*	*11/07/18 20:44*	*1*
2-Fluorophenol (Surr)	*93*		*19 - 119*	*11/02/18 10:41*	*11/07/18 20:44*	*1*
Nitrobenzene-d5 (Surr)	*91*		*44 - 120*	*11/02/18 10:41*	*11/07/18 20:44*	*1*
Phenol-d5 (Surr)	*94*		*10 - 115*	*11/02/18 10:41*	*11/07/18 20:44*	*1*
Terphenyl-d14 (Surr)	*88*		*50 - 134*	*11/02/18 10:41*	*11/07/18 20:44*	*1*

Client Sample ID: LL12mw-242-181001-GW **Lab Sample ID: 280-116336-6**
Date Collected: 10/29/18 15:25 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.2	U	11	2.2	0.61	ug/L		11/07/18 21:13	1
Butyl benzyl phthalate	2.2	U	22	2.2	1.1	ug/L		11/07/18 21:13	1
Diethyl phthalate	1.1	U	22	1.1	0.41	ug/L		11/07/18 21:13	1
Dimethyl phthalate	0.54	U	22	0.54	0.23	ug/L		11/07/18 21:13	1
Di-n-butyl phthalate	4.8	U	22	4.8	1.3	ug/L		11/07/18 21:13	1
Di-n-octyl phthalate	1.1	U	22	1.1	0.38	ug/L		11/07/18 21:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*98*		*43 - 140*	*11/02/18 10:41*	*11/07/18 21:13*	*1*
2-Fluorobiphenyl	*87*		*44 - 119*	*11/02/18 10:41*	*11/07/18 21:13*	*1*
2-Fluorophenol (Surr)	*89*		*19 - 119*	*11/02/18 10:41*	*11/07/18 21:13*	*1*
Nitrobenzene-d5 (Surr)	*86*		*44 - 120*	*11/02/18 10:41*	*11/07/18 21:13*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: LL12mw-242-181001-GW **Lab Sample ID: 280-116336-6**
Date Collected: 10/29/18 15:25 **Matrix: Water**
Date Received: 10/31/18 13:19

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Phenol-d5 (Surr)	*89*		*10 - 115*	*11/02/18 10:41*	*11/07/18 21:13*	*1*
Terphenyl-d14 (Surr)	*75*		*50 - 134*	*11/02/18 10:41*	*11/07/18 21:13*	*1*

Client Sample ID: LL7mw-001-181001-GW **Lab Sample ID: 280-116336-7**
Date Collected: 10/30/18 13:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.0	U	10	2.0	0.57	ug/L		11/07/18 21:41	1
Butyl benzyl phthalate	2.0	U	20	2.0	1.0	ug/L		11/07/18 21:41	1
Diethyl phthalate	1.0	U	20	1.0	0.39	ug/L		11/07/18 21:41	1
Dimethyl phthalate	0.51	U	20	0.51	0.22	ug/L		11/07/18 21:41	1
Di-n-butyl phthalate	4.5	U	20	4.5	1.2	ug/L		11/07/18 21:41	1
Di-n-octyl phthalate	1.0	U	20	1.0	0.36	ug/L		11/07/18 21:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*94*		*43 - 140*	*11/02/18 10:41*	*11/07/18 21:41*	*1*
2-Fluorobiphenyl	*83*		*44 - 119*	*11/02/18 10:41*	*11/07/18 21:41*	*1*
2-Fluorophenol (Surr)	*87*		*19 - 119*	*11/02/18 10:41*	*11/07/18 21:41*	*1*
Nitrobenzene-d5 (Surr)	*83*		*44 - 120*	*11/02/18 10:41*	*11/07/18 21:41*	*1*
Phenol-d5 (Surr)	*86*		*10 - 115*	*11/02/18 10:41*	*11/07/18 21:41*	*1*
Terphenyl-d14 (Surr)	*90*		*50 - 134*	*11/02/18 10:41*	*11/07/18 21:41*	*1*

Client Sample ID: NTAmw-119-181001-GW **Lab Sample ID: 280-116336-12**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4-Dinitrotoluene	4.3	U	20	4.3	1.6	ug/L		11/07/18 22:10	1
2,6-Dinitrotoluene	4.3	U	20	4.3	1.9	ug/L		11/07/18 22:10	1
Bis(2-ethylhexyl) phthalate	2.0	U	9.8	2.0	0.55	ug/L		11/07/18 22:10	1
Butyl benzyl phthalate	2.0	U	20	2.0	0.98	ug/L		11/07/18 22:10	1
Diethyl phthalate	0.98	U	20	0.98	0.37	ug/L		11/07/18 22:10	1
Dimethyl phthalate	0.49	U	20	0.49	0.21	ug/L		11/07/18 22:10	1
Di-n-butyl phthalate	4.3	U	20	4.3	1.1	ug/L		11/07/18 22:10	1
Di-n-octyl phthalate	0.98	U	20	0.98	0.34	ug/L		11/07/18 22:10	1
Nitrobenzene	2.0	U	20	2.0	0.79	ug/L		11/07/18 22:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*88*		*43 - 140*	*11/02/18 10:41*	*11/07/18 22:10*	*1*
2-Fluorobiphenyl	*80*		*44 - 119*	*11/02/18 10:41*	*11/07/18 22:10*	*1*
2-Fluorophenol (Surr)	*80*		*19 - 119*	*11/02/18 10:41*	*11/07/18 22:10*	*1*
Nitrobenzene-d5 (Surr)	*77*		*44 - 120*	*11/02/18 10:41*	*11/07/18 22:10*	*1*
Phenol-d5 (Surr)	*80*		*10 - 115*	*11/02/18 10:41*	*11/07/18 22:10*	*1*
Terphenyl-d14 (Surr)	*86*		*50 - 134*	*11/02/18 10:41*	*11/07/18 22:10*	*1*

Client Sample ID: NTAmw-119-181002-GW **Lab Sample ID: 280-116336-13**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.0	U	10	2.0	0.56	ug/L		11/07/18 22:39	1
Butyl benzyl phthalate	2.0	U	20	2.0	1.0	ug/L		11/07/18 22:39	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: NTAmw-119-181002-GW **Lab Sample ID: 280-116336-13**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Diethyl phthalate	1.0	U	20	1.0	0.38	ug/L		11/07/18 22:39	1
Dimethyl phthalate	0.50	U	20	0.50	0.21	ug/L		11/07/18 22:39	1
Di-n-butyl phthalate	4.4	U	20	4.4	1.2	ug/L		11/07/18 22:39	1
Di-n-octyl phthalate	1.0	U	20	1.0	0.35	ug/L		11/07/18 22:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*91*		*43 - 140*	*11/02/18 10:41*	*11/07/18 22:39*	*1*
2-Fluorobiphenyl	*81*		*44 - 119*	*11/02/18 10:41*	*11/07/18 22:39*	*1*
2-Fluorophenol (Surr)	*84*		*19 - 119*	*11/02/18 10:41*	*11/07/18 22:39*	*1*
Nitrobenzene-d5 (Surr)	*77*		*44 - 120*	*11/02/18 10:41*	*11/07/18 22:39*	*1*
Phenol-d5 (Surr)	*83*		*10 - 115*	*11/02/18 10:41*	*11/07/18 22:39*	*1*
Terphenyl-d14 (Surr)	*85*		*50 - 134*	*11/02/18 10:41*	*11/07/18 22:39*	*1*

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: FWGmw-007-181001-GW **Lab Sample ID: 280-116336-3**
Date Collected: 10/30/18 09:55 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.45	U	1.1	0.45	0.23	ug/L		11/05/18 23:42	1
1,3-Dinitrobenzene	0.23	U	0.45	0.23	0.10	ug/L		11/05/18 23:42	1
2,4,6-Trinitrotoluene	0.23	U	0.45	0.23	0.082	ug/L		11/05/18 23:42	1
2,4-Dinitrotoluene	0.23	U	0.45	0.23	0.095	ug/L		11/05/18 23:42	1
2,6-Dinitrotoluene	0.23	U	0.23	0.23	0.073	ug/L		11/05/18 23:42	1
2-Amino-4,6-dinitrotoluene	0.14	U	0.23	0.14	0.057	ug/L		11/05/18 23:42	1
2-Nitrotoluene	0.23	U	0.45	0.23	0.097	ug/L		11/07/18 01:05	1
3-Nitrotoluene	0.23	U	0.45	0.23	0.094	ug/L		11/05/18 23:42	1
4-Amino-2,6-dinitrotoluene	0.14	U	0.23	0.14	0.065	ug/L		11/05/18 23:42	1
4-Nitrotoluene	0.45	U	1.1	0.45	0.23	ug/L		11/05/18 23:42	1
HMX	0.23	U M U	0.45	0.23	0.099	ug/L		11/05/18 23:42	1
Nitrobenzene	0.23	U	0.45	0.23	0.10	ug/L		11/05/18 23:42	1
Nitroglycerin	2.3	U	3.4	2.3	1.0	ug/L		11/05/18 23:42	1
PETN	1.4	U	2.3	1.4	0.47	ug/L		11/05/18 23:42	1
RDX	0.14	U	0.23	0.14	0.059	ug/L		11/05/18 23:42	1
Tetryl	0.23	U	0.27	0.23	0.090	ug/L		11/05/18 23:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*100*		*83 - 119*	*11/02/18 12:09*	*11/05/18 23:42*	*1*
1,2-Dinitrobenzene	*85*		*83 - 119*	*11/02/18 12:09*	*11/07/18 01:05*	*1*

Client Sample ID: LL12mw-242-181001-GW **Lab Sample ID: 280-116336-6**
Date Collected: 10/29/18 15:25 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.42	U	1.0	0.42	0.21	ug/L		11/06/18 19:39	1
1,3-Dinitrobenzene	0.21	U	0.42	0.21	0.093	ug/L		11/06/18 19:39	1
2,4,6-Trinitrotoluene	0.21	U	0.42	0.21	0.076	ug/L		11/06/18 19:39	1
2,4-Dinitrotoluene	0.21	U	0.42	0.21	0.087	ug/L		11/06/18 19:39	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.067	ug/L		11/06/18 19:39	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.21	0.13	0.053	ug/L		11/06/18 19:39	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: LL12mw-242-181001-GW **Lab Sample ID: 280-116336-6**
Date Collected: 10/29/18 15:25 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrotoluene	0.21	U	0.42	0.21	0.089	ug/L		11/07/18 22:58	1
3-Nitrotoluene	0.21	U	0.42	0.21	0.087	ug/L		11/06/18 19:39	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.21	0.13	0.060	ug/L		11/06/18 19:39	1
4-Nitrotoluene	0.42	U	1.0	0.42	0.21	ug/L		11/06/18 19:39	1
HMX	0.21	U M U	0.42	0.21	0.091	ug/L		11/06/18 19:39	1
Nitrobenzene	0.21	U	0.42	0.21	0.095	ug/L		11/06/18 19:39	1
Nitroglycerin	2.1	U	3.1	2.1	0.96	ug/L		11/06/18 19:39	1
PETN	1.3	U	2.1	1.3	0.43	ug/L		11/06/18 19:39	1
RDX	0.13	U	0.21	0.13	0.055	ug/L		11/06/18 19:39	1
Tetryl	0.21	U	0.25	0.21	0.083	ug/L		11/06/18 19:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*108*		*83 - 119*	*11/01/18 12:42*	*11/06/18 19:39*	*1*
1,2-Dinitrobenzene	*84*		*83 - 119*	*11/01/18 12:42*	*11/07/18 22:58*	*1*

Client Sample ID: LL7mw-001-181001-GW **Lab Sample ID: 280-116336-7**
Date Collected: 10/30/18 13:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.44	U	1.1	0.44	0.22	ug/L		11/06/18 00:04	1
1,3-Dinitrobenzene	0.22	U	0.44	0.22	0.097	ug/L		11/06/18 00:04	1
2,4,6-Trinitrotoluene	0.22	U	0.44	0.22	0.079	ug/L		11/06/18 00:04	1
2,4-Dinitrotoluene	0.22	U M U	0.44	0.22	0.091	ug/L		11/06/18 00:04	1
2,6-Dinitrotoluene	0.22	U	0.22	0.22	0.070	ug/L		11/06/18 00:04	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.22	0.13	0.055	ug/L		11/06/18 00:04	1
2-Nitrotoluene	0.22	U	0.44	0.22	0.093	ug/L		11/07/18 01:40	1
3-Nitrotoluene	0.22	U M U	0.44	0.22	0.091	ug/L		11/06/18 00:04	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.22	0.13	0.063	ug/L		11/06/18 00:04	1
4-Nitrotoluene	0.44	U	1.1	0.44	0.22	ug/L		11/06/18 00:04	1
HMX	0.22	U M U	0.44	0.22	0.096	ug/L		11/06/18 00:04	1
Nitrobenzene	0.22	U	0.44	0.22	0.099	ug/L		11/06/18 00:04	1
Nitroglycerin	2.2	U	3.3	2.2	1.0	ug/L		11/06/18 00:04	1
PETN	1.3	U	2.2	1.3	0.45	ug/L		11/06/18 00:04	1
RDX	**0.75**	J M08	0.22	0.13	0.057	ug/L		11/06/18 00:04	1
Tetryl	0.22	U	0.26	0.22	0.086	ug/L		11/06/18 00:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*93*		*83 - 119*	*11/02/18 12:09*	*11/06/18 00:04*	*1*
1,2-Dinitrobenzene	*86*		*83 - 119*	*11/02/18 12:09*	*11/07/18 01:40*	*1*

Client Sample ID: NTAmw-119-181001-GW **Lab Sample ID: 280-116336-12**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.42	U	1.0	0.42	0.21	ug/L		11/06/18 00:27	1
1,3-Dinitrobenzene	0.21	U	0.42	0.21	0.093	ug/L		11/06/18 00:27	1
2,4,6-Trinitrotoluene	0.21	U	0.42	0.21	0.076	ug/L		11/06/18 00:27	1
2,4-Dinitrotoluene	0.21	U	0.42	0.21	0.088	ug/L		11/06/18 00:27	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.068	ug/L		11/06/18 00:27	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.21	0.13	0.053	ug/L		11/06/18 00:27	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: NTAmw-119-181001-GW **Lab Sample ID: 280-116336-12**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2-Nitrotoluene	0.21	U	0.42	0.21	0.090	ug/L		11/07/18 02:15	1
3-Nitrotoluene	0.21	U	0.42	0.21	0.088	ug/L		11/06/18 00:27	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.21	0.13	0.061	ug/L		11/06/18 00:27	1
4-Nitrotoluene	0.42	U	1.0	0.42	0.21	ug/L		11/06/18 00:27	1
HMX	0.21	U M U	0.42	0.21	0.092	ug/L		11/06/18 00:27	1
Nitrobenzene	0.21	U	0.42	0.21	0.095	ug/L		11/06/18 00:27	1
Nitroglycerin	2.1	U	3.1	2.1	0.97	ug/L		11/06/18 00:27	1
PETN	1.3	U	2.1	1.3	0.44	ug/L		11/06/18 00:27	1
RDX	0.13	U	0.21	0.13	0.055	ug/L		11/06/18 00:27	1
Tetryl	0.21	U M U	0.25	0.21	0.083	ug/L		11/06/18 00:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*100*		*83 - 119*	*11/02/18 12:09*	*11/06/18 00:27*	*1*
1,2-Dinitrobenzene	*92*		*83 - 119*	*11/02/18 12:09*	*11/07/18 02:15*	*1*

Client Sample ID: NTAmw-119-181002-GW **Lab Sample ID: 280-116336-13**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.41	U	1.0	0.41	0.21	ug/L		11/06/18 00:50	1
1,3-Dinitrobenzene	0.21	U	0.41	0.21	0.091	ug/L		11/06/18 00:50	1
2,4,6-Trinitrotoluene	0.21	U	0.41	0.21	0.074	ug/L		11/06/18 00:50	1
2,4-Dinitrotoluene	0.21	U	0.41	0.21	0.086	ug/L		11/06/18 00:50	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.066	ug/L		11/06/18 00:50	1
2-Amino-4,6-dinitrotoluene	0.12	U	0.21	0.12	0.052	ug/L		11/06/18 00:50	1
2-Nitrotoluene	0.21	U	0.41	0.21	0.088	ug/L		11/07/18 02:50	1
3-Nitrotoluene	0.21	U	0.41	0.21	0.085	ug/L		11/06/18 00:50	1
4-Amino-2,6-dinitrotoluene	0.12	U	0.21	0.12	0.059	ug/L		11/06/18 00:50	1
4-Nitrotoluene	0.41	U	1.0	0.41	0.21	ug/L		11/06/18 00:50	1
HMX	0.21	U M U	0.41	0.21	0.090	ug/L		11/06/18 00:50	1
Nitrobenzene	0.21	U	0.41	0.21	0.093	ug/L		11/06/18 00:50	1
Nitroglycerin	2.1	U	3.1	2.1	0.94	ug/L		11/06/18 00:50	1
PETN	1.2	U	2.1	1.2	0.43	ug/L		11/06/18 00:50	1
RDX	0.12	U	0.21	0.12	0.054	ug/L		11/06/18 00:50	1
Tetryl	0.21	U	0.25	0.21	0.081	ug/L		11/06/18 00:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*98*		*83 - 119*	*11/02/18 12:09*	*11/06/18 00:50*	*1*
1,2-Dinitrobenzene	*83*		*83 - 119*	*11/02/18 12:09*	*11/07/18 02:50*	*1*

Method: 6010C - Metals (ICP)

Client Sample ID: FWGmw-007-181001-GW **Lab Sample ID: 280-116336-3**
Date Collected: 10/30/18 09:55 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**100**	**J**	300	70	18	ug/L		11/06/18 01:40	1
Calcium	**140000**		1000	140	35	ug/L		11/06/18 01:40	1
Iron	**270**	U F01	100	85	22	ug/L		11/06/18 01:40	1
Magnesium	**71000**		500	40	11	ug/L		11/06/18 01:40	1

Method: 6010C - Metals (ICP) (Continued)

Client Sample ID: FWGmw-007-181001-GW **Lab Sample ID: 280-116336-3**
Date Collected: 10/30/18 09:55 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Potassium	2400	J	3000	940	240	ug/L		11/06/18 01:40	1
Sodium	11000	J D05	5000	350	120	ug/L		11/06/18 01:40	1

Client Sample ID: LL12mw-242-181001-GW **Lab Sample ID: 280-116336-6**
Date Collected: 10/29/18 15:25 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	1000		300	70	18	ug/L		11/06/18 01:43	1
Calcium	77000		1000	140	35	ug/L		11/06/18 01:43	1
Iron	3600		100	85	22	ug/L		11/06/18 01:43	1
Magnesium	48000		500	40	11	ug/L		11/06/18 01:43	1
Potassium	2100	J	3000	940	240	ug/L		11/06/18 01:43	1
Sodium	22000	J D05	5000	350	120	ug/L		11/06/18 01:43	1

Client Sample ID: LL7mw-001-181001-GW **Lab Sample ID: 280-116336-7**
Date Collected: 10/30/18 13:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		11/06/18 01:47	1
Calcium	37000		1000	140	35	ug/L		11/06/18 01:47	1
Iron	9000		100	85	22	ug/L		11/06/18 01:47	1
Magnesium	12000		500	40	11	ug/L		11/06/18 01:47	1
Potassium	940	J	3000	940	240	ug/L		11/06/18 01:47	1
Sodium	6300	J D05	5000	350	120	ug/L		11/06/18 01:47	1

Client Sample ID: NTAmw-119-181001-GW **Lab Sample ID: 280-116336-12**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	120	J	300	70	18	ug/L		11/06/18 01:50	1
Calcium	85000		1000	140	35	ug/L		11/06/18 01:50	1
Iron	1200		100	85	22	ug/L		11/06/18 01:50	1
Magnesium	22000		500	40	11	ug/L		11/06/18 01:50	1
Potassium	1100	J	3000	940	240	ug/L		11/06/18 01:50	1
Sodium	7100	J D05	5000	350	120	ug/L		11/06/18 01:50	1

Client Sample ID: NTAmw-119-181002-GW **Lab Sample ID: 280-116336-13**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	120	J	300	70	18	ug/L		11/06/18 02:07	1
Calcium	86000		1000	140	35	ug/L		11/06/18 02:07	1
Iron	1200		100	85	22	ug/L		11/06/18 02:07	1
Magnesium	22000		500	40	11	ug/L		11/06/18 02:07	1
Potassium	1200	J	3000	940	240	ug/L		11/06/18 02:07	1
Sodium	7300	J D05	5000	350	120	ug/L		11/06/18 02:07	1

Method: 6010C - Metals (ICP) - Dissolved

Client Sample ID: LL12mw-242-181001-GW **Lab Sample ID: 280-116336-6**
Date Collected: 10/29/18 15:25 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**2100**		300	70	18	ug/L		11/07/18 14:47	1
Calcium	**74000**		1000	140	35	ug/L		11/07/18 04:31	1
Iron	**3200**		100	85	22	ug/L		11/07/18 04:31	1
Magnesium	**48000**		500	40	11	ug/L		11/07/18 04:31	1
Potassium	**3200**		3000	940	240	ug/L		11/07/18 04:31	1
Sodium	**22000**		5000	350	120	ug/L		11/07/18 04:31	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: FWGmw-007-181001-GW **Lab Sample ID: 280-116336-3**
Date Collected: 10/30/18 09:55 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/14/18 05:55	1
Arsenic	1.0	U	5.0	1.0	0.33	ug/L		11/14/18 05:55	1
Barium	**21**		3.0	0.95	0.29	ug/L		11/14/18 05:55	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/14/18 05:55	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/14/18 05:55	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/14/18 05:55	1
Cobalt	**0.41**	**J**	1.0	0.20	0.054	ug/L		11/14/18 05:55	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/14/18 05:55	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/14/18 05:55	1
Manganese	**130**	**Q** J D05	3.5	0.95	0.31	ug/L		11/14/18 05:55	1
Nickel	**1.4**	**J**	3.0	1.0	0.30	ug/L		11/14/18 05:55	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/14/18 05:55	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/14/18 05:55	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/14/18 05:55	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/14/18 05:55	1
Zinc	**2.2**	**J**	20	8.0	2.0	ug/L		11/14/18 05:55	1

Client Sample ID: LL12mw-242-181001-GW **Lab Sample ID: 280-116336-6**
Date Collected: 10/29/18 15:25 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/14/18 05:59	1
Arsenic	**21**		5.0	1.0	0.33	ug/L		11/14/18 05:59	1
Barium	**28**		3.0	0.95	0.29	ug/L		11/14/18 05:59	1
Beryllium	0.30 **0.10**	**J** J F06	1.0	0.30	0.080	ug/L		11/14/18 05:59	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/14/18 05:59	1
Chromium	**0.98**	**J**	10	1.8	0.50	ug/L		11/14/18 05:59	1
Cobalt	**1.3**		1.0	0.20	0.054	ug/L		11/14/18 05:59	1
Copper	**2.2**		2.0	1.8	0.56	ug/L		11/14/18 05:59	1
Lead	**1.4**	**J**	3.0	0.70	0.18	ug/L		11/14/18 05:59	1
Manganese	**120**	**Q** J D05	3.5	0.95	0.31	ug/L		11/14/18 05:59	1
Nickel	**1.3**	**J**	3.0	1.0	0.30	ug/L		11/14/18 05:59	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/14/18 05:59	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/14/18 05:59	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/14/18 05:59	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/14/18 05:59	1
Zinc	**3.9**	**J**	20	8.0	2.0	ug/L		11/14/18 05:59	1

Client Sample ID: LL7mw-001-181001-GW **Lab Sample ID: 280-116336-7**
Date Collected: 10/30/18 13:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/14/18 06:02	1
Arsenic	**1.8**	**J**	5.0	1.0	0.33	ug/L		11/14/18 06:02	1
Barium	**20**		3.0	0.95	0.29	ug/L		11/14/18 06:02	1
Beryllium	0.30 **0.12**	**J** U F06	1.0	0.30	0.080	ug/L		11/14/18 06:02	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/14/18 06:02	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/14/18 06:02	1
Cobalt	**5.9**		1.0	0.20	0.054	ug/L		11/14/18 06:02	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/14/18 06:02	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/14/18 06:02	1
Manganese	**400**	**Q** J D05	3.5	0.95	0.31	ug/L		11/14/18 06:02	1
Nickel	**8.3**		3.0	1.0	0.30	ug/L		11/14/18 06:02	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/14/18 06:02	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/14/18 06:02	1
Thallium	**0.15**	**J**	1.0	0.20	0.050	ug/L		11/14/18 06:02	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/14/18 06:02	1
Zinc	**46**		20	8.0	2.0	ug/L		11/14/18 06:02	1

Client Sample ID: NTAmw-119-181001-GW **Lab Sample ID: 280-116336-12**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/14/18 06:06	1
Arsenic	**6.8**		5.0	1.0	0.33	ug/L		11/14/18 06:06	1
Barium	**84**		3.0	0.95	0.29	ug/L		11/14/18 06:06	1
Beryllium	0.30	U	1.0	0.30	0.080	ug/L		11/14/18 06:06	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/14/18 06:06	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/14/18 06:06	1
Cobalt	**0.15**	**J**	1.0	0.20	0.054	ug/L		11/14/18 06:06	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/14/18 06:06	1
Lead	**0.26**	**J**	3.0	0.70	0.18	ug/L		11/14/18 06:06	1
Manganese	**330**	**Q** J D05	3.5	0.95	0.31	ug/L		11/14/18 06:06	1
Nickel	1.0	U	3.0	1.0	0.30	ug/L		11/14/18 06:06	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/14/18 06:06	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/14/18 06:06	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/14/18 06:06	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/14/18 06:06	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/14/18 06:06	1

Client Sample ID: NTAmw-119-181002-GW **Lab Sample ID: 280-116336-13**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/14/18 06:10	1
Arsenic	**6.6**		5.0	1.0	0.33	ug/L		11/14/18 06:10	1
Barium	**81**		3.0	0.95	0.29	ug/L		11/14/18 06:10	1
Beryllium	0.30 **0.12**	**J** U F06	1.0	0.30	0.080	ug/L		11/14/18 06:10	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/14/18 06:10	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/14/18 06:10	1
Cobalt	**0.16**	**J**	1.0	0.20	0.054	ug/L		11/14/18 06:10	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/14/18 06:10	1
Lead	**0.22**	**J**	3.0	0.70	0.18	ug/L		11/14/18 06:10	1
Manganese	**330**	**Q** J D05	3.5	0.95	0.31	ug/L		11/14/18 06:10	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: NTAmw-119-181002-GW **Lab Sample ID: 280-116336-13**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nickel	1.0	U	3.0	1.0	0.30	ug/L		11/14/18 06:10	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/14/18 06:10	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/14/18 06:10	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/14/18 06:10	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/14/18 06:10	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/14/18 06:10	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Client Sample ID: LL12mw-242-181001-GW **Lab Sample ID: 280-116336-6**
Date Collected: 10/29/18 15:25 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	**0.72**	**J**	6.0	1.0	0.40	ug/L		11/07/18 21:52	1
Arsenic	**20**		5.0	1.0	0.33	ug/L		11/07/18 21:52	1
Barium	**27**		3.0	0.95	0.29	ug/L		11/07/18 21:52	1
Beryllium	**0.33**	**J**	1.0	0.30	0.080	ug/L		11/07/18 21:52	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/07/18 21:52	1
Chromium	**1.7**	**J**	10	1.8	0.50	ug/L		11/07/18 21:52	1
Cobalt	**1.3**		1.0	0.20	0.054	ug/L		11/07/18 21:52	1
Copper	**1.5**	**J**	2.0	1.8	0.56	ug/L		11/07/18 21:52	1
Lead	**0.93**	**J**	3.0	0.70	0.18	ug/L		11/07/18 21:52	1
Manganese	**93**		3.5	0.95	0.31	ug/L		11/07/18 21:52	1
Nickel	**2.8**	**J**	3.0	1.0	0.30	ug/L		11/07/18 21:52	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/07/18 21:52	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/07/18 21:52	1
Thallium	**0.056**	**J**	1.0	0.20	0.050	ug/L		11/07/18 21:52	1
Vanadium	2.0 **1.3**	**J** U F06	6.0	2.0	0.50	ug/L		11/08/18 02:03	1
Zinc	**6.9**	**J**	20	8.0	2.0	ug/L		11/07/18 21:52	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: FWGmw-007-181001-GW **Lab Sample ID: 280-116336-3**
Date Collected: 10/30/18 09:55 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	**0.050**	**J**	0.20	0.080	0.027	ug/L		11/13/18 18:45	1

Client Sample ID: LL12mw-242-181001-GW **Lab Sample ID: 280-116336-6**
Date Collected: 10/29/18 15:25 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.08 **0.052**	**J** U F06	0.20	0.080	0.027	ug/L		11/13/18 18:47	1

Client Sample ID: LL7mw-001-181001-GW **Lab Sample ID: 280-116336-7**
Date Collected: 10/30/18 13:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	**0.052**	**J**	0.20	0.080	0.027	ug/L		11/13/18 18:49	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: NTAmw-119-181001-GW **Lab Sample ID: 280-116336-12**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	**0.045**	**J**	0.20	0.080	0.027	ug/L		11/13/18 18:51	1

Client Sample ID: NTAmw-119-181002-GW **Lab Sample ID: 280-116336-13**
Date Collected: 10/30/18 10:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	**0.047**	**J**	0.20	0.080	0.027	ug/L		11/13/18 18:54	1

Method: 7470A - Mercury (CVAA) - Dissolved

Client Sample ID: LL12mw-242-181001-GW **Lab Sample ID: 280-116336-6**
Date Collected: 10/29/18 15:25 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/15/18 12:02	1

General Chemistry

Client Sample ID: FBQmw-171-181001-GW **Lab Sample ID: 280-116336-1**
Date Collected: 10/30/18 13:25 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/13/18 21:31	1
Sulfide	1.9	U	4.0	1.9	0.79	mg/L		11/02/18 21:21	1
Nitrate as N	**0.38**	**J**	0.50	0.10	0.042	mg/L		10/31/18 23:48	1
Nitrite as N	0.10	U	0.50	0.10	0.049	mg/L		10/31/18 23:48	1
Sulfate	**26**		5.0	0.50	0.23	mg/L		10/31/18 23:48	1
Alkalinity	**38**		5.0	5.0	1.1	mg/L		11/12/18 21:53	1

Client Sample ID: FBQmw-172-181001-GW **Lab Sample ID: 280-116336-2**
Date Collected: 10/30/18 14:55 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/13/18 21:35	1

Client Sample ID: FWGmw-023-181001-GW **Lab Sample ID: 280-116336-4**
Date Collected: 10/30/18 09:25 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/13/18 21:37	1

Client Sample ID: LL11mw-005-181001-GW **Lab Sample ID: 280-116336-5**
Date Collected: 10/30/18 14:45 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/13/18 21:38	1

General Chemistry

Client Sample ID: LL12mw-242-181001-GW **Lab Sample ID: 280-116336-6**
Date Collected: 10/29/18 15:25 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate as N	0.10 **0.045**	**J H**	0.50	0.10	0.042	mg/L		11/01/18 00:07	1

ADR DID NOT QUAL FOR HT UJ F01 F06 A03

Client Sample ID: LL7mw-001-181001-GW **Lab Sample ID: 280-116336-7**
Date Collected: 10/30/18 13:10 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/13/18 21:47	1

Client Sample ID: LL7mw-006-181001-GW **Lab Sample ID: 280-116336-9**
Date Collected: 10/30/18 11:37 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/13/18 21:49	1

Client Sample ID: NTAmw-117-181001-GW **Lab Sample ID: 280-116336-10**
Date Collected: 10/30/18 09:30 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/13/18 21:50	1

Client Sample ID: NTAmw-118-181001-GW **Lab Sample ID: 280-116336-11**
Date Collected: 10/30/18 11:30 **Matrix: Water**
Date Received: 10/31/18 13:19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/13/18 21:52	1

Client Sample ID: FBQmw-171-181001-GW **Lab Sample ID: 280-116336-1**
Date Collected: 10/30/18 13:25 **Matrix: Water**
Date Received: 10/31/18 13:19

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexavalent chromium	ND	U	0.020	0.0030	mg/L			10/30/18 17:15	1

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116336-1						
Method: 2320B						
FBQmw-171-181001-GW	280-116336-1	AQ	N	METHOD	10/30/2018 1:25:00 PM	S2AVE
Method: 6010C						
FWGmw-007-181001-GW	280-116336-3	AQ	N	3010A	10/30/2018 9:55:00 AM	S2AVE
LL12mw-242-181001-GW	280-116336-6	AQ	N	3005A	10/29/2018 3:25:00 PM	S2AVE
LL12mw-242-181001-GW	280-116336-6	AQ	N	3010A	10/29/2018 3:25:00 PM	S2AVE
LL7mw-001-181001-GW	280-116336-7	AQ	N	3010A	10/30/2018 1:10:00 PM	S2AVE
NTAmw-119-181001-GW	280-116336-12	AQ	N	3010A	10/30/2018 10:10:00 AM	S2AVE
NTAmw-119-181002-GW	280-116336-13	AQ	FD	3010A	10/30/2018 10:10:00 AM	S2AVE
Method: 6010C-KNA						
FWGmw-007-181001-GW	280-116336-3	AQ	N	3010A	10/30/2018 9:55:00 AM	S2AVE
LL12mw-242-181001-GW	280-116336-6	AQ	N	3005A	10/29/2018 3:25:00 PM	S2AVE
LL12mw-242-181001-GW	280-116336-6	AQ	N	3010A	10/29/2018 3:25:00 PM	S2AVE
LL7mw-001-181001-GW	280-116336-7	AQ	N	3010A	10/30/2018 1:10:00 PM	S2AVE
NTAmw-119-181001-GW	280-116336-12	AQ	N	3010A	10/30/2018 10:10:00 AM	S2AVE
NTAmw-119-181002-GW	280-116336-13	AQ	FD	3010A	10/30/2018 10:10:00 AM	S2AVE
Method: 6020A						
FWGmw-007-181001-GW	280-116336-3	AQ	N	3020A	10/30/2018 9:55:00 AM	S2AVE
LL12mw-242-181001-GW	280-116336-6	AQ	N	3005A	10/29/2018 3:25:00 PM	S2AVE
LL12mw-242-181001-GW	280-116336-6	AQ	N	3020A	10/29/2018 3:25:00 PM	S2AVE
LL7mw-001-181001-GW	280-116336-7	AQ	N	3020A	10/30/2018 1:10:00 PM	S2AVE
NTAmw-119-181001-GW	280-116336-12	AQ	N	3020A	10/30/2018 10:10:00 AM	S2AVE
NTAmw-119-181002-GW	280-116336-13	AQ	FD	3020A	10/30/2018 10:10:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method		Collection Date	Validation Code
Method: 7470A							
FWGmw-007-181001-GW	280-116336-3	AQ	N	7470A		10/30/2018 9:55:00 AM	S2AVE
LL12mw-242-181001-GW	280-116336-6	AQ	N	7470A		10/29/2018 3:25:00 PM	S2AVE
LL12mw-242-181001-GWMS	280-116336-6MS	AQ	MS	7470A		10/29/2018 3:25:00 PM	S2AVE
LL12mw-242-181001-GWMSD	280-116336-6MSD	AQ	MSD	7470A		10/29/2018 3:25:00 PM	S2AVE
LL7mw-001-181001-GW	280-116336-7	AQ	N	7470A		10/30/2018 1:10:00 PM	S2AVE
NTAmw-119-181001-GW	280-116336-12	AQ	N	7470A		10/30/2018 10:10:00 AM	S2AVE
NTAmw-119-181002-GW	280-116336-13	AQ	FD	7470A		10/30/2018 10:10:00 AM	S2AVE
Method: 8260B							
FWGTB-181007-TB	280-116336-14	AQ	TB	METHOD		10/30/2018 10:10:00 AM	S2AVE
FWGTB-181010-TB	280-116336-8	AQ	TB	METHOD		10/30/2018 1:10:00 PM	S2AVE
LL7mw-001-181001-GW	280-116336-7	AQ	N	METHOD		10/30/2018 1:10:00 PM	S2AVE
NTAmw-119-181001-GW	280-116336-12	AQ	N	METHOD		10/30/2018 10:10:00 AM	S2AVE
Method: 8270D							
FWGmw-007-181001-GW	280-116336-3	AQ	N	3520C		10/30/2018 9:55:00 AM	S2AVE
LL12mw-242-181001-GW	280-116336-6	AQ	N	3520C		10/29/2018 3:25:00 PM	S2AVE
LL7mw-001-181001-GW	280-116336-7	AQ	N	3520C		10/30/2018 1:10:00 PM	S2AVE
NTAmw-119-181001-GW	280-116336-12	AQ	N	3520C		10/30/2018 10:10:00 AM	S2AVE
NTAmw-119-181002-GW	280-116336-13	AQ	FD	3520C		10/30/2018 10:10:00 AM	S2AVE
Method: 8270D-SIM							
NTAmw-119-181001-GW	280-116336-12	AQ	N	3510C		10/30/2018 10:10:00 AM	S2AVE
Method: 8330B							
FWGmw-007-181001-GW	280-116336-3	AQ	N		3535	10/30/2018 9:55:00 AM	S2AVE
LL12mw-242-181001-GW	280-116336-6	AQ	N		3535	10/29/2018 3:25:00 PM	S2AVE
LL7mw-001-181001-GW	280-116336-7	AQ	N		3535	10/30/2018 1:10:00 PM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method		Collection Date	Validation Code
Method: 8330B							
NTAmw-119-181001-GW	280-116336-12	AQ	N		3535	10/30/2018 10:10:00 AM	S2AVE
NTAmw-119-181002-GW	280-116336-13	AQ	FD		3535	10/30/2018 10:10:00 AM	S2AVE
Method: 9012B							
FBQmw-171-181001-GW	280-116336-1	AQ	N	Gen Prep		10/30/2018 1:25:00 PM	S2AVE
FBQmw-171-181001-GWMS	280-116336-1MS	AQ	MS	Gen Prep		10/30/2018 1:25:00 PM	S2AVE
FBQmw-171-181001-GWMSD	280-116336-1MSD	AQ	MSD	Gen Prep		10/30/2018 1:25:00 PM	S2AVE
FBQmw-172-181001-GW	280-116336-2	AQ	N	Gen Prep		10/30/2018 2:55:00 PM	S2AVE
FWGmw-023-181001-GW	280-116336-4	AQ	N	Gen Prep		10/30/2018 9:25:00 AM	S2AVE
LL11mw-005-181001-GW	280-116336-5	AQ	N	Gen Prep		10/30/2018 2:45:00 PM	S2AVE
LL7mw-001-181001-GW	280-116336-7	AQ	N	Gen Prep		10/30/2018 1:10:00 PM	S2AVE
LL7mw-006-181001-GW	280-116336-9	AQ	N	Gen Prep		10/30/2018 11:37:00 AM	S2AVE
NTAmw-117-181001-GW	280-116336-10	AQ	N	Gen Prep		10/30/2018 9:30:00 AM	S2AVE
NTAmw-118-181001-GW	280-116336-11	AQ	N	Gen Prep		10/30/2018 11:30:00 AM	S2AVE
Method: 9034							
FBQmw-171-181001-GW	280-116336-1	AQ	N	Gen Prep		10/30/2018 1:25:00 PM	S2AVE
Method: 9056A							
FBQmw-171-181001-GW	280-116336-1	AQ	N	METHOD		10/30/2018 1:25:00 PM	S2AVE
LL12mw-242-181001-GW	280-116336-6	AQ	N	METHOD		10/29/2018 3:25:00 PM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116336-1
EDD Filename: 280-116336-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	A
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	A
Field Triplicates	N
Field Blanks	A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-116336-1
Laboratory: TA DEN
EDD Filename: 280-116336-1
eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined

Method: 9056A **Preparation Method: METHOD**
Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
LL12mw-242-181001-GW (RE2/TO	Sampling To Analysis	56.75	48.00	HOURS	J (all detects) UJ (all non-detects)

**CONFIRMED

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116336-1 **Laboratory: TA DEN**

EDD Filename: 280-116336-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Action limit	Associated Samples
MB 280-435829/1-A	11/6/2018 12:45:00 AM	CALCIUM	43.6 ug/L	436	FWGmw-007-181001-GW LL12mw-242-181001-GW LL7mw-001-181001-GW NTAmw-119-181001-GW NTAmw-119-181002-GW
		IRON	33.6 ug/L	336	
		MAGNESIUM	29.3 ug/L	293	

*Confirmed, one Iron result qualified

Method: 6010C-KNA
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result		Associated Samples
MB 280-435829/1-A	11/6/2018 12:45:00 AM	SODIUM	165 ug/L	1650	FWGmw-007-181001-GW LL12mw-242-181001-GW LL7mw-001-181001-GW NTAmw-119-181001-GW NTAmw-119-181002-GW
MB 280-436442/1-A	11/7/2018 3:07:00 AM	SODIUM	155 ug/L	1550	LL12mw-242-181001-GW

*CONFIRMED

Method: 6020A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result		Associated Samples
MB 280-436131/1-A	11/14/2018 5:40:00 AM	BARIUM	1.26 ug/L	12.6	FWGmw-007-181001-GW LL12mw-242-181001-GW LL7mw-001-181001-GW NTAmw-119-181001-GW NTAmw-119-181002-GW

*CONFIRMED no qual

Method: 8270D-SIM
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436346/1-A	11/8/2018 4:50:00 PM	FLUORANTHENE	0.0120 ug/L	NTAmw-110-181001-GW
		PHENANTHRENE	0.0158 ug/L	

**CONFIRMED Associated results ND, no qual

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116336-1 **Laboratory: TA DEN**

EDD Filename: 280-116336-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: **8330B**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436019/1-A	11/5/2018 5:34:00 PM	2-NITROTOLUENE	0.345 ug/L	FWGmw-007-181001-GW LL7mw-001-181001-GW NTAmw-119-181001-GW NTAmw-119-181002-GW

*CONFIRMED, associated results ND, no qual

Method: **9056A**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-435696/6	10/31/2018 12:25:00 PM	Nitrate as N	0.0441 mg/L	FBQmw-171-181001-GW LL12mw-242-181001-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
LL12mw-242-181001-GW(RE2/TOT)	Nitrate as N	0.045 mg/L	0.045U mg/L

0.0441 mg/L (AL=0.225 mg/L)
One result qualified U

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116336-1 **Laboratory: TA DEN**

EDD Filename: 280-116336-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-007-181001-GW	ALUMINUM	J	100	300	LOQ	ug/L	J (all detects)
NTAmw-119-181001-GW	ALUMINUM	J	120	300	LOQ	ug/L	J (all detects)
NTAmw-119-181002-GW	ALUMINUM	J	120	300	LOQ	ug/L	J (all detects)

Method: 6010C-KNA

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-007-181001-GW	POTASSIUM	J	2400	3000	LOQ	ug/L	J (all detects)
LL12mw-242-181001-GW	POTASSIUM	J	2100	3000	LOQ	ug/L	J (all detects)
LL7mw-001-181001-GW	POTASSIUM	J	940	3000	LOQ	ug/L	J (all detects)
NTAmw-119-181001-GW	POTASSIUM	J	1100	3000	LOQ	ug/L	J (all detects)
NTAmw-119-181002-GW	POTASSIUM	J	1200	3000	LOQ	ug/L	J (all detects)

Method: 6020A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-007-181001-GW	COBALT	J	0.41	1.0	LOQ	ug/L	
	NICKEL	J	1.4	3.0	LOQ	ug/L	J (all detects)
	ZINC	J	2.2	20	LOQ	ug/L	
LL12mw-242-181001-GW	ANTIMONY	J	0.72	6.0	LOQ	ug/L	
	BERYLLIUM	J	0.33	1.0	LOQ	ug/L	
	CHROMIUM	J	1.7	10	LOQ	ug/L	
	COPPER	J	1.5	2.0	LOQ	ug/L	
	LEAD	J	0.93	3.0	LOQ	ug/L	J (all detects)
	NICKEL	J	2.8	3.0	LOQ	ug/L	
	THALLIUM	J	0.056	1.0	LOQ	ug/L	
	VANADIUM	J	1.3	6.0	LOQ	ug/L	
	ZINC	J	6.9	20	LOQ	ug/L	
LL7mw-001-181001-GW	ARSENIC	J	1.8	5.0	LOQ	ug/L	
	BERYLLIUM	J	0.12	1.0	LOQ	ug/L	J (all detects)
	THALLIUM	J	0.15	1.0	LOQ	ug/L	
NTAmw-119-181001-GW	COBALT	J	0.15	1.0	LOQ	ug/L	J (all detects)
	LEAD	J	0.26	3.0	LOQ	ug/L	
NTAmw-119-181002-GW	BERYLLIUM	J	0.12	1.0	LOQ	ug/L	
	COBALT	J	0.16	1.0	LOQ	ug/L	J (all detects)
	LEAD	J	0.22	3.0	LOQ	ug/L	

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116336-1 **Laboratory: TA DEN**

EDD Filename: 280-116336-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 7470A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGmw-007-181001-GW	MERCURY	J	0.050	0.20	LOQ	ug/L	J (all detects)
LL12mw-242-181001-GW	MERCURY	J	0.052	0.20	LOQ	ug/L	J (all detects)
LL7mw-001-181001-GW	MERCURY	J	0.052	0.20	LOQ	ug/L	J (all detects)
NTAmw-119-181001-GW	MERCURY	J	0.045	0.20	LOQ	ug/L	J (all detects)
NTAmw-119-181002-GW	MERCURY	J	0.047	0.20	LOQ	ug/L	J (all detects)

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FWGTB-181010-TB	CARBON DISULFIDE	J	0.93	2.0	LOQ	ug/L	J (all detects)
LL7mw-001-181001-GW	ACETONE	J	4.9	10	LOQ	ug/L	J (all detects)
NTAmw-119-181001-GW	ACETONE METHYLENE CHLORIDE	J J	4.1 0.86	10 5.0	LOQ LOQ	ug/L ug/L	J (all detects)

Method: 9056A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FBQmw-171-181001-GW	Nitrate as N	J	0.38	0.50	LOQ	mg/L	J (all detects)
LL12mw-242-181001-GW	Nitrate as N	J H	0.045	0.50	LOQ	mg/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-116336-1 **Laboratory: TA DEN**

EDD Filename: 280-116336-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 6010C
Matrix: AQ

Analyte	Concentration (ug/L) NTAmw-119-181001-GW (TOT)	Concentration (ug/L) NTAmw-119-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
ALUMINUM	120	120	0	50.00	No Qualifiers Applied
CALCIUM	85000	86000	1	50.00	
IRON	1200	1200	0	50.00	
MAGNESIUM	22000	22000	0	50.00	

Method: 6010C-KNA
Matrix: AQ

Analyte	Concentration (ug/L) NTAmw-119-181001-GW (TOT)	Concentration (ug/L) NTAmw-119-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
POTASSIUM	1100	1200	9	50.00	No Qualifiers Applied
SODIUM	7100	7300	3	50.00	

Method: 6020A
Matrix: AQ

Analyte	Concentration (ug/L) NTAmw-119-181001-GW (TOT)	Concentration (ug/L) NTAmw-119-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
ARSENIC	6.8	6.6	3	50.00	No Qualifiers Applied
BARIUM	84	81	4	50.00	
BERYLLIUM	1.0 U	0.12	200	50.00	
COBALT	0.15	0.16	6	50.00	
LEAD	0.26	0.22	17	50.00	
MANGANESE	330	330	0	50.00	

Method: 7470A
Matrix: AQ

Analyte	Concentration (ug/L) NTAmw-119-181001-GW (TOT)	Concentration (ug/L) NTAmw-119-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
MERCURY	0.045	0.047	4	50.00	No Qualifiers Applied

Data Qualifier Summary

Lab Reporting Batch ID: 280-116336-1 **Laboratory: TA DEN**

EDD Filename: 280-116336-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: GENCHEM

Method: 9056A **Matrix:** AQ

Sample ID: FBQmw-171-181001-GW **Collected:** 10/30/2018 1:25:00 PM **Analysis Type:** RE2/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate as N	0.38	J	0.10	LOD	0.50	LOQ	mg/L	J	RI

Sample ID: LL12mw-242-181001-GW **Collected:** 10/29/2018 3:25:00 PM **Analysis Type:** RE2/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate as N	0.045	J H	0.10	LOD	0.50	LOQ	mg/L	U J	Mb , StoA

ALTHOUGH HT VIOLATION NOTED (PG 5) SAMPLE NOT QUALIFIED FOR HOLD TIME (UJ)

Method Category: METALS

Method: 6010C **Matrix:** AQ

Sample ID: FWGmw-007-181001-GW **Collected:** 10/30/2018 9:55:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	100	J	70	LOD	300	LOQ	ug/L	J	RI

Sample ID: NTAmw-119-181001-GW **Collected:** 10/30/2018 10:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	120	J	70	LOD	300	LOQ	ug/L	J	RI

Sample ID: NTAmw-119-181002-GW **Collected:** 10/30/2018 10:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	120	J	70	LOD	300	LOQ	ug/L	J	RI

Method Category: METALS

Method: 6010C-KNA **Matrix:** AQ

Sample ID: FWGmw-007-181001-GW **Collected:** 10/30/2018 9:55:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	2400	J	940	LOD	3000	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116336-1 **Laboratory: TA DEN**

EDD Filename: 280-116336-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6010C-KNA **Matrix:** AQ

Sample ID: LL12mw-242-181001-GW **Collected:** 10/29/2018 3:25:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	2100	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: LL7mw-001-181001-GW **Collected:** 10/30/2018 1:10:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	940	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: NTAmw-119-181001-GW **Collected:** 10/30/2018 10:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1100	J	940	LOD	3000	LOQ	ug/L	J	RI

Sample ID: NTAmw-119-181002-GW **Collected:** 10/30/2018 10:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	1200	J	940	LOD	3000	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: FWGmw-007-181001-GW **Collected:** 10/30/2018 9:55:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
COBALT	0 41	J	0 20	LOD	1 0	LOQ	ug/L	J	RI
NICKEL	1 4	J	1 0	LOD	3 0	LOQ	ug/L	J	RI
ZINC	2 2	J	8 0	LOD	20	LOQ	ug/L	J	RI

Sample ID: LL12mw-242-181001-GW **Collected:** 10/29/2018 3:25:00 PM **Analysis Type:** RE/DIS **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
VANADIUM	1 3	J	2 0	LOD	6 0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116336-1 **Laboratory: TA DEN**

EDD Filename: 280-116336-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 6020A **Matrix:** AQ

Sample ID: LL12mw-242-181001-GW **Collected:** 10/29/2018 3:25:00 PM **Analysis Type:** RES/DIS **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.72	J	1.0	LOD	6.0	LOQ	ug/L	J	RI
BERYLLIUM	0.33	J	0.30	LOD	1.0	LOQ	ug/L	J	RI
CHROMIUM	1.7	J	1.8	LOD	10	LOQ	ug/L	J	RI
COPPER	1.5	J	1.8	LOD	2.0	LOQ	ug/L	J	RI
LEAD	0.93	J	0.70	LOD	3.0	LOQ	ug/L	J	RI
NICKEL	2.8	J	1.0	LOD	3.0	LOQ	ug/L	J	RI
THALLIUM	0.056	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
ZINC	6.9	J	8.0	LOD	20	LOQ	ug/L	J	RI

Sample ID: LL12mw-242-181001-GW **Collected:** 10/29/2018 3:25:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.10	J	0.30	LOD	1.0	LOQ	ug/L	J	RI
CHROMIUM	0.98	J	1.8	LOD	10	LOQ	ug/L	J	RI
LEAD	1.4	J	0.70	LOD	3.0	LOQ	ug/L	J	RI
NICKEL	1.3	J	1.0	LOD	3.0	LOQ	ug/L	J	RI
ZINC	3.9	J	8.0	LOD	20	LOQ	ug/L	J	RI

Sample ID: LL7mw-001-181001-GW **Collected:** 10/30/2018 1:10:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	1.8	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
BERYLLIUM	0.12	J	0.30	LOD	1.0	LOQ	ug/L	J	RI
THALLIUM	0.15	J	0.20	LOD	1.0	LOQ	ug/L	J	RI

Sample ID: NTAmw-119-181001-GW **Collected:** 10/30/2018 10:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
COBALT	0.15	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
LEAD	0.26	J	0.70	LOD	3.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116336-1 **Laboratory: TA DEN**

EDD Filename: 280-116336-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: NTAmw-119-181002-GW **Collected:** 10/30/2018 10:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.12	J	0.30	LOD	1.0	LOQ	ug/L	J	RI
COBALT	0.16	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
LEAD	0.22	J	0.70	LOD	3.0	LOQ	ug/L	J	RI

Method Category: METALS
Method: 7470A **Matrix:** AQ

Sample ID: FWGmw-007-181001-GW **Collected:** 10/30/2018 9:55:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.050	J	0.080	LOD	0.20	LOQ	ug/L	J	RI

Sample ID: LL12mw-242-181001-GW **Collected:** 10/29/2018 3:25:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.052	J	0.080	LOD	0.20	LOQ	ug/L	J	RI

Sample ID: LL7mw-001-181001-GW **Collected:** 10/30/2018 1:10:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.052	J	0.080	LOD	0.20	LOQ	ug/L	J	RI

Sample ID: NTAmw-119-181001-GW **Collected:** 10/30/2018 10:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.045	J	0.080	LOD	0.20	LOQ	ug/L	J	RI

Sample ID: NTAmw-119-181002-GW **Collected:** 10/30/2018 10:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.047	J	0.080	LOD	0.20	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116336-1 **Laboratory: TA DEN**

EDD Filename: 280-116336-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: VOA

Method: 8260B **Matrix:** AQ

Sample ID: FWGTB-181010-TB **Collected:** 10/30/2018 1:10:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CARBON DISULFIDE	0.93	J	1.6	LOD	2.0	LOQ	ug/L	J	RI

Sample ID: LL7mw-001-181001-GW **Collected:** 10/30/2018 1:10:00 PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	4.9	J	6.4	LOD	10	LOQ	ug/L	J	RI

Sample ID: NTAmw-119-181001-GW **Collected:** 10/30/2018 10:10:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACETONE	4.1	J	6.4	LOD	10	LOQ	ug/L	J	RI
METHYLENE CHLORIDE	0.86	J	0.80	LOD	5.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116336-1 **Laboratory: TA DEN**

EDD Filename: 280-116336-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
Mb	Method Blank Contamination
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA CAN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116336-2						
Method: 7196A						
FBQmw-171-181001-GW	280-116336-1	AQ	N	METHOD	10/30/2018 1:25:00 PM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116336-2
EDD Filename: 280-116336-2

Laboratory: TA CAN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	A
Surrogate/Tracer Spikes	N
Matrix Spike/Matrix Spike Duplicates	N
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	A
Field Duplicates	N
Field Triplicates	N
Field Blanks	N

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers

LEIDOS
Laboratory Data Verification Checklist

Project: RVAAP

SDG No: J116407

Analyte Group: SVOC, PAH, Explosives, Metals, Wet Chem

Sample Matrix: Water

EDD (Y/N):

Disposition of Data Package:

NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)		Y
Check for LCS results (e.g., org. form III, inorg. form XII)		Y
Check for method blank results (e.g., org. form IV, inorg. form III)		Y
Check for MS/MSD results (e.g., inorg. form V)		Y
Check for laboratory duplicate results (e.g., inorg. form VI)		Y
Check for Method Calibration and Run Documentation		
organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	method linear range	Y
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	Y
other:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	sample run sequence	Y

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Brooke Francis Date: 1/3/19

QA Review By: Date: 01/07/2019

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: J116407

Analyte Group: SVOC, PAH, Explosives, Metals, wet Chem

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:

Comments:

Sample Summary

Client: Leidos, Inc.
TestAmerica Job ID: 280-116407-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-116407-1	LL4mw-193-181001-GW	Water	10/31/18 12:00	11/01/18 09:30
280-116407-2	FBQmw-176-181001-GW	Water	10/30/18 15:35	11/01/18 09:30
280-116407-3	ES3tw-001-181001-GW	Water	10/31/18 15:05	11/01/18 09:30
280-116407-4	ES3tw-003-181001-GW	Water	10/31/18 15:50	11/01/18 09:30
280-116407-5	LL12mw-245-181001-GW	Water	10/31/18 00:00	11/01/18 09:30
280-116407-6	LL12mw-187-181001-GW	Water	10/31/18 09:10	11/01/18 09:30
280-116407-7	LL12mw-183-181001-GW	Water	10/31/18 12:45	11/01/18 09:30
280-116407-8	FBQmw-175-181001-GW	Water	10/31/18 11:10	11/01/18 09:30

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116407 **Analysis:** SVOC/PAH

Method: 8270/SIM

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/3/19

QA Reviewed by: Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: Holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No discrepancies, ADR confirmed

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: No discrepancies, ~~ADR confirmed~~

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes / No
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: ~~No discrepancies,~~ ADR confirmed SEE ADR FOR PAH MB ANALYTES

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration:
VOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: 11/12 SVOC 11/7 SIM
SVOC - Date(s) of continuing calibration: 11/14/18 11/8
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: Calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-436342 LCS 280-436346

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J116407 **Analysis:** Explosives

Method: 8330B

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/3/19

QA Reviewed by: Richman Stark Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes:
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

MNX not target

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be $\leq$ 20%
Continuing calibration %D must be within $\pm$ 15%

Deviations:

Compound	Correlation Coefficient	% RSD	%D	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks: Calibration results met control limits

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks: No discrepancies, ADR confirmed

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MB contamination qualified by ADR

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-436019

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

LEIDOS
Metals Data Review Checklist

Project: RVAAP

SDG No: J116407

Analysis: Metals

Method: 6010/6020/7470

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on an examination of the following:

Case Narrative	MS/MSD Recoveries and Differences
Analytical Holding Times	Duplicate Relative Percent Differences
Sample Preservation	ICP Serial Dilution
Method Calibration	Furnace Atomic Absorption QC
Method and Project Blanks	Re-analysis and Secondary Dilution
LCS Recoveries	Internal Standard Performance (if applicable)

Project specific QA/QC or contract requirements may take priority over validation criteria in this proceudre.

Overall remarks: DoD QSM

Some results were not qualified as non-detect due to calibration blanks

Some results were not qualified as estimated due to calibration discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/3/19

QA Reviewed by: Richman Stach Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Metals - Waters - preserved to pH<2, 180 days from sample collection
Metals - Soils - 180 days from sample collection
Mercury - Waters - preserved to pH<2, 28 days from sample collection
Mercury - Soils - 28 days from sample collection

Deviations:

Sample #	Metals				Mercury			
	Date Collected	Date Analyzed	Days >HT	pH Check	Date Collected	Date Analyzed	Days >HT	pH Check

Actions:

1. If preserved samples exceed holding time, qualify all associated results as estimated (J/UJ).
2. If unpreserved samples exceed holding time, qualify all associated results as unusable (R).
3. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
4. If water samples are not acidified, use professional judgement. Minimally, qualify data as estimated (J) and non-detects unusable (R).
5. If soil samples exceed holding time, use professional judgement to qualify data.

Remarks: All holding times were met

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.)

Initial calibration linearity criteria is r ≥ 0.995
ICV and CCV criteria are ± 10% recovery, low level check standard allowed ± 30%
ICP inter-element check standard criteria ± 20%

Deviations:

Element	Date	Intial Calib.	ICV/ CCV	%R	Samples Affected		
Sodium	11/7		CCV	111	436619/38	None	
Calcium	11/7		CCVL	172	436619-26	None	NONE IN SEQUENCE
Sodium	↓			127	↓		
Aluminum	↓			123	↓		
Sodium	11/7		CCVL	122	436619/40	None	
Aluminum	↓			121	↓		
Sodium	11/7		CCVL	122	436619/52	116407-5 (diss)	
Sodium	11/7		CCVL	121	436619/65	116407-5 (diss)	

Actions:

1. If any elements initial claibration linearity is <0.995, qualify the data as estimated (J/UJ)
2. If any elements initial claibration linearity is <0.95, qualify the data as unusable (R)

3a. If any elements ICV or CCV recovery is <90%, qualify the data as estimated (J/UJ)

3b. If any elements ICV or CCV recovery is > 110%, qualify results ≥ MDL as estimated (J). Do not qualify non-detects.

4a. If any elements ICV or CCV recovery is <75%, qualify the data as unusable (R)

4b. If any elements ICV or CCV recovery is > 125% qualify positive results as estimated (J) or non-detects as unusable (R).

4c. If any element ICV or CCV recovery is ≥ 160%, qualify positive results ≥ MDL as unusable (R). Do not qualify non-detects.

5a. If any elements CRI recovery is 50 - 69% (30 - 49% for Sb, Pb, Tb), qualify results ≥ MDL (but < 2 times CRQL) as estimated (J/UJ) and results > 2 times CRQL are not qualified.

5b. If any elements CRI recovery is < 50% (<30% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) and non-detects as unusable (R). Results > 2 times CRQL are estimated (J).

5c. If any elements CRI recovery is > 130% but < 180% (>150% but ≤ 200% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) as esimated (J). And non-detects and results ≥ 2x CRQL are not qualified.

5d. If CRI or (R) > 180% (> 200% for Sb, Pb, Ti), qualify results that are ≥ MDL as unusable (R).

Remarks: _____

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.) (continued)

Analytical Sequence and MS Tune (Y/N)

1. Were the appropriate number of ICP standards used? Y
2. Were the appropriate number of AA standards used? Y
3. Was calibration performed and documented at the beginning of each run? Y
4. Were calibration check standards run at 10% frequency or every two hours? Y
5. Were low level standard checks analyzed at approximately 2X the PQL? Y
6. Was ICP-MS mass calibration within 0.1 AMU? Y
7. Was ICP-MS % RSD of the aboslute signals for all analytes < 5%? Y

Deviations:

Element	Deviation	Samples Affected	
Manganese	126%	ICV 436767/11	None
Sodium	122%	CCVL 436791/52	116407-5, 6
Sodium	137%	CCVL 436791/80	None
Beryllium	75%	ICVL 437321/11	None
Manganese	125	CCVL 437321/120	None
Barium	121%	ICVL 437566/9	None
Manganese	126%	CCVL 437566/148	116407-5 ,6

Actions:

1. If instrument calibration is questionable, use professional judgement, qualify the data as estimated (J/UJ)
2. If instrument calibration documentation can not be obtained or is inadequate, qualify the data as unusable (R)
3. If mass calibration for ICP-MS was not within 0.1 AMU qualify analyte results as estimated (J/UJ)
4. If % RSD for ICP-MS was > 5% for any analyte in the tuning solution, qualify associated results as estimated (J/UJ).

Results: Calibration discrepancies were not noted by ADR

V. Blanks (ICB, CCB, Method Blank, Equipment Rinsate Blank)

A. Blank Results

If the blank level is > CRQL for any analyte, check that the analyte's concentration in the samples is > 10 times the blank value. The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account when applying the action level.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
ccb 436619/25	Caclium	43.7ug/L		None
	Sodium	316 ug/L		↓
ccb 436619/39	Sodium	173 ug/L		None
ccb 436619/51	Sodium	186 ug/L	1860	116407-5
ccb 436619/64	Sodium	197 ug/L	1970	116407-5
CCB 436791/51	Sodium	135 ug/L	1350	116407-5, 6
CCB 436791/79	Sodium	400 ug/L		None
	Potassium	326 ug/L		↓
ICB 437321/10	Vanadium	0.856 ug/L		None
CCB 437321/167	Vanadium	0.603 ug/L	6.03 ug/L	116407-5 (diss)
~~CCB 436791/178~~	Beryllium	0.120 ug/L	1.20 ug/L	116407-5 (diss)
	Vanadium 437321 ↓	0.669 ug/L	6.69 ug/L	↓

If additional space is required, use next page

Actions:

1. For blank results ≥ MDL but ≤ CRQL, qualify samples ≥ MDL but < CRQL as CRQL U.
   Use proffessional judgement to qualify sample results exceeding the CRQL.

2a. If blank results are > CRQL: For sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < 10 times the blank qualify results as unusable (R) or estimated (J). No action is taken for sample results ≥ 10 times the blank levels.

2b. If ICB/ CCB results are > CRQL; for sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < blank results, qualify results as not detected (U) at the level of the blank or unusable (R). Use professional judgement for sample results > blank results.

Remarks: MB contamination included in ADR qualifiers, CCB contamination qualifiers added to Form 1's

V. Blanks (continued)

The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
ICB 437566/8	Vanadium	1.20 ug/L		None
CCB 437566/135	Antimony	0.541 ug/L		None
	Beryllium	0.156 ug/L		↓
	Vanadium	0.789 ug/L		↓
CCB 437566/147	Antimony	0.405 ug/L	4.05	116407-5, 6
	Beryllium	0.139 ug/L	1.39	↓
	Vanadium	1.18 ug/L	11.8	↓
CCB 437566/158	Antimony	0.447 ug/L	4.47	116407-5, 6
	Beryllium	0.159 ug/L	1.59	↓
CCB 437490/13	Mercury	0.0400 ug/L	0.40	11/15 11:42 ND, no qual

V. Blanks (continued)

B. Frequency Requirements (Y/N)

1. Was a method (preparation) blank analyzed for each matrix? Y
2. Was a method blank processed for every analytical batch (20 samples)? Y
3. Was a calibration blank analyzed at 10% frequency or every two hours? Y

Deviations:

Element	Deviation	Samples Affected

Remarks:

C. Baseline Shift Evaluation

List the highest negative blank concentration for each analyte observed in laboratory or project blanks.

Deviations:

Blank ID	Element	Max. Neg Conc.	Action Level	Samples Affected

Actions:

1. If the absolute value of the maximum negative blank result is > the CRQL, qualify positive results as estimated (J) and non-detects as estimated (UJ).

Remarks:

VI. Laboratory Control Sample Evaluation

All LCS recovery criteria are set at 80-120%
An LCS must be analyzed for each matrix and for each digestion batch or set of twenty samples

Deviations:

Element	Date	%R	Matrix	Samples Affected

Actions:

1. If any element's LCS recovery is >120%, qualify positive results as (J).
2. If any element's LCS recovery is 50-79%, qualify positive results as (J) and non-detect results as (UJ)

3a. If any element's LCS recovery is <50%, qualify positive results as (J) and non-detect results as (R)
3b. If the LCS recovery is > 150%, qualify all results as unusable (R).

4. For soil LCS recovery > upper limit, qualify samples results ≥ MDL as estimated (J).
5. For soil LCS recovery < lower limit, qualify results ≥ MDL as esimated (J) and non-detected estimated (UJ).
6. Use professional judgement to qualify data if the LCS frequency criteria are not met.

Remarks: No discrepancies, ADR confirmed

VII. Matrix Spike Evaluation

All MS recovery criteria are set at 75-125%
An MS must be analyzed for each matrix and for each digestion batch or set of twenty samples
Verify that a field blank or PE sample was not used for spiked sample analysis
Verify that a post-digestion spike was analyzed for those anlytes where the pre-digestion spike recovery is outside control limits and the sample result is < 4 times the spike added.

Project Sample(s) Spiked: LL12mw-245-181001-GW

Deviations:

Element	Spiked Sample Result	Sample Result	Spike Amount	%R	Samples Affected

Actions:

1. If the sample concentration exceeds the spiking level by a factor of 4X or more, do not qualify the data
2. If the spike recovery is >125%, qualify all positive values as (J).
3. If the spike recovery is between 30-74%, qualify positive values as (J) and non-detect values as estimated (UJ)
4. If the spike recovery is <30%, qualify positive values as (J) and non-detects are qualified unusable (R)
if the post-digestion spike recovery is < 75% (or none was performed); non-detects are qualified as estimated (UJ)
If the post-digestion spike reocvery is ≥ 75%. There is no post-digestion spike performed for mercury.
5. Qualify all samples of similar matrix to the spiked sample in the same manner
6. Use professional judgement to qualify data if the MS frequency criteria are not met.
7. Use professional judgement for qualification of data for unspiked elements

Remarks: Discrepancies noted in the ADR output and qualified accordingly

VIII. Laboratory Duplicate Evaluation

Duplicate relative percent difference (RPD) for water is 20% (both results > 5 times CDRL) or < CRDL difference (if either result is < 5 times CRDL) and RPD for soil is 35% (if both results are > 5 times CRDL or < 2 times CRDL if either result is < 5 times CRDL).
When duplicate sample values are both less than the reporting level they are considered acceptable
When dupicate sample values are within 5X the reporting level they are acceptable if their absolute difference is within 3X the reporting level
Verify that a field blank on PE sample was not used for duplicate analysis.

Deviations: ____

Element	Sample #	Duplicate #	RPD	Samples Affected

Actions:

1. If an element's RPD is >20% (water) / >35% (soil), qualify positive results as (J) and non-detect results as (UJ)
2. For low concentrations, if an element's duplicate absolute difference is > 3X the reporting level, qualify positive results as (J) and non-detect results as (UJ)
3. Use professional judgement to qualify data if the duplicate frequency criteria are not met.

Remarks: NA

IX. Inductively Coupled Plasma (ICP) Serial Dilution Analysis

Verify that a field blank or PE sample was not used for serial dilution.
Serial dilution of positive results are performed when values exceed 50X the IDL
Results from serial dilutions should agree within 10% of the original undiluted analysis

Deviations:

Element	Sample #	Sample Result	Serial Dilution	%D	Action

Actions:

1. If the serial dilution %D is >10 and the analyte results are >50X the IDL, qualify all positive results as estimated (J) and non-detects as estimated (UJ).

Remarks: No discrepancies, ADR confirmed

X. Furnace Atomic Absorption QC

A. Duplicate Precision (Y/N)

1. Were duplicate injections performed for all samples? _____
2. Were one point analytical spikes performed for all samples? _____
3. Did duplicate injections agree within ± 20%? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If duplicate injection results are outside ± 20%, qualify positive results as (J) and non-detect results as (UJ)

Remarks: NA

B. Post Digestion Spike Recoveries (Y/N)

1. Did post digestion spike recoveries meet an 85-115% recovery criteria? _____
2. If spike recoveries did not meet recovery criteria were samples analyzed by MSA? _____
3. If MSA was used to analyze samples, was its' correlation coefficient ≥ 0.995? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If post digestion spike recoveries are >115%, qualify positive results as (J) and non-detect results as (U)
2. If post digestion spike recoveries are 11-84%, qualify positive results as (J) and non-detect results as (UJ)
3. If post digestion spike recoveries are <10%, qualify positive results as (R) and non-detect results as (R)
4. If MSA was used to quantitate values and the correlation coefficient was <0.995, qualify data as (J or UJ)
5. If MSA was used to quantitate values and the correlation coefficient was <0.95, qualify data as (R)

Remarks: No discrepancies, ADR confirmed

XI. Inductively Coupled Plasma (ICP) Interference Check Sample Evaluation

Interference check samples should be analyzed at the beginning and end of each analysis run, or at a minimum of twice per 8 hour working shift.
Results for the ICS solution AB must fall within control limits of 20% for analytes included in the solution.
Evaluate the ICS A solution raw data for results with an absolute value ≥ MDL for analytes that are not present in the ICS A solution.

Deviations:

Element	Sample #	Sample Result	Interferent Result	Action

Actions:

1. If the ICS AB %R for an analyte is > 120%, qualify sample results ≥ MDL as estimated (J) and non-detects should not be qualified.
2. If the ICS AB %R for an analyte is 50-79%, qualify sample results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ).
3. If the ICS AB %R for an analyte is <50%, qualify all sample results that are ≥ MDL and all non-detects as as unusable (R).
4. If results ≥ MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents and with analyte concentration that approximate those levels in the ICS A, sample results ≥ MDL should be qualified as estimated (J) and non-detects should not be qualified.
5. If negative results with absolute values > MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents, affected sample results > MDL should be qualified as estimated (J) and non-detects (UJ).

Remarks: ICS results met control limits

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116407

Analysis: Sulfide, Nitrate, Nitrite, Sulfate, Alkalinity

Method: 9034, 9056, 2320

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/3/19

QA Reviewed by: Richman Stark Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: Some nitrate/nitrite results were reported at a dilution

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: Holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected		
Nitrate	0.0433 mg/L		ICB 5:43	None	
Nitrate	0.0435 mg/L	0.435 mg/L	CCB 12:15	116407-8	No qual
Nitrate	0.0447 mg/L	0.447 mgL	CCB 18:44	116407-8	↓
Sulfate	0.254 mg/L	2.54 mg/L	CCB 18:44	116407-8	↓

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks:

MB contamination qualified per ADR Output,, no qual
CCB contamination was not included in ADR qualifiers, added to form 1's

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: No discrepancies, ADR confirmed

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: No discrepancies, ADR confirmed

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116407-2

Analysis: Hexachromium

Method: 7196A

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: Laboratory Limits

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/3/19

QA Reviewed by: Date: 01/07/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: Holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: No discrepancies, confirmed with ADR

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, confirmed with ADR

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: NA

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: ES3tw-001-181001-GW **Lab Sample ID: 280-116407-3**
Date Collected: 10/31/18 15:05 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Naphthalene	0.014	U	0.11	0.014	0.0091	ug/L		11/08/18 20:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*81*		*53 - 106*	*11/05/18 13:07*	*11/08/18 20:55*	*1*
Nitrobenzene-d5	*76*		*55 - 111*	*11/05/18 13:07*	*11/08/18 20:55*	*1*
Terphenyl-d14	*86*		*58 - 132*	*11/05/18 13:07*	*11/08/18 20:55*	*1*

Client Sample ID: ES3tw-003-181001-GW **Lab Sample ID: 280-116407-4**
Date Collected: 10/31/18 15:50 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Naphthalene	0.013	U	0.11	0.013	0.0085	ug/L		11/08/18 21:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*75*		*53 - 106*	*11/05/18 13:07*	*11/08/18 21:25*	*1*
Nitrobenzene-d5	*68*		*55 - 111*	*11/05/18 13:07*	*11/08/18 21:25*	*1*
Terphenyl-d14	*78*		*58 - 132*	*11/05/18 13:07*	*11/08/18 21:25*	*1*

Client Sample ID: LL12mw-183-181001-GW **Lab Sample ID: 280-116407-7**
Date Collected: 10/31/18 12:45 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.013	U	0.11	0.013	0.0066	ug/L		11/08/18 21:55	1
2-Methylnaphthalene	0.013	U	0.11	0.013	0.0067	ug/L		11/08/18 21:55	1
Acenaphthene	0.045	U M U	0.11	0.045	0.0047	ug/L		11/08/18 21:55	1
Acenaphthylene	0.045	U	0.11	0.045	0.0057	ug/L		11/08/18 21:55	1
Anthracene	0.045	U M U	0.11	0.045	0.0062	ug/L		11/08/18 21:55	1
Benzo[a]anthracene	0.013	U	0.11	0.013	0.0047	ug/L		11/08/18 21:55	1
Benzo[a]pyrene	0.013	U M U	0.11	0.013	0.0077	ug/L		11/08/18 21:55	1
Benzo[b]fluoranthene	0.013	U	0.11	0.013	0.0035	ug/L		11/08/18 21:55	1
Benzo[g,h,i]perylene	0.013	U	0.11	0.013	0.0069	ug/L		11/08/18 21:55	1
Benzo[k]fluoranthene	0.013	U M U	0.11	0.013	0.0070	ug/L		11/08/18 21:55	1
Chrysene	0.013	U	0.11	0.013	0.0037	ug/L		11/08/18 21:55	1
Dibenz(a,h)anthracene	0.013	U	0.11	0.013	0.0046	ug/L		11/08/18 21:55	1
Fluoranthene	0.013	U	0.11	0.013	0.0054	ug/L		11/08/18 21:55	1
Fluorene	0.045	U	0.11	0.045	0.0061	ug/L		11/08/18 21:55	1
Indeno[1,2,3-cd]pyrene	0.045	U	0.11	0.045	0.0050	ug/L		11/08/18 21:55	1
Naphthalene	**0.060**	**J**	0.11	0.013	0.0089	ug/L		11/08/18 21:55	1
Phenanthrene	0.022 **0.016**	**J** U F01	0.11	0.022	0.010	ug/L		11/08/18 21:55	1
Pyrene	0.022	U	0.11	0.022	0.0068	ug/L		11/08/18 21:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*69*		*53 - 106*	*11/05/18 13:07*	*11/08/18 21:55*	*1*
Nitrobenzene-d5	*63*		*55 - 111*	*11/05/18 13:07*	*11/08/18 21:55*	*1*
Terphenyl-d14	*76*		*58 - 132*	*11/05/18 13:07*	*11/08/18 21:55*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: LL12mw-245-181001-GW **Lab Sample ID: 280-116407-5**
Date Collected: 10/31/18 00:00 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	2.1	U	10	2.1	0.58	ug/L		11/15/18 01:05	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.0	ug/L		11/15/18 01:05	1
Diethyl phthalate	1.0	U	21	1.0	0.39	ug/L		11/15/18 01:05	1
Dimethyl phthalate	0.52	U	21	0.52	0.22	ug/L		11/15/18 01:05	1
Di-n-butyl phthalate	4.5	U	21	4.5	1.2	ug/L		11/15/18 01:05	1
Di-n-octyl phthalate	1.0	U	21	1.0	0.36	ug/L		11/15/18 01:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*89*		*43 - 140*	*11/05/18 12:30*	*11/15/18 01:05*	*1*
2-Fluorobiphenyl	*79*		*44 - 119*	*11/05/18 12:30*	*11/15/18 01:05*	*1*
2-Fluorophenol (Surr)	*84*		*19 - 119*	*11/05/18 12:30*	*11/15/18 01:05*	*1*
Nitrobenzene-d5 (Surr)	*88*		*44 - 120*	*11/05/18 12:30*	*11/15/18 01:05*	*1*
Phenol-d5 (Surr)	*88*		*10 - 115*	*11/05/18 12:30*	*11/15/18 01:05*	*1*
Terphenyl-d14 (Surr)	*91*		*50 - 134*	*11/05/18 12:30*	*11/15/18 01:05*	*1*

Client Sample ID: LL12mw-187-181001-GW **Lab Sample ID: 280-116407-6**
Date Collected: 10/31/18 09:10 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	1.9	U	9.6	1.9	0.54	ug/L		11/14/18 21:13	1
Butyl benzyl phthalate	1.9	U	19	1.9	0.96	ug/L		11/14/18 21:13	1
Diethyl phthalate	0.96	U	19	0.96	0.37	ug/L		11/14/18 21:13	1
Dimethyl phthalate	0.48	U	19	0.48	0.20	ug/L		11/14/18 21:13	1
Di-n-butyl phthalate	4.2	U	19	4.2	1.1	ug/L		11/14/18 21:13	1
Di-n-octyl phthalate	0.96	U	19	0.96	0.34	ug/L		11/14/18 21:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*90*		*43 - 140*	*11/05/18 12:30*	*11/14/18 21:13*	*1*
2-Fluorobiphenyl	*86*		*44 - 119*	*11/05/18 12:30*	*11/14/18 21:13*	*1*
2-Fluorophenol (Surr)	*99*		*19 - 119*	*11/05/18 12:30*	*11/14/18 21:13*	*1*
Nitrobenzene-d5 (Surr)	*98*		*44 - 120*	*11/05/18 12:30*	*11/14/18 21:13*	*1*
Phenol-d5 (Surr)	*101*		*10 - 115*	*11/05/18 12:30*	*11/14/18 21:13*	*1*
Terphenyl-d14 (Surr)	*68*		*50 - 134*	*11/05/18 12:30*	*11/14/18 21:13*	*1*

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: LL12mw-245-181001-GW **Lab Sample ID: 280-116407-5**
Date Collected: 10/31/18 00:00 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.42	U	1.0	0.42	0.21	ug/L		11/06/18 01:13	1
1,3-Dinitrobenzene	0.21	U	0.42	0.21	0.092	ug/L		11/06/18 01:13	1
2,4,6-Trinitrotoluene	0.21	U	0.42	0.21	0.075	ug/L		11/06/18 01:13	1
2,4-Dinitrotoluene	0.21	U	0.42	0.21	0.087	ug/L		11/06/18 01:13	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.067	ug/L		11/06/18 01:13	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.21	0.13	0.053	ug/L		11/06/18 01:13	1
2-Nitrotoluene	0.21	U	0.42	0.21	0.089	ug/L		11/07/18 03:25	1
3-Nitrotoluene	0.21	U	0.42	0.21	0.087	ug/L		11/06/18 01:13	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.21	0.13	0.060	ug/L		11/06/18 01:13	1
4-Nitrotoluene	0.42	U	1.0	0.42	0.21	ug/L		11/06/18 01:13	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: LL12mw-245-181001-GW **Lab Sample ID: 280-116407-5**
Date Collected: 10/31/18 00:00 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
HMX	0.21	U M U	0.42	0.21	0.091	ug/L		11/06/18 01:13	1
Nitrobenzene	0.21	U	0.42	0.21	0.095	ug/L		11/06/18 01:13	1
Nitroglycerin	2.1	U	3.1	2.1	0.96	ug/L		11/06/18 01:13	1
PETN	1.3	U	2.1	1.3	0.43	ug/L		11/06/18 01:13	1
RDX	0.13	U	0.21	0.13	0.054	ug/L		11/06/18 01:13	1
Tetryl	0.21	U	0.25	0.21	0.083	ug/L		11/06/18 01:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*104*		*83 - 119*	*11/02/18 12:09*	*11/06/18 01:13*	*1*
1,2-Dinitrobenzene	*86*		*83 - 119*	*11/02/18 12:09*	*11/07/18 03:25*	*1*

Method: 6010C - Metals (ICP)

Client Sample ID: LL12mw-245-181001-GW **Lab Sample ID: 280-116407-5**
Date Collected: 10/31/18 00:00 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**10000**		300	70	18	ug/L		11/07/18 19:12	1
Calcium	**160000**		1000	140	35	ug/L		11/07/18 19:12	1
Iron	**24000**		100	85	22	ug/L		11/07/18 19:12	1
Magnesium	**77000**		500	40	11	ug/L		11/07/18 19:12	1
Potassium	**5800**		3000	940	240	ug/L		11/07/18 19:12	1
Sodium	**26000**	J D05	5000	350	120	ug/L		11/07/18 19:12	1

Client Sample ID: LL12mw-187-181001-GW **Lab Sample ID: 280-116407-6**
Date Collected: 10/31/18 09:10 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		11/07/18 19:16	1
Calcium	**1100000**		1000	140	35	ug/L		11/07/18 19:16	1
Iron	**39**	**J**	100	85	22	ug/L		11/07/18 19:16	1
Magnesium	**340000**		500	40	11	ug/L		11/07/18 19:16	1
Potassium	**62000**		3000	940	240	ug/L		11/07/18 19:16	1
Sodium	**42000**	J D05	5000	350	120	ug/L		11/07/18 19:16	1

Method: 6010C - Metals (ICP) - Dissolved

Client Sample ID: LL12mw-245-181001-GW **Lab Sample ID: 280-116407-5**
Date Collected: 10/31/18 00:00 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**1700**		300	70	18	ug/L		11/07/18 14:49	1
Calcium	**160000**		1000	140	35	ug/L		11/07/18 04:33	1
Iron	**3300**		100	85	22	ug/L		11/07/18 04:33	1
Magnesium	**77000**		500	40	11	ug/L		11/07/18 04:33	1
Potassium	**4800**		3000	940	240	ug/L		11/07/18 04:33	1
Sodium	**27000**	J D05	5000	350	120	ug/L		11/07/18 04:33	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: LL12mw-245-181001-GW **Lab Sample ID: 280-116407-5**
Date Collected: 10/31/18 00:00 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U J1 UJ H02	6.0	1.0	0.40	ug/L		11/14/18 06:33	1
Arsenic	**15**		5.0	1.0	0.33	ug/L		11/14/18 06:33	1
Barium	**34**		3.0	0.95	0.29	ug/L		11/14/18 06:33	1
Beryllium	0.30 **0.22**	**J** U F06	1.0	0.30	0.080	ug/L		11/14/18 06:33	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/14/18 06:33	1
Chromium	**3.6**	**J**	10	1.8	0.50	ug/L		11/14/18 06:33	1
Cobalt	**3.3**		1.0	0.20	0.054	ug/L		11/14/18 06:33	1
Copper	**4.7**		2.0	1.8	0.56	ug/L		11/14/18 06:33	1
Lead	**4.5**		3.0	0.70	0.18	ug/L		11/14/18 06:33	1
Manganese	**230**	**Q** J D05	3.5	0.95	0.31	ug/L		11/14/18 06:33	1
Nickel	**5.0**		3.0	1.0	0.30	ug/L		11/14/18 06:33	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/14/18 06:33	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/14/18 06:33	1
Thallium	**0.056**	**J**	1.0	0.20	0.050	ug/L		11/14/18 06:33	1
Vanadium	**2.8**	**J** U F07	6.0	2.0	0.50	ug/L		11/14/18 06:33	1
Zinc	**12**	**J**	20	8.0	2.0	ug/L		11/14/18 06:33	1

Client Sample ID: LL12mw-187-181001-GW **Lab Sample ID: 280-116407-6**
Date Collected: 10/31/18 09:10 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0 **0.84**	**J** U F06	6.0	1.0	0.40	ug/L		11/14/18 06:52	1
Arsenic	**0.53**	**J**	5.0	1.0	0.33	ug/L		11/14/18 06:52	1
Barium	**270**		3.0	0.95	0.29	ug/L		11/14/18 06:52	1
Beryllium	0.30 **0.17**	**J** U F06	1.0	0.30	0.080	ug/L		11/14/18 06:52	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/14/18 06:52	1
Chromium	**0.50**	**J**	10	1.8	0.50	ug/L		11/14/18 06:52	1
Cobalt	**11**		1.0	0.20	0.054	ug/L		11/14/18 06:52	1
Copper	**1.1**	**J**	2.0	1.8	0.56	ug/L		11/14/18 06:52	1
Lead	**0.23**	**J**	3.0	0.70	0.18	ug/L		11/14/18 06:52	1
Manganese	**2500**	**Q** J D05	3.5	0.95	0.31	ug/L		11/14/18 06:52	1
Nickel	**15**		3.0	1.0	0.30	ug/L		11/14/18 06:52	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/14/18 06:52	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/14/18 06:52	1
Thallium	**0.84**	**J**	1.0	0.20	0.050	ug/L		11/14/18 06:52	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/14/18 06:52	1
Zinc	**5.8**	**J**	20	8.0	2.0	ug/L		11/14/18 06:52	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Client Sample ID: LL12mw-245-181001-GW **Lab Sample ID: 280-116407-5**
Date Collected: 10/31/18 00:00 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/13/18 00:20	1
Arsenic	**5.8**		5.0	1.0	0.33	ug/L		11/13/18 00:20	1
Barium	**27**		3.0	0.95	0.29	ug/L		11/13/18 00:20	1
Beryllium	0.30 **0.13**	**J** U F06	1.0	0.30	0.080	ug/L		11/13/18 00:20	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/13/18 00:20	1
Chromium	**2.1**	**J**	10	1.8	0.50	ug/L		11/13/18 00:20	1

Method: 6020A - Metals (ICP/MS) - Dissolved (Continued)

Client Sample ID: LL12mw-245-181001-GW **Lab Sample ID: 280-116407-5**
Date Collected: 10/31/18 00:00 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cobalt	**1.8**			1.0	0.20	0.054	ug/L		11/13/18 00:20	1
Copper	**1.1**	**J**		2.0	1.8	0.56	ug/L		11/13/18 00:20	1
Lead	**0.94**	**J**		3.0	0.70	0.18	ug/L		11/13/18 00:20	1
Manganese	**130**			3.5	0.95	0.31	ug/L		11/13/18 00:20	1
Nickel	**3.0**			3.0	1.0	0.30	ug/L		11/13/18 00:20	1
Selenium	2.0	U		5.0	2.0	0.70	ug/L		11/13/18 00:20	1
Silver	0.10	U		5.0	0.10	0.033	ug/L		11/13/18 00:20	1
Thallium	0.20	U		1.0	0.20	0.050	ug/L		11/13/18 00:20	1
Vanadium	**2.0**	**J**	U F07	6.0	2.0	0.50	ug/L		11/13/18 00:20	1
Zinc	8.0 **7.1**	**J**	U F08	20	8.0	2.0	ug/L		11/13/18 00:20	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: LL12mw-245-181001-GW **Lab Sample ID: 280-116407-5**
Date Collected: 10/31/18 00:00 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	**0.063**	**J**	0.20	0.080	0.027	ug/L		11/13/18 18:56	1

Client Sample ID: LL12mw-187-181001-GW **Lab Sample ID: 280-116407-6**
Date Collected: 10/31/18 09:10 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	**0.047**	**J**	0.20	0.080	0.027	ug/L		11/13/18 18:58	1

Method: 7470A - Mercury (CVAA) - Dissolved

Client Sample ID: LL12mw-245-181001-GW **Lab Sample ID: 280-116407-5**
Date Collected: 10/31/18 00:00 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	0.027	ug/L		11/15/18 12:18	1

General Chemistry

Client Sample ID: LL4mw-193-181001-GW **Lab Sample ID: 280-116407-1**
Date Collected: 10/31/18 12:00 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/13/18 21:56	1

Client Sample ID: FBQmw-176-181001-GW **Lab Sample ID: 280-116407-2**
Date Collected: 10/30/18 15:35 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	**0.025**		0.010	0.0050	0.0020	mg/L		11/13/18 22:10	1

General Chemistry

Client Sample ID: LL12mw-245-181001-GW **Lab Sample ID: 280-116407-5**
Date Collected: 10/31/18 00:00 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate as N	0.20	U	1.0	0.20	0.084	mg/L		11/01/18 20:02	2

Client Sample ID: LL12mw-187-181001-GW **Lab Sample ID: 280-116407-6**
Date Collected: 10/31/18 09:10 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate as N	**1500**	**D M**	250	50	21	mg/L		11/01/18 18:30	500

Client Sample ID: LL12mw-183-181001-GW **Lab Sample ID: 280-116407-7**
Date Collected: 10/31/18 12:45 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/13/18 21:58	1

Client Sample ID: FBQmw-175-181001-GW **Lab Sample ID: 280-116407-8**
Date Collected: 10/31/18 11:10 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Sulfide	1.9	U	4.0	1.9	0.79	mg/L		11/03/18 16:43	1
Nitrate as N	**2.2**		0.50	0.10	0.042	mg/L		11/01/18 16:14	1
Nitrite as N	0.10	U	0.50	0.10	0.049	mg/L		11/01/18 16:14	1
Sulfate	**26**		5.0	0.50	0.23	mg/L		11/01/18 16:14	1
Alkalinity	**7.1**		5.0	5.0	1.1	mg/L		11/12/18 20:15	1

Client: Leidos, Inc. TestAmerica Job ID: 280-116407-2
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

General Chemistry

Client Sample ID: FBQmw-175-181001-GW **Lab Sample ID: 280-116407-8**
Date Collected: 10/31/18 11:10 **Matrix: Water**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Hexavalent chromium	0.0044	J	0.020		0.0030	mg/L		10/31/18 17:50	1

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116407-1						
Method: 2320B						
FBQmw-175-181001-GW	280-116407-8	AQ	N	METHOD	10/31/2018 11:10:00 AM	S2AVE
Method: 6010C						
LL12mw-187-181001-GW	280-116407-6	AQ	N	3010A	10/31/2018 9:10:00 AM	S2AVE
LL12mw-245-181001-GW	280-116407-5	AQ	N	3005A	10/31/2018	S2AVE
LL12mw-245-181001-GW	280-116407-5	AQ	N	3010A	10/31/2018	S2AVE
Method: 6010C-KNA						
LL12mw-187-181001-GW	280-116407-6	AQ	N	3010A	10/31/2018 9:10:00 AM	S2AVE
LL12mw-245-181001-GW	280-116407-5	AQ	N	3005A	10/31/2018	S2AVE
LL12mw-245-181001-GW	280-116407-5	AQ	N	3010A	10/31/2018	S2AVE
Method: 6020A						
LL12mw-187-181001-GW	280-116407-6	AQ	N	3020A	10/31/2018 9:10:00 AM	S2AVE
LL12mw-245-181001-GW	280-116407-5	AQ	N	3005A	10/31/2018	S2AVE
LL12mw-245-181001-GW	280-116407-5	AQ	N	3020A	10/31/2018	S2AVE
LL12mw-245-181001-GWMS	280-116407-5MS	AQ	MS	3020A	10/31/2018	S2AVE
LL12mw-245-181001-GWMSD	280-116407-5MSD	AQ	MSD	3020A	10/31/2018	S2AVE
Method: 7470A						
LL12mw-187-181001-GW	280-116407-6	AQ	N	7470A	10/31/2018 9:10:00 AM	S2AVE
LL12mw-245-181001-GW	280-116407-5	AQ	N	7470A	10/31/2018	S2AVE
Method: 8270D						
LL12mw-187-181001-GW	280-116407-6	AQ	N	3520C	10/31/2018 9:10:00 AM	S2AVE
LL12mw-245-181001-GW	280-116407-5	AQ	N	3520C	10/31/2018	S2AVE
Method: 8270D-SIM						
ES3tw-001-181001-GW	280-116407-3	AQ	N	3510C	10/31/2018 3:05:00 PM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 8270D-SIM						
ES3tw-003-181001-GW	280-116407-4	AQ	N	3510C	10/31/2018 3:50:00 PM	S2AVE
LL12mw-183-181001-GW	280-116407-7	AQ	N	3510C	10/31/2018 12:45:00 PM	S2AVE
Method: 8330B						
LL12mw-245-181001-GW	280-116407-5	AQ	N	3535	10/31/2018	S2AVE
Method: 9012B						
FBQmw-176-181001-GW	280-116407-2	AQ	N	Gen Prep	10/30/2018 3:35:00 PM	S2AVE
LL12mw-183-181001-GW	280-116407-7	AQ	N	Gen Prep	10/31/2018 12:45:00 PM	S2AVE
LL12mw-183-181001-GWMS	280-116407-7MS	AQ	MS	Gen Prep	10/31/2018 12:45:00 PM	S2AVE
LL12mw-183-181001-GWMSD	280-116407-7MSD	AQ	MSD	Gen Prep	10/31/2018 12:45:00 PM	S2AVE
LL4mw-193-181001-GW	280-116407-1	AQ	N	Gen Prep	10/31/2018 12:00:00 PM	S2AVE
Method: 9034						
FBQmw-175-181001-GW	280-116407-8	AQ	N	Gen Prep	10/31/2018 11:10:00 AM	S2AVE
FBQmw-175-181001-GWMS	280-116407-8MS	AQ	MS	Gen Prep	10/31/2018 11:10:00 AM	S2AVE
FBQmw-175-181001-GWMSD	280-116407-8MSD	AQ	MSD	Gen Prep	10/31/2018 11:10:00 AM	S2AVE
Method: 9056A						
FBQmw-175-181001-GW	280-116407-8	AQ	N	METHOD	10/31/2018 11:10:00 AM	S2AVE
FBQmw-175-181001-GWDUP	280-116407-8DUP	AQ	DUP	METHOD	10/31/2018 11:10:00 AM	S2AVE
FBQmw-175-181001-GWMS	280-116407-8MS	AQ	MS	METHOD	10/31/2018 11:10:00 AM	S2AVE
FBQmw-175-181001-GWMSD	280-116407-8MSD	AQ	MSD	METHOD	10/31/2018 11:10:00 AM	S2AVE
LL12mw-187-181001-GW	280-116407-6	AQ	N	METHOD	10/31/2018 9:10:00 AM	S2AVE
LL12mw-245-181001-GW	280-116407-5	AQ	N	METHOD	10/31/2018	S2AVE
LL12mw-245-181001-GWDUP	280-116407-5DUP	AQ	DUP	METHOD	10/31/2018	S2AVE
LL12mw-245-181001-GWMS	280-116407-5MS	AQ	MS	METHOD	10/31/2018	S2AVE
LL12mw-245-181001-GWMSD	280-116407-5MSD	AQ	MSD	METHOD	10/31/2018	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116407-1
EDD Filename: 280-116407-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	A
Matrix Spike/Matrix Spike Duplicates	SR
Laboratory Duplicates	A
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	N
Field Triplicates	N
Field Blanks	N

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116407-1 | **Laboratory: TA DEN**

EDD Filename: 280-116407-1 | **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C-KNA
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436442/1-A	11/7/2018 3:07:00 AM	SODIUM	155 ug/L	LL12mw-245-181001-GW

*CONFIRMED, results >AL, no qual

Method: 6020A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436131/1-A	11/14/2018 5:40:00 AM	BARIUM	1.26 ug/L	LL12mw-187-181001-GW LL12mw-245-181001-GW
MB 280-437003/1-A	11/12/2018 11:57:00 PM	ZINC	3.46 ug/L	LL12mw-245-181001-GW

*RESULTS>AL

SOME RESULTS QUALIFIED U

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
LL12mw-245-181001-GW(RES/DIS)	ZINC	7.1 ug/L	7.1U ug/L

LOD 8.0 U

Method: 8270D-SIM
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436346/1-A	11/8/2018 4:59:00 PM	FLUORANTHENE PHENANTHRENE	0.0120 ug/L 0.0158 ug/L	ES3tw-001-181001-GW ES3tw-003-181001-GW LL12mw-183-181001-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

**CONFIRMED

Sample ID	Analyte	Reported Result	Modified Final Result
LL12mw-183-181001-GW(RES)	PHENANTHRENE	0.016 ug/L	0.016U ug/L

LOD ??

Method: 8330B
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436019/1-A	11/5/2018 5:34:00 PM	2-NITROTOLUENE	0.345 ug/L	LL12mw-245-181001-GW

*CONFIRMED, all ND, no qual

Method: 9056A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-435852/6	11/1/2018 1:30:00 PM	Nitrate as N	0.0442 mg/L	FBQmw-175-181001-GW

**CONFIRMED, no qual

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116407-1 **Laboratory: TA DEN**

EDD Filename: 280-116407-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 9056A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-116407-1

Laboratory: TA DEN

EDD Filename: 280-116407-1

eQAPP Name: Leidos-RVAAP NACA_20181218 -

Method: **6020A**

Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
LL12mw-245-181001-GWMS (TOT) (LL12mw-187-181001-GW LL12mw-245-181001-GW)	ANTIMONY	81	-	85.00-117.00	-	ANTIMONY	J (all detects) UJ (all non-detects)

*Qualified UJ in parent sample only

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116407-1 **Laboratory: TA DEN**

EDD Filename: 280-116407-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL12mw-187-181001-GW	IRON	J	39	100	MRL	ug/L	J (all detects)

Method: 6020A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL12mw-187-181001-GW	ANTIMONY	J	0.84	6.0	MRL	ug/L	J (all detects)
	ARSENIC	J	0.53	5.0	MRL	ug/L	
	BERYLLIUM	J	0.17	1.0	MRL	ug/L	
	CHROMIUM	J	0.50	10	MRL	ug/L	
	COPPER	J	1.1	2.0	MRL	ug/L	
	LEAD	J	0.23	3.0	MRL	ug/L	
	THALLIUM	J	0.84	1.0	MRL	ug/L	
	ZINC	J	5.8	20	MRL	ug/L	
LL12mw-245-181001-GW	BERYLLIUM	J	0.13	1.0	MRL	ug/L	J (all detects)
	CHROMIUM	J	2.1	10	MRL	ug/L	
	COPPER	J	1.1	2.0	MRL	ug/L	
	LEAD	J	0.94	3.0	MRL	ug/L	
	THALLIUM	J	0.056	1.0	MRL	ug/L	
	VANADIUM	J	2.0	6.0	MRL	ug/L	
	ZINC	J B	7.1	20	MRL	ug/L	

Method: 7470A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL12mw-187-181001-GW	MERCURY	J	0.047	0.20	MRL	ug/L	J (all detects)
LL12mw-245-181001-GW	MERCURY	J	0.063	0.20	MRL	ug/L	J (all detects)

Method: 8270D-SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
LL12mw-183-181001-GW	NAPHTHALENE	J	0.060	0.11	MRL	ug/L	J (all detects)
	PHENANTHRENE	J B	0.016	0.11	MRL	ug/L	

Data Qualifier Summary

Lab Reporting Batch ID: 280-116407-1 | **Laboratory: TA DEN**

EDD Filename: 280-116407-1 | **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6010C **Matrix:** AQ

Sample ID: LL12mw-187-181001-GW **Collected:** 10/31/2018 9:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
IRON	39	J	22	MDL	100	MRL	ug/L	J	RI

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: LL12mw-187-181001-GW **Collected:** 10/31/2018 9:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY revise	0.84	J	0.40	MDL	6.0	MRL	ug/L	J	RI, Ms
ARSENIC	0.53	J	0.33	MDL	5.0	MRL	ug/L	J	RI
BERYLLIUM	0.17	J	0.080	MDL	1.0	MRL	ug/L	J	RI
CHROMIUM	0.50	J	0.50	MDL	10	MRL	ug/L	J	RI
COPPER	1.1	J	0.56	MDL	2.0	MRL	ug/L	J	RI
LEAD	0.23	J	0.18	MDL	3.0	MRL	ug/L	J	RI
THALLIUM	0.84	J	0.050	MDL	1.0	MRL	ug/L	J	RI
ZINC	5.8	J	2.0	MDL	20	MRL	ug/L	J	RI

Sample ID: LL12mw-245-181001-GW **Collected:** 10/31/2018 12:00:00 AM **Analysis Type:** RES/DIS **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.13	J	0.080	MDL	1.0	MRL	ug/L	J	RI
CHROMIUM	2.1	J	0.50	MDL	10	MRL	ug/L	J	RI
COPPER	1.1	J	0.56	MDL	2.0	MRL	ug/L	J	RI
LEAD	0.94	J	0.18	MDL	3.0	MRL	ug/L	J	RI
VANADIUM	2.0	J	0.50	MDL	6.0	MRL	ug/L	J	RI
ZINC	7.1	J B	2.0	MDL	20	MRL	ug/L	U	Mb NEED LOD

Sample ID: LL12mw-245-181001-GW **Collected:** 10/31/2018 12:00:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.40	U F1	0.40	MDL	6.0	MRL	ug/L	UJ	Ms OK
BERYLLIUM	0.22	J	0.080	MDL	1.0	MRL	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116407-1 **Laboratory: TA DEN**

EDD Filename: 280-116407-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: LL12mw-245-181001-GW **Collected:** 10/31/2018 12:00:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHROMIUM	3.6	J	0.50	MDL	10	MRL	ug/L	J	RI
THALLIUM	0.056	J	0.050	MDL	1.0	MRL	ug/L	J	RI
VANADIUM	2.8	J	0.50	MDL	6.0	MRL	ug/L	J	RI
ZINC	12	J	2.0	MDL	20	MRL	ug/L	J	RI

Method Category: METALS
Method: 7470A **Matrix:** AQ

Sample ID: LL12mw-187-181001-GW **Collected:** 10/31/2018 9:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.047	J	0.027	MDL	0.20	MRL	ug/L	J	RI

Sample ID: LL12mw-245-181001-GW **Collected:** 10/31/2018 12:00:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.063	J	0.027	MDL	0.20	MRL	ug/L	J	RI

Method Category: SVOA
Method: 8270D-SIM **Matrix:** AQ

Sample ID: LL12mw-183-181001-GW **Collected:** 10/31/2018 12:45:00 PM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NAPHTHALENE	0.060	J	0.0089	MDL	0.11	MRL	ug/L	J	RI
PHENANTHRENE	0.016	J B	0.010	MDL	0.11	MRL	ug/L	U	Mb

NEED LOD

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116407-1 **Laboratory: TA DEN**

EDD Filename: 280-116407-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA CAN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116407-2						
Method: 7196A						
FBQmw-175-181001-GW	280-116407-8	AQ	N	METHOD	10/31/2018 11:10:00 AM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116407-2
EDD Filename: 280-116407-2

Laboratory: TA CAN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	A
Surrogate/Tracer Spikes	N
Matrix Spike/Matrix Spike Duplicates	N
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	N
Field Triplicates	N
Field Blanks	N

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116407-2 **Laboratory: TA CAN**

EDD Filename: 280-116407-2 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 7196A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FBQmw-175-181001-GW	HEXAVALENT CHROMIUM	J	0.0044	0.020	MRL	mg/L	J (all detects)

Data Qualifier Summary

Lab Reporting Batch ID: 280-116407-2 **Laboratory: TA CAN**

EDD Filename: 280-116407-2 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 7196A *Matrix:* AQ

Sample ID: FBQmw-175-181001-GW *Collected:* 10/31/2018 11:10:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEXAVALENT CHROMIUM	0.0044	J	0.0030	MDL	0.020	MRL	mg/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116407-2 **Laboratory: TA CAN**

EDD Filename: 280-116407-2 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
RI	Reporting Limit Trace Value

LEIDOS
Laboratory Data Verification Checklist

Project: RVAAP

SDG No: J116469

Analyte Group: VOC, SVOC, PCB/Pest, Expl, Perchlorate, Metals, Wet Chem

Sample Matrix: Water

EDD (Y/N):

Disposition of Data Package:

NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)		Y
Check for LCS results (e.g., org. form III, inorg. form XII)		Y
Check for method blank results (e.g., org. form IV, inorg. form III)		Y
Check for MS/MSD results (e.g., inorg. form V)		Y
Check for laboratory duplicate results (e.g., inorg. form VI)		NA
Check for Method Calibration and Run Documentation		
organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	method linear range	Y
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	Y
other:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	sample run sequence	Y

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Brooke Francis Date: 1/9/19

QA Review By: Date: 01/10/2019

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: J116469

Analyte Group: VOC, SVOC, Pest/PCB, Expl, Perchlorate, Metals, Wet Chem

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:
ES3tw-002-181001-GW	116469-1	W	PAH	
SCLmw-002-181002-GW	116469-2		VOC, SVOC, Pest/PCB, Expl, Perchlorate, Metals, Wet Chem	
SCLmw-002-181001-GW	116469-3		VOC, SVOC, Pest/PCB, Expl, Perchlorate, Metals, Wet Chem	
FWGTB-181011-TB	116469-4		VOC	

Comments:

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116469

Analysis: VOC

Method: 8260B

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/9/19

QA Reviewed by: Richman Stark Date: 01/10/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: Holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No discrepancies, ADR confirmed

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: No discrepancies, ~~ADR confirmed~~ ISTD not evaluated by ADR; validated manually

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: No contamination, ADR confirmed

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: 10/15 11/3
VOC - Date(s) of continuing calibration: 11/13
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration:
SVOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: All calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: SCLmw-002-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: No discrepancies, ADR confirmed

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-437466

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116469

Analysis: SVOC/PAH

Method: 8270/SIM

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

One result was qualified as non-detect due to blank contamination

One result was qualified as estimated due to MS/MSD discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/9/19

QA Reviewed by: Richman Stark Date: 01/10/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No discrepancies, confirmed with ADR

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: No discrepancies, ADR ~~confirmed~~ ISTD not evaluated by ADR; validated manually

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: PAH MB Contamination, ADR qualified

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration:
VOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: 11/12 11/14 11/7
SVOC - Date(s) of continuing calibration: 11/15 11/8
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: Calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: SCLmw-002-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: PAH Discrepancies, see ADR Output

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-436342 LCS 280-436346

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, confirmed with ADR

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116469

Analysis: Pesticides/PCB

Method: 8081/8082

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooks Francis Date: 1/9/19

QA Reviewed by: Richman Stark Date: 01/10/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

Pest

The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: SCLmw-002-181002-GW (280-116469-2), SCLmw-002-181001-GW (280-116469-3), SCLmw-002-181001-GW (280-116469-3[MS]), SCLmw-002-181001-GW (280-116469-3[MSD]), (LCS 280-436649/2-A), (LCSD 280-436649/3-A) and (MB 280-436649/1-A). The reagent lot number used was: T31E034.

PCB

The following samples required a sulfuric acid clean-up, via EPA Method 3665A, to reduce matrix interferences: SCLmw-002-181002-GW (280-116469-2), SCLmw-002-181001-GW (280-116469-3), (LCS 280-436649/4-A), (LCSD 280-436649/5-A) and (MB 280-436649/1-A).

The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: SCLmw-002-181002-GW (280-116469-2), SCLmw-002-181001-GW (280-116469-3), (LCS 280-436649/4-A), (LCSD 280-436649/5-A) and (MB 280-436649/1-A).

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No discrepancies, ADR confirmed

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: No discrepancies

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: No contamination, ADR confirmed

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: _____
VOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: _____
SVOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: NA

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	%D ~~RPD~~	Samples Affected	
Toxaphene (average)	-	32.56	ICV all UJ	~~ND no qual~~
Toxaphene (average)		26.36	ICV	ND no qual
Endrin Ketone		23.7	CCV 438595/13	ND no qual
Endosulfan Sulfate		24.3	↓	↓
Methoxychlor		21.0	↓	↓
Endosulfan Sulfate		21.8	CCV 438595/26	ND no qual
Toxaphene		23.8	CCV 438595/41	ND no qual
Endrin		22.4	CCV 438595/43	ND no qual
Endrin Aldehyde		24.2	↓	↓
Methoxychlor		24.2	↓	↓
Endosulfan Sulfate		29.5	↓	↓
Endrin Ketone		28.3	↓	↓
PCB 1248 (Average)		20.1	ICV	ND no qual
PCB 1262 (Average)		21.6	ICV	ND no qual

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks:

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: SCLmw-002-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: No discrepancies, ADR confirmed

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS/D 280-436649 LCS/D 280-436649

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: See ADR for discrepancies

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J116469 **Analysis:** Explosives/ Nitroguanidine

Method: 8330B

Laboratory: Test America **Matrix:** Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DoD QSM

One result was qualified as estimated due to column comparison discrepancies

One result was qualified as estimated due to MS/MSD discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/9/19

QA Reviewed by: Richman Stark Date: 01/10/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: The RPD for RDX is 50 and qualified J on the Form 1's and not by ADR SCLmw-002-181001-GW

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes:
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be $\leq$ 20%
Continuing calibration %D must be within $\pm$ 15%

Deviations:

Compound	Correlation Coefficient	% RSD	%D	Samples Affected
Tetryl			20.1	CCV 436836/4. ND, no qual

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks:

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks: No discrepancies, ADR confirmed

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: ~~No contamination~~, ADR confirmed sample results all U so no impact based on MB results

The method blank associated with preparation batch 280-436459 and analytical batch 280-436836 contained m-Nitrotoluene greater than one-half the reporting limit (RL) on the confirmation column, the primary column was non-detect. The samples were non-detect for this analyte. The sample results have been qualified and reported. The MB on the confirmation column also had a detection for RDX and 2,4,6-Trinitrophenol on the primary column less than half the RL, with the analyte non-detect on the confirmation column

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: SCLmw-002-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks: See ADR for discrepancies

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-436459

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

Leidos - Project Specific
Perchlorate by Mass Spectrometry Methods Data Verification/Validation

Project: RVAAP

SDG No: J116469

Analysis: Perchlorate

Method: 6860

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Isotope Ratios
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution
Mas Tuning	

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

* **If this SDG requires full validation; recalculations from the raw data are required where noted in the verification/validation checklist. Attach all calculations at the end of the validation checklist.**

Data verification and data validation are essentially identical, with the exception that validation requires results to be recalculated from the raw data.

Remarks: DoD QSM

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded

Verification/Validation by: Brooke Francis

Date: 1/9/19

QA Reviewed by:

Date: 01/10/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Waters - Cool 4°C with headspace to reduce anaerobic biodegradation; analysis within 28 days of sample collection

Soils - Cool 4°C ; extraction within 28 days of sample collection; analysis within 18 days of sample extraction

Deviations:

Sample #	Date Collected	Date Analyzed	Comments

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: Holding times were met

IV. $^{35}CL/^{37}CL$ Isotope Ratios

List any field samples, field QC samples, or laboratory QC samples where the $^{35}CL/^{37}CL$ Isotope ratio does not fall within 2.3 to 2.8:

Deviations:

Sample #	Provide the ratio below:

Sample #	Provide the ratio below:

Actions:

1. If the $^{35}CL/^{37}CL$ isotope ratio does not meet acceptance criteria the sample must be reanalyzed.
2. If any sample is reported with an unacceptable $^{35}CL/^{37}CL$ isotope ratio, the results must be rejected (R)

Remarks: No discrepancies

The ion ratio is outside of control (2.30-3.80) due to instrument drift. The target analytes are in control in the associated QC sample indicating positive identification despite the ion ratio failure.

V. Internal Standards Performance

Internal standard areas must be between ± 50% of the average areas from the initial calibrations (Y/N)
Relative retention times must be within 0.98-1.02 (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time is outside acceptance criteria use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: No IS discrepancies

VI. Blanks

A method blank was reported for each aqueous analytical batch and one method blank was reported for each soil extraction batch? (Y/N)
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Sample ID #	Compound	Conc.

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Sample ID #	Compound	Conc.

Remarks: No blank contamination

VI. Blanks (continued)

Calculate the action level based on 5X the highest blank concentration

Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If contamination exists in method blanks < 1/2 LOQ, samples must be re-extracted and reanalyzed. Use professional judgement to qualify the data if this occurs.
5. If method blanks were not analyzed use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

Mass Calibration Acceptable? (Y/N)

Date of initial calibration: _____
r>0.995? (Y/N)
ICV ≤ 15% drift? (Y/N)

Date(s) of continuing calibration: _____
CCV analyzed at beginning of analytical sequence and after every 10 field sample? (Y/N)
CCV ≤ 15% drift? (Y/N)

LOQ Standard ≤ 30% drift? (Y/N)
LOQ Standard analyzed daily? (Y/N)

Deviations:

Compound	Date	r value	%Drift	Samples Affected

Actions:

* **If this SDG requires full validation; recalculate the r value, a CCV% Drift, and a LOQ % Drift from the raw data. Attach all calculations at the end of the validation checklist.**

1. If initial calibration curve criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. Only evaluate the ICV if it brackets field samples. If the ICV does bracket field samples, then CCV actions apply
3. If a CCV is above the upper control limit, qualify detects as estimated (J). Nondects require no action.
4. If a CCV is below the lower control limit but > 30% recovery, qualify results as estimated (J/UJ).
5. If a CCV is ≤ 30% recovery, qualify detects as estimated (J) and nondetects as rejected (R)
6. If CCVs were not analyzed at the proper frequency, use professional judgement.
7. If an acceptable mass calibration was not performed, then all data should be rejected (R)
8. If a LOQ standard is above the upper control limit, qualify detects as estimated (J). Nondects require no action.
9. If a LOQ standard is below the lower control limit but > 10% recovery, qualify results as estimated (J/UJ).
10. If a LOQ standard is ≤ 10% recovery, qualify detects as estimated (J) and nondetects as rejected (R)
11. If LOQ standards were not analyzed at the proper frequency, use professional judgement.

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:
percent recovery (%R) 80-120% recovery
relative percent difference (RPD) 20% RPD

Project Sample(s) Spiked: SCLmw-002-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ).
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

* **If this SDG requires full validation; recalculate at least one % recovery and one % RPD from the raw data. Attach all calculations at the end of the validation checklist.**

Remarks: No discrepancies, ADR confirmed

X. Laboratory Control Sample Information

General LCS Criteria:
Percent recovery (%R) = 80-120% recovery
RPD if LCSD performed = 20% RPD

Laboratory LCS Identifications: LCS 280-437280

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

*** If this SDG requires full validation; recalculate at least one % recovery and one % RPD (if LCSD was performed) from the raw data. Attach all calculations at the end of the validation checklist.**

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

LEIDOS
Metals Data Review Checklist

Project: RVAAP

SDG No: J116469

Analysis: Metals

Method: 6010/6020/7470

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on an examination of the following:

Case Narrative	MS/MSD Recoveries and Differences
Analytical Holding Times	Duplicate Relative Percent Differences
Sample Preservation	ICP Serial Dilution
Method Calibration	Furnace Atomic Absorption QC
Method and Project Blanks	Re-analysis and Secondary Dilution
LCS Recoveries	Internal Standard Performance (if applicable)

Project specific QA/QC or contract requirements may take priority over validation criteria in this proceudre.

Overall remarks: DoD QSM

Some results were qualified as estimated due to MS/MSD and/or calibration discrepancies

Some results were qualified as non-detect due to blank contamination

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/9/19

QA Reviewed by: Richman Stark Date: 01/10/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Metals - Waters - preserved to pH<2, 180 days from sample collection
Metals - Soils - 180 days from sample collection
Mercury - Waters - preserved to pH<2, 28 days from sample collection
Mercury - Soils - 28 days from sample collection

Deviations:

Sample #	Metals				Mercury			
	Date Collected	Date Analyzed	Days >HT	pH Check	Date Collected	Date Analyzed	Days >HT	pH Check

Actions:

1. If preserved samples exceed holding time, qualify all associated results as estimated (J/UJ).
2. If unpreserved samples exceed holding time, qualify all associated results as unusable (R).
3. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
4. If water samples are not acidified, use professional judgement. Minimally, qualify data as estimated (J) and non-detects unusable (R).
5. If soil samples exceed holding time, use professional judgement to qualify data.

Remarks: Holding times were met

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.)

Initial calibration linearity criteria is r ≥ 0.995
ICV and CCV criteria are ± 10% recovery, low level check standard allowed ± 30%
ICP inter-element check standard criteria ± 20%

Deviations:

Element	Date	Intial Calib.	ICV/ CCV	%R	Samples Affected	
Sodium	11/7		CCVL	232	436619/65	None
Sodium	11/7		CCVL	122	436619/93	116469-2
Sodium	11/7		CCVL	123	436619/103	116469-3
Aluminum	11/7		CCVL	122		↓
Magnesium	11/7		ICVL	126	436768/11	None
Barium	11/13		ICVL	121		↓
Barium	11/13		CCVL	125	437566/68	None
Manganese	11/14		CCVL	124	437566/79	None
Nickel	11/14		CCVL	70	437566/92	116469-2, 3
Beryllium	11/14		CCVL	127	437566/105	116469-2, 3 ND, no qual
Vanadium				123		↓ ND, no qual

Actions:

1. If any elements initial claibration linearity is <0.995, qualify the data as estimated (J/UJ)
2. If any elements initial claibration linearity is <0.95, qualify the data as unusable (R)

3a. If any elements ICV or CCV recovery is <90%, qualify the data as estimated (J/UJ)

3b. If any elements ICV or CCV recovery is > 110%, qualify results ≥ MDL as estimated (J).
Do not qualify non-detects.

4a. If any elements ICV or CCV recovery is <75%, qualify the data as unusable (R)

4b. If any elements ICV or CCV recovery is > 125% qualify positive results as estimated (J) or non-detects as unusable (R).

4c. If any element ICV or CCV recovery is ≥ 160%, qualify positive results ≥ MDL as unusable (R).
Do not qualify non-detects.

5a. If any elements CRI recovery is 50 - 69% (30 - 49% for Sb, Pb, Tb), qualify results ≥ MDL (but < 2 times CRQL) as estimated (J/UJ) and results > 2 times CRQL are not qualified.

5b. If any elements CRI recovery is < 50% (<30% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) and non-detects as unusable (R). Results > 2 times CRQL are estimated (J).

5c. If any elements CRI recovery is > 130% but < 180% (>150% but ≤ 200% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) as esimated (J). And non-detects and results ≥ 2x CRQL are not qualified.

5d. If CRI or (R) > 180% (> 200% for Sb, Pb, Ti), qualify results that are ≥ MDL as unusable (R).

Remarks: _____

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.) (continued)

Analytical Sequence and MS Tune	(Y/N)
1. Were the appropriate number of ICP standards used?	Y
2. Were the appropriate number of AA standards used?	Y
3. Was calibration performed and documented at the beginning of each run?	Y
4. Were calibration check standards run at 10% frequency or every two hours?	Y
5. Were low level standard checks analyzed at approximately 2X the PQL?	Y
6. Was ICP-MS mass calibration within 0.1 AMU?	Y
7. Was ICP-MS % RSD of the aboslute signals for all analytes < 5%?	Y

Deviations:

Element	Deviation	Samples Affected	
Barium	76%	CCVL 437702/53	116469-2, 3
Beryllium	77%	CCVL 437702/64	116469-2, 3
Vanadium	128%		↓

Actions:

1. If instrument calibration is questionable, use professional judgement, qualify the data as estimated (J/UJ)
2. If instrument calibration documentation can not be obtained or is inadequate, qualify the data as unusable (R)
3. If mass calibration for ICP-MS was not within 0.1 AMU qualify analyte results as estimated (J/UJ)
4. If % RSD for ICP-MS was > 5% for any analyte in the tuning solution, qualify associated results as estimated (J/UJ).

Results:

V. Blanks (ICB, CCB, Method Blank, Equipment Rinsate Blank)

A. Blank Results

If the blank level is > CRQL for any analyte, check that the analyte's concentration in the samples is > 10 times the blank value. The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account when applying the action level.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
CCB 436619/64	Sodium	197 ug/L		None
CCB 436619/78	Sodium	185 ug/L	1850	116469-2
	Aluminum	22.4 ug/L	224	
CCB436619/92	Sodium	168 ug/L	1680	116469-2, 3
CCB 436619/102	Sodium	199 ug/L	1990	116469-3
CCB 436768/66	Magnesium	16.8 ug/L	168	116469-3
ICB 437566/8	Vanadium	1.20		None
CCB 437566/25	Antimony	0.485		None
	Vanadium	0.558		
CCB 437566/67	Vanadium	1.42		None
CCB 437566/78	Antimony	0.506		None
	Vanadium	1.52		

If additional space is required, use next page

Actions:

1. For blank results ≥ MDL but ≤ CRQL, qualify samples ≥ MDL but < CRQL as CRQL U.
   Use proffessional judgement to qualify sample results exceeding the CRQL.

2a. If blank results are > CRQL: For sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < 10 times the blank qualify results as unusable (R) or estimated (J). No action is taken for sample results ≥ 10 times the blank levels.

2b. If ICB/ CCB results are > CRQL; for sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < blank results, qualify results as not detected (U) at the level of the blank or unusable (R). Use professional judgement for sample results > blank results.

Remarks: CCB contamination is not qualified by ADR, see Form 1's

V. Blanks (continued)

The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected	
CCB 437566/91	Antimony	0.495	4.95	116469-2, 3	ND, no qual
	Vanadium	1.23	12.3	↓	ND, no qual
CCB 437566/104	Antimony	0.599	5.99	116469-2, 3	ND, no qual
	Vanadium	1.62	16.2	↓	ND, no qual
ICB 437702/9	Vanadium	0.762		None	
CCB 437702/52	Antimony	0.484	4.84	116469-2, 3	ND, no qual
CCB 437702/63	Antimony	0.500	5.00	116469-2, 3	ND, no qual
	Vanadium	2.05	20.5	↓	ND, no qual
ICB 437882/10	Mercury	0.0333		None	
CCB 437882 20:17	Mercury	0.0350		None	
CCB 437882 20:44	Mercury	0.0317	0.317	116469-2	
CCB 437882 21:11	Mercury	0.0317	0.317	116469-2, 3	
CCB 437882 21:37	Mercury	0.0383	0.383	116469-3	

V. Blanks (continued)

B. Frequency Requirements (Y/N)

1. Was a method (preparation) blank analyzed for each matrix? Y
2. Was a method blank processed for every analytical batch (20 samples)? Y
3. Was a calibration blank analyzed at 10% frequency or every two hours? Y

Deviations:

Element	Deviation	Samples Affected

Remarks: **SEE ADR FOR MB CONTAMINATION

C. Baseline Shift Evaluation

List the highest negative blank concentration for each analyte observed in laboratory or project blanks.

Deviations:

Blank ID	Element	Max. Neg Conc.	Action Level	Samples Affected

Actions:

1. If the absolute value of the maximum negative blank result is > the CRQL, qualify positive results as estimated (J) and non-detects as estimated (UJ).

Remarks:

VI. Laboratory Control Sample Evaluation

All LCS recovery criteria are set at 80-120%
An LCS must be analyzed for each matrix and for each digestion batch or set of twenty samples

Deviations:

Element	Date	%R	Matrix	Samples Affected

Actions:

1. If any element's LCS recovery is >120%, qualify positive results as (J).
2. If any element's LCS recovery is 50-79%, qualify positive results as (J) and non-detect results as (UJ)

3a. If any element's LCS recovery is <50%, qualify positive results as (J) and non-detect results as (R)
3b. If the LCS recovery is > 150%, qualify all results as unusable (R).

4. For soil LCS recovery > upper limit, qualify samples results ≥ MDL as estimated (J).
5. For soil LCS recovery < lower limit, qualify results ≥ MDL as esimated (J) and non-detected estimated (UJ).
6. Use professional judgement to qualify data if the LCS frequency criteria are not met.

Remarks: No discrepancies, ADR confirmed

VII. Matrix Spike Evaluation

All MS recovery criteria are set at 75-125%
An MS must be analyzed for each matrix and for each digestion batch or set of twenty samples
Verify that a field blank or PE sample was not used for spiked sample analysis
Verify that a post-digestion spike was analyzed for those anlytes where the pre-digestion spike recovery is outside control limits and the sample result is < 4 times the spike added.

Project Sample(s) Spiked: SCLmw-002-181001-GW

Deviations:

Element	Spiked Sample Result	Sample Result	Spike Amount	%R	Samples Affected

Actions:

1. If the sample concentration exceeds the spiking level by a factor of 4X or more, do not qualify the data
2. If the spike recovery is >125%, qualify all positive values as (J).
3. If the spike recovery is between 30-74%, qualify positive values as (J) and non-detect values as estimated (UJ)
4. If the spike recovery is <30%, qualify positive values as (J) and non-detects are qualified unusable (R)
if the post-digestion spike recovery is < 75% (or none was performed); non-detects are qualified as estimated (UJ)
If the post-digestion spike reocvery is ≥ 75%. There is no post-digestion spike performed for mercury.
5. Qualify all samples of similar matrix to the spiked sample in the same manner
6. Use professional judgement to qualify data if the MS frequency criteria are not met.
7. Use professional judgement for qualification of data for unspiked elements

Remarks: See ADR for discrepancies

VIII. Laboratory Duplicate Evaluation

Duplicate relative percent difference (RPD) for water is 20% (both results > 5 times CDRL) or < CRDL difference (if either result is < 5 times CRDL) and RPD for soil is 35% (if both results are > 5 times CRDL or < 2 times CRDL if either result is < 5 times CRDL).
When duplicate sample values are both less than the reporting level they are considered acceptable
When dupicate sample values are within 5X the reporting level they are acceptable if their absolute difference is within 3X the reporting level
Verify that a field blank on PE sample was not used for duplicate analysis.

Deviations: ____

Element	Sample #	Duplicate #	RPD	Samples Affected

Actions:

1. If an element's RPD is >20% (water) / >35% (soil), qualify positive results as (J) and non-detect results as (UJ)
2. For low concentrations, if an element's duplicate absolute difference is > 3X the reporting level, qualify positive results as (J) and non-detect results as (UJ)
3. Use professional judgement to qualify data if the duplicate frequency criteria are not met.

Remarks: NA

IX. Inductively Coupled Plasma (ICP) Serial Dilution Analysis

Verify that a field blank or PE sample was not used for serial dilution.
Serial dilution of positive results are performed when values exceed 50X the IDL
Results from serial dilutions should agree within 10% of the original undiluted analysis

Deviations:

Element	Sample #	Sample Result	Serial Dilution	%D	Action

Actions:

1. If the serial dilution %D is >10 and the analyte results are >50X the IDL, qualify all positive results as estimated (J) and non-detects as estimated (UJ).

Remarks: NA

X. Furnace Atomic Absorption QC

A. Duplicate Precision (Y/N)

1. Were duplicate injections performed for all samples? _____
2. Were one point analytical spikes performed for all samples? _____
3. Did duplicate injections agree within ± 20%? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If duplicate injection results are outside ± 20%, qualify positive results as (J) and non-detect results as (UJ)

Remarks: NA

B. Post Digestion Spike Recoveries (Y/N)

1. Did post digestion spike recoveries meet an 85-115% recovery criteria? _____
2. If spike recoveries did not meet recovery criteria were samples analyzed by MSA? _____
3. If MSA was used to analyze samples, was its' correlation coefficient ≥ 0.995? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If post digestion spike recoveries are >115%, qualify positive results as (J) and non-detect results as (U)
2. If post digestion spike recoveries are 11-84%, qualify positive results as (J) and non-detect results as (UJ)
3. If post digestion spike recoveries are <10%, qualify positive results as (R) and non-detect results as (R)
4. If MSA was used to quantitate values and the correlation coefficient was <0.995, qualify data as (J or UJ)
5. If MSA was used to quantitate values and the correlation coefficient was <0.95, qualify data as (R)

Remarks: NA

XI. Inductively Coupled Plasma (ICP) Interference Check Sample Evaluation

Interference check samples should be analyzed at the beginning and end of each analysis run, or at a minimum of twice per 8 hour working shift.
Results for the ICS solution AB must fall within control limits of 20% for analytes included in the solution.
Evaluate the ICS A solution raw data for results with an absolute value ≥ MDL for analytes that are not present in the ICS A solution.

Deviations:

Element	Sample #	Sample Result	Interferent Result	Action

Actions:

1. If the ICS AB %R for an analyte is > 120%, qualify sample results ≥ MDL as estimated (J) and non-detects should not be qualified.
2. If the ICS AB %R for an analyte is 50-79%, qualify sample results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ).
3. If the ICS AB %R for an analyte is <50%, qualify all sample results that are ≥ MDL and all non-detects as as unusable (R).
4. If results ≥ MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents and with analyte concentration that approximate those levels in the ICS A, sample results ≥ MDL should be qualified as estimated (J) and non-detects should not be qualified.
5. If negative results with absolute values > MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents, affected sample results > MDL should be qualified as estimated (J) and non-detects (UJ).

Remarks: All ICP results met control limits

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116469

Analysis: Cyanide, Sulfide, Nitrate/Nitrite, Sulfate, Alkalinity, Nitrocell

Method: 9012, 9034, 9056, 2320, 353.3

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: DoD QSM

Some results were qualified as non-detect due to blank contamination

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/9/19

QA Reviewed by: Richman Stark Date: 01/10/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No results were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: Holding times met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected
Nitrate	0.0433 mg/L	0.2165 mg/L	ICB
Nitrate	0.0454 mg/L	0.227 mg/L	Highest CCB
Sulfate	0.252 mg/L	1.270 mg/L	ICB
Sulfate	0.265 mg/L	1.325 mg/L	Highest CCB
Alkalinity	1.39 mg/L	5.95 mg/L	Highest CCB

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: See ADR output for MB contamination

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: No discrepancies, ADR confirmed

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: No discrepancies, ADR confirmed

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116469-2

Analysis: Hexa Chrom

Method: 7156

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: Laboratory Limits

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 1/9/19

QA Reviewed by: Date: 01/10/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No results were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: Holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: No contamination, ADR confirmed

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: No discrepancies, ADR confirmed

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: No discrepancies, ADR confirmed

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

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

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 22:37	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/13/18 22:37	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/13/18 22:37	1
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		11/13/18 22:37	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		11/13/18 22:37	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/13/18 22:37	1
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/13/18 22:37	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/13/18 22:37	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/13/18 22:37	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/13/18 22:37	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/13/18 22:37	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/13/18 22:37	1
Acetone	6.4	U	10	6.4	1.9	ug/L		11/13/18 22:37	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 22:37	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 22:37	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/13/18 22:37	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 22:37	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/13/18 22:37	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/13/18 22:37	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		11/13/18 22:37	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/13/18 22:37	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 22:37	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/13/18 22:37	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 22:37	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/13/18 22:37	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 22:37	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 22:37	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 22:37	1
Methylene Chloride	**0.41**	**J**	5.0	0.80	0.32	ug/L		11/13/18 22:37	1
Styrene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 22:37	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/13/18 22:37	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 22:37	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/13/18 22:37	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 22:37	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/13/18 22:37	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/13/18 22:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*81 - 118*		*11/13/18 22:37*	*1*
4-Bromofluorobenzene (Surr)	*102*		*85 - 114*		*11/13/18 22:37*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 119*		*11/13/18 22:37*	*1*
Toluene-d8 (Surr)	*105*		*89 - 112*		*11/13/18 22:37*	*1*

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 22:59	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/13/18 22:59	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/13/18 22:59	1

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

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		11/13/18 22:59	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		11/13/18 22:59	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/13/18 22:59	1
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/13/18 22:59	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/13/18 22:59	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/13/18 22:59	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/13/18 22:59	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/13/18 22:59	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/13/18 22:59	1
Acetone	6.4	U	10	6.4	1.9	ug/L		11/13/18 22:59	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 22:59	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 22:59	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/13/18 22:59	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 22:59	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/13/18 22:59	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/13/18 22:59	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		11/13/18 22:59	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/13/18 22:59	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 22:59	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/13/18 22:59	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 22:59	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/13/18 22:59	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 22:59	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 22:59	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 22:59	1
Methylene Chloride	0.80	U	5.0	0.80	0.32	ug/L		11/13/18 22:59	1
Styrene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 22:59	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/13/18 22:59	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		11/13/18 22:59	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/13/18 22:59	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/13/18 22:59	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/13/18 22:59	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/13/18 22:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*81 - 118*		*11/13/18 22:59*	*1*
4-Bromofluorobenzene (Surr)	*99*		*85 - 114*		*11/13/18 22:59*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 119*		*11/13/18 22:59*	*1*
Toluene-d8 (Surr)	*102*		*89 - 112*		*11/13/18 22:59*	*1*

Client Sample ID: FWGTB-181011-TB **Lab Sample ID: 280-116469-4**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		11/14/18 00:07	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/14/18 00:07	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/14/18 00:07	1
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		11/14/18 00:07	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		11/14/18 00:07	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/14/18 00:07	1

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

Client Sample ID: FWGTB-181011-TB **Lab Sample ID: 280-116469-4**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/14/18 00:07	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/14/18 00:07	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/14/18 00:07	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/14/18 00:07	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/14/18 00:07	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/14/18 00:07	1
Acetone	6.4	U	10	6.4	1.9	ug/L		11/14/18 00:07	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/14/18 00:07	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/14/18 00:07	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/14/18 00:07	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/14/18 00:07	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/14/18 00:07	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/14/18 00:07	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		11/14/18 00:07	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/14/18 00:07	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/14/18 00:07	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/14/18 00:07	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/14/18 00:07	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/14/18 00:07	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/14/18 00:07	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/14/18 00:07	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/14/18 00:07	1
Methylene Chloride	0.80	U	5.0	0.80	0.32	ug/L		11/14/18 00:07	1
Styrene	0.40	U	1.0	0.40	0.17	ug/L		11/14/18 00:07	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/14/18 00:07	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		11/14/18 00:07	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/14/18 00:07	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/14/18 00:07	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/14/18 00:07	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/14/18 00:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*11/14/18 00:07*	*1*
4-Bromofluorobenzene (Surr)	*100*		*85 - 114*		*11/14/18 00:07*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 119*		*11/14/18 00:07*	*1*
Toluene-d8 (Surr)	*102*		*89 - 112*		*11/14/18 00:07*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: ES3tw-002-181001-GW **Lab Sample ID: 280-116469-1**
Date Collected: 11/01/18 09:20 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Naphthalene	0.014	U	0.12	0.014	0.0093	ug/L		11/09/18 01:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*89*		*53 - 106*	*11/05/18 13:07*	*11/09/18 01:23*	*1*
Nitrobenzene-d5	*77*		*55 - 111*	*11/05/18 13:07*	*11/09/18 01:23*	*1*
Terphenyl-d14	*78*		*58 - 132*	*11/05/18 13:07*	*11/09/18 01:23*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.013	U	0.11	0.013	0.0065	ug/L		11/08/18 22:25	1
2-Methylnaphthalene	0.013	U	0.11	0.013	0.0066	ug/L		11/08/18 22:25	1
Acenaphthene	0.044	U	0.11	0.044	0.0046	ug/L		11/08/18 22:25	1
Acenaphthylene	0.044	U	0.11	0.044	0.0056	ug/L		11/08/18 22:25	1
Anthracene	0.044	U	0.11	0.044	0.0062	ug/L		11/08/18 22:25	1
Benzo[a]anthracene	0.013	U M U	0.11	0.013	0.0046	ug/L		11/08/18 22:25	1
Benzo[a]pyrene	UJ H02 0.013	U M	0.11	0.013	0.0076	ug/L		11/08/18 22:25	1
Benzo[b]fluoranthene	0.013	U M	0.11	0.013	0.0034	ug/L		11/08/18 22:25	1
Benzo[g,h,i]perylene	0.013	U M	0.11	0.013	0.0068	ug/L		11/08/18 22:25	1
Benzo[k]fluoranthene	0.013	U M	0.11	0.013	0.0069	ug/L		11/08/18 22:25	1
Chrysene	**0.017**	**J**	0.11	0.013	0.0036	ug/L		11/08/18 22:25	1
Dibenz(a,h)anthracene	0.013	U	0.11	0.013	0.0045	ug/L		11/08/18 22:25	1
Fluoranthene added by ADR	0.013 **0.012**	**J** U F01	0.11	0.013	0.0053	ug/L		11/08/18 22:25	1
Fluorene	0.044	U	0.11	0.044	0.0061	ug/L		11/08/18 22:25	1
Indeno[1,2,3-cd]pyrene	0.044	U	0.11	0.044	0.0050	ug/L		11/08/18 22:25	1
Naphthalene	0.013	U	0.11	0.013	0.0088	ug/L		11/08/18 22:25	1
Phenanthrene	0.022	U	0.11	0.022	0.010	ug/L		11/08/18 22:25	1
Pyrene	0.022	U	0.11	0.022	0.0067	ug/L		11/08/18 22:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*75*		*53 - 106*	*11/05/18 13:07*	*11/08/18 22:25*	*1*
Nitrobenzene-d5	*65*		*55 - 111*	*11/05/18 13:07*	*11/08/18 22:25*	*1*
Terphenyl-d14	*83*		*58 - 132*	*11/05/18 13:07*	*11/08/18 22:25*	*1*

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.012	U J1 U	0.10	0.012	0.0061	ug/L		11/08/18 22:54	1
2-Methylnaphthalene	0.012	U J1 U	0.10	0.012	0.0062	ug/L		11/08/18 22:54	1
Acenaphthene	0.042	U M J1 U	0.10	0.042	0.0044	ug/L		11/08/18 22:54	1
Acenaphthylene	0.042	U J1 U	0.10	0.042	0.0053	ug/L		11/08/18 22:54	1
Anthracene	0.042	U	0.10	0.042	0.0058	ug/L		11/08/18 22:54	1
Benzo[a]anthracene	0.012	U	0.10	0.012	0.0044	ug/L		11/08/18 22:54	1
Benzo[a]pyrene added by ADR	UJ H02 0.012	U M J1 ~~J H02~~	0.10	0.012	0.0072	ug/L		11/08/18 22:54	1
Benzo[b]fluoranthene	0.012	U	0.10	0.012	0.0032	ug/L		11/08/18 22:54	1
Benzo[g,h,i]perylene	0.012	U	0.10	0.012	0.0065	ug/L		11/08/18 22:54	1
Benzo[k]fluoranthene	0.012	U	0.10	0.012	0.0066	ug/L		11/08/18 22:54	1
Chrysene	0.012	U	0.10	0.012	0.0034	ug/L		11/08/18 22:54	1
Dibenz(a,h)anthracene	0.012	U	0.10	0.012	0.0043	ug/L		11/08/18 22:54	1
Fluoranthene	0.012	U	0.10	0.012	0.0050	ug/L		11/08/18 22:54	1
Fluorene	0.042	U J1 U	0.10	0.042	0.0057	ug/L		11/08/18 22:54	1
Indeno[1,2,3-cd]pyrene	0.042	U	0.10	0.042	0.0047	ug/L		11/08/18 22:54	1
Naphthalene	0.012	U J1 U	0.10	0.012	0.0083	ug/L		11/08/18 22:54	1
Phenanthrene	0.021	U	0.10	0.021	0.0097	ug/L		11/08/18 22:54	1
Pyrene	0.021	U	0.10	0.021	0.0063	ug/L		11/08/18 22:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*72*		*53 - 106*	*11/05/18 13:07*	*11/08/18 22:54*	*1*
Nitrobenzene-d5	*63*		*55 - 111*	*11/05/18 13:07*	*11/08/18 22:54*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	95		58 - 132	11/05/18 13:07	11/08/18 22:54	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	0.99	U	9.9	0.99	0.28	ug/L		11/15/18 18:50	1
1,2-Dichlorobenzene	0.49	U	9.9	0.49	0.23	ug/L		11/15/18 18:50	1
1,3-Dichlorobenzene	0.99	U	9.9	0.99	0.30	ug/L		11/15/18 18:50	1
1,4-Dichlorobenzene	0.99	U	9.9	0.99	0.32	ug/L		11/15/18 18:50	1
1,4-Dioxane	4.3	U	18	4.3	1.7	ug/L		11/15/18 18:50	1
2,4,5-Trichlorophenol	0.99	U	20	0.99	0.44	ug/L		11/15/18 18:50	1
2,4,6-Trichlorophenol	0.99	U	20	0.99	0.29	ug/L		11/15/18 18:50	1
2,4-Dichlorophenol	2.0	U	9.9	2.0	0.63	ug/L		11/15/18 18:50	1
2,4-Dimethylphenol	2.0	U	9.9	2.0	0.57	ug/L		11/15/18 18:50	1
2,4-Dinitrophenol	30	U	79	30	9.9	ug/L		11/15/18 18:50	1
2,4-Dinitrotoluene	4.3	U	20	4.3	1.6	ug/L		11/15/18 18:50	1
2,6-Dinitrotoluene	4.3	U	20	4.3	1.9	ug/L		11/15/18 18:50	1
2-Chloronaphthalene	0.99	U	9.9	0.99	0.26	ug/L		11/15/18 18:50	1
2-Chlorophenol	4.3	U	9.9	4.3	2.0	ug/L		11/15/18 18:50	1
2-Methylphenol	2.0	U	9.9	2.0	0.97	ug/L		11/15/18 18:50	1
2-Nitroaniline	4.3	U	49	4.3	1.7	ug/L		11/15/18 18:50	1
2-Nitrophenol	0.99	U	20	0.99	0.39	ug/L		11/15/18 18:50	1
3 & 4 Methylphenol	0.49	U	20	0.49	0.25	ug/L		11/15/18 18:50	1
3,3'-Dichlorobenzidine	4.3	U	49	4.3	2.0	ug/L		11/15/18 18:50	1
3-Nitroaniline	4.3	U	49	4.3	2.0	ug/L		11/15/18 18:50	1
4,6-Dinitro-2-methylphenol	8.7	U	79	8.7	4.0	ug/L		11/15/18 18:50	1
4-Bromophenyl phenyl ether	0.99	U	9.9	0.99	0.42	ug/L		11/15/18 18:50	1
4-Chloro-3-methylphenol	4.9	U	20	4.9	2.4	ug/L		11/15/18 18:50	1
4-Chloroaniline	4.3	U	25	4.3	2.1	ug/L		11/15/18 18:50	1
4-Chlorophenyl phenyl ether	4.3	U	9.9	4.3	1.6	ug/L		11/15/18 18:50	1
4-Nitroaniline	4.3	U	49	4.3	2.0	ug/L		11/15/18 18:50	1
4-Nitrophenol	4.0	U	49	4.0	1.2	ug/L		11/15/18 18:50	1
Benzoic acid	30	U	79	30	9.9	ug/L		11/15/18 18:50	1
Benzyl alcohol	0.49	U	25	0.49	0.23	ug/L		11/15/18 18:50	1
bis (2-chloroisopropyl) ether	0.99	U	9.9	0.99	0.28	ug/L		11/15/18 18:50	1
Bis(2-chloroethoxy)methane	2.0	U	9.9	2.0	0.96	ug/L		11/15/18 18:50	1
Bis(2-chloroethyl)ether	0.99	U	20	0.99	0.40	ug/L		11/15/18 18:50	1
Bis(2-ethylhexyl) phthalate	2.0	U	9.9	2.0	0.55	ug/L		11/15/18 18:50	1
Butyl benzyl phthalate	2.0	U	20	2.0	0.99	ug/L		11/15/18 18:50	1
Carbazole	0.99	U	9.9	0.99	0.42	ug/L		11/15/18 18:50	1
Dibenzofuran	0.99	U	9.9	0.99	0.29	ug/L		11/15/18 18:50	1
Diethyl phthalate	0.99	U	20	0.99	0.38	ug/L		11/15/18 18:50	1
Dimethyl phthalate	0.49	U	20	0.49	0.21	ug/L		11/15/18 18:50	1
Di-n-butyl phthalate	4.3	U	20	4.3	1.1	ug/L		11/15/18 18:50	1
Di-n-octyl phthalate	0.99	U	20	0.99	0.35	ug/L		11/15/18 18:50	1
Hexachlorobenzene	2.0	U	9.9	2.0	0.65	ug/L		11/15/18 18:50	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hexachlorobutadiene	9.9	U	30	9.9	3.3	ug/L		11/15/18 18:50	1
Hexachlorocyclopentadiene	30	U	49	30	9.9	ug/L		11/15/18 18:50	1
Hexachloroethane	4.3	U	9.9	4.3	2.1	ug/L		11/15/18 18:50	1
Isophorone	0.49	U	9.9	0.49	0.21	ug/L		11/15/18 18:50	1
Nitrobenzene	2.0	U	20	2.0	0.80	ug/L		11/15/18 18:50	1
N-Nitrosodi-n-propylamine	0.99	U	20	0.99	0.35	ug/L		11/15/18 18:50	1
N-Nitrosodiphenylamine	0.99	U	9.9	0.99	0.43	ug/L		11/15/18 18:50	1
Pentachlorophenol	59	U	79	59	20	ug/L		11/15/18 18:50	1
Phenol	4.3	U	9.9	4.3	2.0	ug/L		11/15/18 18:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*92*		*43 - 140*	*11/05/18 12:30*	*11/15/18 18:50*	*1*
2-Fluorobiphenyl	*73*		*44 - 119*	*11/05/18 12:30*	*11/15/18 18:50*	*1*
2-Fluorophenol (Surr)	*74*		*19 - 119*	*11/05/18 12:30*	*11/15/18 18:50*	*1*
Nitrobenzene-d5 (Surr)	*76*		*44 - 120*	*11/05/18 12:30*	*11/15/18 18:50*	*1*
Phenol-d5 (Surr)	*80*		*10 - 115*	*11/05/18 12:30*	*11/15/18 18:50*	*1*
Terphenyl-d14 (Surr)	*92*		*50 - 134*	*11/05/18 12:30*	*11/15/18 18:50*	*1*

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	1.1	U	11	1.1	0.30	ug/L		11/15/18 19:19	1
1,2-Dichlorobenzene	0.54	U	11	0.54	0.25	ug/L		11/15/18 19:19	1
1,3-Dichlorobenzene	1.1	U	11	1.1	0.33	ug/L		11/15/18 19:19	1
1,4-Dichlorobenzene	1.1	U	11	1.1	0.35	ug/L		11/15/18 19:19	1
1,4-Dioxane	4.8	U	20	4.8	1.8	ug/L		11/15/18 19:19	1
2,4,5-Trichlorophenol	1.1	U	22	1.1	0.49	ug/L		11/15/18 19:19	1
2,4,6-Trichlorophenol	1.1	U	22	1.1	0.31	ug/L		11/15/18 19:19	1
2,4-Dichlorophenol	2.2	U	11	2.2	0.69	ug/L		11/15/18 19:19	1
2,4-Dimethylphenol	2.2	U	11	2.2	0.63	ug/L		11/15/18 19:19	1
2,4-Dinitrophenol	33	U	87	33	11	ug/L		11/15/18 19:19	1
2,4-Dinitrotoluene	4.8	U	22	4.8	1.8	ug/L		11/15/18 19:19	1
2,6-Dinitrotoluene	4.8	U	22	4.8	2.1	ug/L		11/15/18 19:19	1
2-Chloronaphthalene	1.1	U	11	1.1	0.28	ug/L		11/15/18 19:19	1
2-Chlorophenol	4.8	U	11	4.8	2.2	ug/L		11/15/18 19:19	1
2-Methylphenol	2.2	U	11	2.2	1.1	ug/L		11/15/18 19:19	1
2-Nitroaniline	4.8	U	54	4.8	1.9	ug/L		11/15/18 19:19	1
2-Nitrophenol	1.1	U	22	1.1	0.42	ug/L		11/15/18 19:19	1
3 & 4 Methylphenol	0.54	U	22	0.54	0.27	ug/L		11/15/18 19:19	1
3,3'-Dichlorobenzidine	4.8	U	54	4.8	2.2	ug/L		11/15/18 19:19	1
3-Nitroaniline	4.8	U	54	4.8	2.2	ug/L		11/15/18 19:19	1
4,6-Dinitro-2-methylphenol	9.5	U	87	9.5	4.3	ug/L		11/15/18 19:19	1
4-Bromophenyl phenyl ether	1.1	U	11	1.1	0.47	ug/L		11/15/18 19:19	1
4-Chloro-3-methylphenol	5.4	U	22	5.4	2.6	ug/L		11/15/18 19:19	1
4-Chloroaniline	4.8	U	27	4.8	2.3	ug/L		11/15/18 19:19	1
4-Chlorophenyl phenyl ether	4.8	U	11	4.8	1.8	ug/L		11/15/18 19:19	1
4-Nitroaniline	4.8	U	54	4.8	2.2	ug/L		11/15/18 19:19	1
4-Nitrophenol	4.3	U	54	4.3	1.3	ug/L		11/15/18 19:19	1
Benzoic acid	33	U	87	33	11	ug/L		11/15/18 19:19	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Benzyl alcohol	0.54	U	27	0.54	0.25	ug/L		11/15/18 19:19	1
bis (2-chloroisopropyl) ether	1.1	U	11	1.1	0.30	ug/L		11/15/18 19:19	1
Bis(2-chloroethoxy)methane	2.2	U	11	2.2	1.1	ug/L		11/15/18 19:19	1
Bis(2-chloroethyl)ether	1.1	U	22	1.1	0.44	ug/L		11/15/18 19:19	1
Bis(2-ethylhexyl) phthalate	2.2	U	11	2.2	0.61	ug/L		11/15/18 19:19	1
Butyl benzyl phthalate	2.2	U	22	2.2	1.1	ug/L		11/15/18 19:19	1
Carbazole	1.1	U	11	1.1	0.47	ug/L		11/15/18 19:19	1
Dibenzofuran	1.1	U	11	1.1	0.31	ug/L		11/15/18 19:19	1
Diethyl phthalate	1.1	U	22	1.1	0.41	ug/L		11/15/18 19:19	1
Dimethyl phthalate	0.54	U	22	0.54	0.23	ug/L		11/15/18 19:19	1
Di-n-butyl phthalate	4.8	U	22	4.8	1.3	ug/L		11/15/18 19:19	1
Di-n-octyl phthalate	1.1	U M U	22	1.1	0.38	ug/L		11/15/18 19:19	1
Hexachlorobenzene	2.2	U	11	2.2	0.72	ug/L		11/15/18 19:19	1
Hexachlorobutadiene	11	U	33	11	3.6	ug/L		11/15/18 19:19	1
Hexachlorocyclopentadiene	33	U	54	33	11	ug/L		11/15/18 19:19	1
Hexachloroethane	4.8	U	11	4.8	2.3	ug/L		11/15/18 19:19	1
Isophorone	0.54	U	11	0.54	0.23	ug/L		11/15/18 19:19	1
Nitrobenzene	2.2	U	22	2.2	0.88	ug/L		11/15/18 19:19	1
N-Nitrosodi-n-propylamine	1.1	U	22	1.1	0.38	ug/L		11/15/18 19:19	1
N-Nitrosodiphenylamine	1.1	U	11	1.1	0.48	ug/L		11/15/18 19:19	1
Pentachlorophenol	65	U	87	65	22	ug/L		11/15/18 19:19	1
Phenol	4.8	U	11	4.8	2.2	ug/L		11/15/18 19:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*92*		*43 - 140*	*11/05/18 12:30*	*11/15/18 19:19*	*1*
2-Fluorobiphenyl	*82*		*44 - 119*	*11/05/18 12:30*	*11/15/18 19:19*	*1*
2-Fluorophenol (Surr)	*86*		*19 - 119*	*11/05/18 12:30*	*11/15/18 19:19*	*1*
Nitrobenzene-d5 (Surr)	*87*		*44 - 120*	*11/05/18 12:30*	*11/15/18 19:19*	*1*
Phenol-d5 (Surr)	*90*		*10 - 115*	*11/05/18 12:30*	*11/15/18 19:19*	*1*
Terphenyl-d14 (Surr)	*95*		*50 - 134*	*11/05/18 12:30*	*11/15/18 19:19*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.020	U	0.049	0.020	0.0076	ug/L		11/24/18 03:13	1
4,4'-DDE	0.020	U	0.049	0.020	0.0074	ug/L		11/24/18 03:13	1
4,4'-DDT	0.049	U	0.049	0.049	0.015	ug/L		11/24/18 03:13	1
Aldrin	0.020	U	0.049	0.020	0.0058	ug/L		11/24/18 03:13	1
alpha-BHC	0.020	U	0.049	0.020	0.0052	ug/L		11/24/18 03:13	1
alpha-Chlordane	0.020	U	0.049	0.020	0.0052	ug/L		11/24/18 03:13	1
beta-BHC	0.020	U	0.049	0.020	0.0086	ug/L		11/24/18 03:13	1
delta-BHC	0.020	U	0.049	0.020	0.0057	ug/L		11/24/18 03:13	1
Dieldrin	0.020	U	0.049	0.020	0.0062	ug/L		11/24/18 03:13	1
Endosulfan I	0.020	U	0.049	0.020	0.0057	ug/L		11/24/18 03:13	1
Endosulfan II	0.020	U	0.049	0.020	0.0069	ug/L		11/24/18 03:13	1
Endosulfan sulfate	0.020	U	0.049	0.020	0.0056	ug/L		11/24/18 03:13	1
Endrin	0.020	U	0.049	0.020	0.0078	ug/L		11/24/18 03:13	1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Endrin aldehyde	0.020	U	0.049	0.020	0.0087	ug/L		11/24/18 03:13	1
Endrin ketone	0.020	U	0.049	0.020	0.0069	ug/L		11/24/18 03:13	1
gamma-BHC (Lindane)	0.020	U	0.049	0.020	0.0068	ug/L		11/24/18 03:13	1
gamma-Chlordane	0.020	U	0.049	0.020	0.0090	ug/L		11/24/18 03:13	1
Heptachlor	0.020	U	0.049	0.020	0.0076	ug/L		11/24/18 03:13	1
Heptachlor epoxide	0.020	U	0.049	0.020	0.0074	ug/L		11/24/18 03:13	1
Methoxychlor	0.049	U	0.049	0.049	0.013	ug/L		11/24/18 03:13	1
Toxaphene	0.79	U Q ~~U~~ UJ C05	2.0	0.79	0.36	ug/L		11/24/18 03:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*39*		*34 - 122*	*11/07/18 10:54*	*11/24/18 03:13*	*1*
Tetrachloro-m-xylene	*64*		*44 - 124*	*11/07/18 10:54*	*11/24/18 03:13*	*1*

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.020	U	0.051	0.020	0.0079	ug/L		11/24/18 00:53	1
4,4'-DDE	0.020	U	0.051	0.020	0.0077	ug/L		11/24/18 00:53	1
4,4'-DDT	0.051	U	0.051	0.051	0.015	ug/L		11/24/18 00:53	1
Aldrin	0.020	U	0.051	0.020	0.0060	ug/L		11/24/18 00:53	1
alpha-BHC	0.020	U	0.051	0.020	0.0054	ug/L		11/24/18 00:53	1
alpha-Chlordane	0.020	U	0.051	0.020	0.0054	ug/L		11/24/18 00:53	1
beta-BHC	0.020	U	0.051	0.020	0.0089	ug/L		11/24/18 00:53	1
delta-BHC	0.020	U	0.051	0.020	0.0059	ug/L		11/24/18 00:53	1
Dieldrin	0.020	U	0.051	0.020	0.0064	ug/L		11/24/18 00:53	1
Endosulfan I	0.020	U	0.051	0.020	0.0059	ug/L		11/24/18 00:53	1
Endosulfan II	0.020	U	0.051	0.020	0.0071	ug/L		11/24/18 00:53	1
Endosulfan sulfate	0.020	U	0.051	0.020	0.0058	ug/L		11/24/18 00:53	1
Endrin	0.020	U	0.051	0.020	0.0081	ug/L		11/24/18 00:53	1
Endrin aldehyde	0.020	U	0.051	0.020	0.0090	ug/L		11/24/18 00:53	1
Endrin ketone	0.020	U	0.051	0.020	0.0071	ug/L		11/24/18 00:53	1
gamma-BHC (Lindane)	0.020	U	0.051	0.020	0.0070	ug/L		11/24/18 00:53	1
gamma-Chlordane	0.020	U	0.051	0.020	0.0093	ug/L		11/24/18 00:53	1
Heptachlor	0.020	U	0.051	0.020	0.0079	ug/L		11/24/18 00:53	1
Heptachlor epoxide	0.020	U	0.051	0.020	0.0077	ug/L		11/24/18 00:53	1
Methoxychlor	0.051	U	0.051	0.051	0.013	ug/L		11/24/18 00:53	1
Toxaphene	0.82	U Q ~~U~~ UJ C05	2.0	0.82	0.37	ug/L		11/24/18 00:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*50*		*34 - 122*	*11/07/18 10:54*	*11/24/18 00:53*	*1*
Tetrachloro-m-xylene	*82*		*44 - 124*	*11/07/18 10:54*	*11/24/18 00:53*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.39	U M U	0.98	0.39	0.12	ug/L		11/27/18 19:07	1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1221	0.25	U M U	0.98	0.25	0.21	ug/L		11/27/18 19:07	1
PCB-1232	0.59	U M	0.98	0.59	0.16	ug/L		11/27/18 19:07	1
PCB-1242	0.30	U M	0.98	0.30	0.10	ug/L		11/27/18 19:07	1
PCB-1248	0.30	U Q M	0.98	0.30	0.090	ug/L		11/27/18 19:07	1
PCB-1254	0.25	U M	0.98	0.25	0.11	ug/L		11/27/18 19:07	1
PCB-1260	0.39	U M	0.98	0.39	0.16	ug/L		11/27/18 19:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*69*		*25 - 120*	*11/07/18 10:54*	*11/27/18 19:07*	*1*
DCB Decachlorobiphenyl	*42*	*Q*	*30 - 136*	*11/07/18 10:54*	*11/27/18 19:07*	*1*

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.41	U M U	1.0	0.41	0.13	ug/L		11/27/18 19:28	1
PCB-1221	0.26	U M	1.0	0.26	0.22	ug/L		11/27/18 19:28	1
PCB-1232	0.61	U M	1.0	0.61	0.17	ug/L		11/27/18 19:28	1
PCB-1242	0.31	U M	1.0	0.31	0.11	ug/L		11/27/18 19:28	1
PCB-1248	0.31	U Q M	1.0	0.31	0.093	ug/L		11/27/18 19:28	1
PCB-1254	0.26	U M	1.0	0.26	0.12	ug/L		11/27/18 19:28	1
PCB-1260	0.41	U M	1.0	0.41	0.16	ug/L		11/27/18 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*87*		*25 - 120*	*11/07/18 10:54*	*11/27/18 19:28*	*1*
DCB Decachlorobiphenyl	*53*	*Q*	*30 - 136*	*11/07/18 10:54*	*11/27/18 19:28*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		11/10/18 03:24	1

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		11/10/18 03:41	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.43	U	1.1	0.43	0.22	ug/L		11/09/18 00:15	1
1,3-Dinitrobenzene	0.22	U	0.43	0.22	0.095	ug/L		11/09/18 00:15	1
2,4,6-Trinitrotoluene	0.22	U	0.43	0.22	0.078	ug/L		11/09/18 00:15	1
2,4-Dinitrotoluene	0.22	U	0.43	0.22	0.090	ug/L		11/09/18 00:15	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC) (Continued)

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,6-Dinitrotoluene	0.22	U	0.22	0.22	0.069	ug/L		11/09/18 00:15	1
2-Amino-4,6-dinitrotoluene	0.13	U	0.22	0.13	0.055	ug/L		11/09/18 00:15	1
2-Nitrotoluene	0.22	U UJ H02	0.43	0.22	0.092	ug/L		11/09/18 00:15	1
3-Nitrotoluene	0.22	U M U	0.43	0.22	0.090	ug/L		11/09/18 00:15	1
4-Amino-2,6-dinitrotoluene	0.13	U	0.22	0.13	0.062	ug/L		11/09/18 00:15	1
4-Nitrotoluene	0.43	U	1.1	0.43	0.22	ug/L		11/09/18 00:15	1
HMX	0.22	U M U	0.43	0.22	0.094	ug/L		11/09/18 00:15	1
Nitrobenzene	0.22	U	0.43	0.22	0.098	ug/L		11/09/18 00:15	1
Nitroglycerin	2.2	U	3.2	2.2	0.99	ug/L		11/09/18 00:15	1
PETN	1.3	U	2.2	1.3	0.45	ug/L		11/09/18 00:15	1
RDX	0.13	U	0.22	0.13	0.056	ug/L		11/09/18 00:15	1
Tetryl	0.22	U Q U	0.26	0.22	0.085	ug/L		11/09/18 00:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*107*	*M*	*83 - 119*	*11/06/18 12:18*	*11/09/18 00:15*	*1*

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.41	U	1.0	0.41	0.21	ug/L		11/09/18 00:38	1
1,3-Dinitrobenzene	0.21	U	0.41	0.21	0.092	ug/L		11/09/18 00:38	1
2,4,6-Trinitrotoluene	0.21	U	0.41	0.21	0.075	ug/L		11/09/18 00:38	1
2,4-Dinitrotoluene	0.21	U	0.41	0.21	0.087	ug/L		11/09/18 00:38	1
2,6-Dinitrotoluene	0.21	U	0.21	0.21	0.067	ug/L		11/09/18 00:38	1
2-Amino-4,6-dinitrotoluene	0.12	U	0.21	0.12	0.052	ug/L		11/09/18 00:38	1
2-Nitrotoluene added by ADR	0.21	U J1 UJ H02	0.41	0.21	0.088	ug/L		11/09/18 00:38	1
3-Nitrotoluene	0.21	U J1 M U	0.41	0.21	0.086	ug/L		11/09/18 00:38	1
4-Amino-2,6-dinitrotoluene	0.12	U	0.21	0.12	0.060	ug/L		11/09/18 00:38	1
4-Nitrotoluene	0.41	U	1.0	0.41	0.21	ug/L		11/09/18 00:38	1
HMX	0.21	U	0.41	0.21	0.091	ug/L		11/09/18 00:38	1
Nitrobenzene	0.21	U	0.41	0.21	0.094	ug/L		11/09/18 00:38	1
Nitroglycerin	2.1	U	3.1	2.1	0.95	ug/L		11/09/18 00:38	1
PETN	1.2	U	2.1	1.2	0.43	ug/L		11/09/18 00:38	1
RDX	**0.17**	**J J1 M** J M08	0.21	0.12	0.054	ug/L		11/09/18 00:38	1
RDX	**0.10**	**J J1** *	0.21	0.12	0.054	ug/L		11/10/18 12:19	1
Tetryl	0.21	U Q U	0.25	0.21	0.082	ug/L		11/09/18 00:38	1

* = DO NOT USE

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*100*	*M*	*83 - 119*	*11/06/18 12:18*	*11/09/18 00:38*	*1*
1,2-Dinitrobenzene	*90*		*83 - 119*	*11/06/18 12:18*	*11/10/18 12:19*	*1*

Method: 6860 - Perchlorate by IC/MS or IC/MS/MS

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perchlorate	0.010	U M U	0.050	0.010	0.0040	ug/L		11/12/18 17:15	1

Method: 6860 - Perchlorate by IC/MS or IC/MS/MS

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perchlorate	**0.0058**	**J**	0.050	0.010	0.0040	ug/L		11/12/18 17:20	1

Method: 6010C - Metals (ICP)

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		11/07/18 15:47	1
Calcium	**190000**	J H02	1000	140	35	ug/L		11/07/18 05:31	1
Iron	**8000**		100	85	22	ug/L		11/07/18 15:47	1
Magnesium	**23000**		500	40	11	ug/L		11/07/18 05:31	1
Potassium	**4300**		3000	940	240	ug/L		11/07/18 05:31	1
Sodium	**8200**	J D05	5000	350	120	ug/L		11/07/18 05:31	1
Phosphorus	**100**	**J** J H02	3000	50	14	ug/L		11/07/18 05:31	1

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70	U	300	70	18	ug/L		11/07/18 16:19	1
Calcium applied by ADR	**190000**	**J1** J H02	1000	140	35	ug/L		11/07/18 06:04	1
Iron	**7700**	**J1** =	100	85	22	ug/L		11/07/18 16:19	1
Magnesium	**24000**		500	40	11	ug/L		11/07/18 06:04	1
Potassium	**4500**		3000	940	240	ug/L		11/07/18 06:04	1
Sodium	**8200**	J D05	5000	350	120	ug/L		11/07/18 06:04	1
Phosphorus	**110**	**J J1** J H02	3000	50	14	ug/L		11/07/18 06:04	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/14/18 03:04	1
Arsenic	**1.9**	**J**	5.0	1.0	0.33	ug/L		11/14/18 03:04	1
Barium applied by ADR	**54**	J D05 H01	3.0	0.95	0.29	ug/L		11/14/18 03:04	1
Beryllium	0.30	U UJ D05	1.0	0.30	0.080	ug/L		11/14/18 03:04	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/14/18 03:04	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/14/18 03:04	1
Cobalt	**0.070**	**J**	1.0	0.20	0.054	ug/L		11/14/18 03:04	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/14/18 03:04	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/14/18 03:04	1
Manganese	**750**		3.5	0.95	0.31	ug/L		11/14/18 16:28	1
Nickel	1.0	U UJ D05	3.0	1.0	0.30	ug/L		11/14/18 03:04	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/14/18 03:04	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/14/18 03:04	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/14/18 03:04	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/14/18 03:04	1
Zinc applied by ADR	8.0 **2.0**	**J** U F01	20	8.0	2.0	ug/L		11/14/18 03:04	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	1.0	U	6.0	1.0	0.40	ug/L		11/14/18 03:07	1
Arsenic	**1.9**	**J**	5.0	1.0	0.33	ug/L		11/14/18 03:07	1
Barium applied by ADR	**55**	**J1** J H01 D05	3.0	0.95	0.29	ug/L		11/14/18 03:07	1
Beryllium	0.30	U UJ D05	1.0	0.30	0.080	ug/L		11/14/18 03:07	1
Cadmium	1.0	U	1.0	1.0	0.27	ug/L		11/14/18 03:07	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/14/18 03:07	1
Cobalt	**0.060**	**J**	1.0	0.20	0.054	ug/L		11/14/18 03:07	1
Copper	1.8	U	2.0	1.8	0.56	ug/L		11/14/18 03:07	1
Lead	0.70	U	3.0	0.70	0.18	ug/L		11/14/18 03:07	1
Manganese	**760**		3.5	0.95	0.31	ug/L		11/14/18 16:31	1
Nickel	1.0	U UJ D05	3.0	1.0	0.30	ug/L		11/14/18 03:07	1
Selenium	2.0	U	5.0	2.0	0.70	ug/L		11/14/18 03:07	1
Silver	0.10	U	5.0	0.10	0.033	ug/L		11/14/18 03:07	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/14/18 03:07	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/14/18 03:07	1
Zinc	8.0	U	20	8.0	2.0	ug/L		11/14/18 03:07	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury applied by ADR, add F06	0.080 **0.068**	**J** U F01 F06	0.20	0.080	0.027	ug/L		11/16/18 21:06	1

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury applied by ADR, add F06	0.080 **0.033**	**J** U F01 F06	0.20	0.080	0.027	ug/L		11/16/18 21:13	1

General Chemistry

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1000	U	2000	1000	480	ug/L		11/15/18 13:41	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/14/18 17:54	1
Sulfide	1.9	U	4.0	1.9	0.79	mg/L		11/02/18 21:21	1
Nitrate as N	0.10 **0.046**	**J** U F06	0.50	0.10	0.042	mg/L		11/03/18 01:24	1
Nitrite as N	0.10	U	0.50	0.10	0.049	mg/L		11/03/18 01:24	1
Sulfate	**150**	**M** =	5.0	0.50	0.23	mg/L		11/03/18 01:24	1
Alkalinity	**410**		5.0	5.0	1.1	mg/L		11/13/18 15:00	1

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1000	U	2000	1000	480	ug/L		11/15/18 13:43	1

General Chemistry (Continued)

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/15/18 18:02	1
Sulfide	1.9	U	4.0	1.9	0.79	mg/L		11/02/18 21:21	1
Nitrate as N	0.10 **0.047**	**J** U F06	0.50	0.10	0.042	mg/L		11/03/18 01:42	1
Nitrite as N	0.10	U	0.50	0.10	0.049	mg/L		11/03/18 01:42	1
Sulfate	**150**	**M** =	5.0	0.50	0.23	mg/L		11/03/18 01:42	1
Alkalinity	**390**		5.0	5.0	1.1	mg/L		11/13/18 15:10	1

General Chemistry

Client Sample ID: SCLmw-002-181002-GW **Lab Sample ID: 280-116469-2**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Hexavalent chromium	ND	U	0.020		0.0030	mg/L		11/01/18 17:00	1

Client Sample ID: SCLmw-002-181001-GW **Lab Sample ID: 280-116469-3**
Date Collected: 11/01/18 10:45 **Matrix: Water**
Date Received: 11/02/18 09:05

Analyte	Result	Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Hexavalent chromium	**0.0044**	**J**	0.020		0.0030	mg/L		11/01/18 17:00	1

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116469-1						
Method: 2320B						
SCLmw-002-181001-GW	280-116469-3	AQ	N	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	METHOD	11/1/2018 10:45:00 AM	S2AVE
Method: 353.2						
SCLmw-002-181001-GW	280-116469-3	AQ	N	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	METHOD	11/1/2018 10:45:00 AM	S2AVE
Method: 6010C						
SCLmw-002-181001-GW	280-116469-3	AQ	N	3010A	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	3010A	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	3010A	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	3010A	11/1/2018 10:45:00 AM	S2AVE
Method: 6010C-KNA						
SCLmw-002-181001-GW	280-116469-3	AQ	N	3010A	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	3010A	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	3010A	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	3010A	11/1/2018 10:45:00 AM	S2AVE
Method: 6020A						
SCLmw-002-181001-GW	280-116469-3	AQ	N	3020A	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	3020A	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	3020A	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	3020A	11/1/2018 10:45:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 6860						
SCLmw-002-181001-GW	280-116469-3	AQ	N	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	METHOD	11/1/2018 10:45:00 AM	S2AVE
Method: 7470A						
SCLmw-002-181001-GW	280-116469-3	AQ	N	7470A	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	7470A	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	7470A	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	7470A	11/1/2018 10:45:00 AM	S2AVE
Method: 8081B						
SCLmw-002-181001-GW	280-116469-3	AQ	N	3510C	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	3510C	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	3510C	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	3510C	11/1/2018 10:45:00 AM	S2AVE
Method: 8082A						
SCLmw-002-181001-GW	280-116469-3	AQ	N	3510C	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	3510C	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	3510C	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	3510C	11/1/2018 10:45:00 AM	S2AVE
Method: 8260B						
FWGTB-181011-TB	280-116469-4	AQ	TB	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GW	280-116469-3	AQ	N	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	METHOD	11/1/2018 10:45:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method		Collection Date	Validation Code
Method: 8260B							
SCLmw-002-181002-GW	280-116469-2	AQ	FD	METHOD		11/1/2018 10:45:00 AM	S2AVE
Method: 8270D							
SCLmw-002-181001-GW	280-116469-3	AQ	N	3520C		11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	3520C		11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	3520C		11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	3520C		11/1/2018 10:45:00 AM	S2AVE
Method: 8270D-SIM							
ES3tw-002-181001-GW	280-116469-1	AQ	N	3510C		11/1/2018 9:20:00 AM	S2AVE
SCLmw-002-181001-GW	280-116469-3	AQ	N	3510C		11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	3510C		11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	3510C		11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	3510C		11/1/2018 10:45:00 AM	S2AVE
Method: 8330							
SCLmw-002-181001-GW	280-116469-3	AQ	N	METHOD		11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	METHOD		11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	METHOD		11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	METHOD		11/1/2018 10:45:00 AM	S2AVE
Method: 8330B							
SCLmw-002-181001-GW	280-116469-3	AQ	N		3535	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS		3535	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD		3535	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD		3535	11/1/2018 10:45:00 AM	S2AVE
Method: 9012B							
SCLmw-002-181001-GW	280-116469-3	AQ	N	Gen Prep		11/1/2018 10:45:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 9012B						
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	Gen Prep	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	Gen Prep	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	Gen Prep	11/1/2018 10:45:00 AM	S2AVE
Method: 9034						
SCLmw-002-181001-GW	280-116469-3	AQ	N	Gen Prep	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	Gen Prep	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	Gen Prep	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	Gen Prep	11/1/2018 10:45:00 AM	S2AVE
Method: 9056A						
SCLmw-002-181001-GW	280-116469-3	AQ	N	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWDUP	280-116469-3DUP	AQ	DUP	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	METHOD	11/1/2018 10:45:00 AM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116469-1
EDD Filename: 280-116469-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	A
Matrix Spike/Matrix Spike Duplicates	SR
Laboratory Duplicates	A
Laboratory Replicates	N
Laboratory Control Samples	SR
Compound Quantitation	SR
Field Duplicates	A
Field Triplicates	N
Field Blanks	A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116469-1 **Laboratory: TA DEN**

EDD Filename: 280-116469-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C-KNA
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436445/1-A	11/7/2018 4:46:00 AM	SODIUM	129 ug/L	SCLmw-002-181001-GW SCLmw-002-181002-GW

*CONFIRMED, results >AL, no qual

Method: 6020A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-437002/1-A	11/14/2018 1:21:00 AM	ZINC	2.43 ug/L	SCLmw-002-181001-GW SCLmw-002-181002-GW

*CONFIRMED

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SCLmw-002-181002-GW(RES/TOT)	ZINC	2.0 ug/L	2.0U ug/L

Method: 7470A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-437885/1-A	11/16/2018 8:33:00 PM	MERCURY	0.0317 ug/L	SCLmw-002-181001-GW SCLmw-002-181002-GW

*CONFIRMED

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SCLmw-002-181001-GW(RES/TOT)	MERCURY	0.033 ug/L	0.033U ug/L
SCLmw-002-181002-GW(RES/TOT)	MERCURY	0.068 ug/L	0.068U ug/L

Method: 8270D-SIM
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436346/1-A	11/8/2018 4:59:00 PM	FLUORANTHENE PHENANTHRENE	0.0120 ug/L 0.0158 ug/L	ESSlw-002-181001-GW SCLmw-002-181001-GW SCLmw-002-181002-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SCLmw-002-181002-GW(RES)	FLUORANTHENE	0.012 ug/L	0.012U ug/L

**CONFIRMED

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116469-1 **Laboratory: TA DEN**

EDD Filename: 280-116469-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: **9012B**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-437477/4-A	11/14/2018 5:35:00 PM	Cyanide, Total	0.00520 mg/L	SCLmw-002-181002-GW

*CONFIRMED, ND, no qual

Method: **9056A**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436079/6	11/2/2018 2:45:00 PM	Nitrate as N	0.0441 mg/L	SCLmw-002-181001-GW SCLmw-002-181002-GW

*CONFIRMED,ND, no qual

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-116469-1 **Laboratory: TA DEN**

EDD Filename: 280-116469-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 353.2
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SCLmw-002-181001-GWMS SCLmw-002-181001-GWMSD (SCLmw-002-181001-GW)	Nitrocellulose	52	56	~~63.00-130.00~~ 26-144	-	Nitrocellulose Wrong Limits, No qual	J (all detects) UJ (all non-detects)

Method: 8270D-SIM
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SCLmw-002-181001-GWMSD (SCLmw-002-181001-GW)	1-METHYLNAPHTHALENE	-	-	41.00-115.00	30 (20.00)	1-METHYLNAPHTHALENE	ND, no qual
	2-METHYLNAPHTHALENE	-	-	39.00-114.00	32 (20.00)	2-METHYLNAPHTHALENE	
	ACENAPHTHENE	-	-	48.00-114.00	29 (20.00)	ACENAPHTHENE	J(all detects)
	ACENAPHTHYLENE	-	-	35.00-121.00	32 (20.00)	ACENAPHTHYLENE	
	FLUORENE	-	-	50.00-118.00	25 (20.00)	FLUORENE	
	NAPHTHALENE	-	-	43.00-114.00	32 (20.00)	NAPHTHALENE	
SCLmw-002-181001-GWMS (SCLmw-002-181001-GW)	BENZO(A)PYRENE	52	-	53.00-120.00	-	BENZO(A)PYRENE **CONFIRMED	J(all detects) UJ(all non-detects)

Method: 6010C
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SCLmw-002-181001-GWMS (TOT) (SCLmw-002-181001-GW)	PHOSPHORUS	114	-	88.00-113.00	-	PHOSPHORUS *CONFIRM	J(all detects)
SCLmw-002-181001-GWMS (TOT) SCLmw-002-181001-GWMSD (TOT) (SCLmw-002-181001-GW)	CALCIUM	86	72	87.00-115.00	-	CALCIUM *CONFIRM	
	IRON	85	50	87.00-113.00	-	IRON >4x, no qual	J(all detects) UJ(all non-detects)

Method: 8330B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SCLmw-002-181001-GWMSD (SCLmw-002-181001-GW)	3-NITROTOLUENE	-	128	73.00-125.00	-	3-NITROTOLUENE *ND no qual	J(all detects)
SCLmw-002-181001-GWMS (SCLmw-002-181001-GW)	2-NITROTOLUENE	66	-	70.00-127.00	-	2-NITROTOLUENE *UJ *CONFIRMED	J(all detects) UJ(all non-detects)

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-116469-1 **Laboratory: TA DEN**

EDD Filename: 280-116469-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 6020A
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SCLmw-002-181001-GWMSD (TOT) (SCLmw-002-181001-GW SCLmw-002-181002-GW)	BARIUM	-	115	86.00-114.00	-	BARIUM	J(all detects)

*CONFIRM

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-116469-1

Laboratory: TA DEN

EDD Filename: 280-116469-1

eQAPP Name: Leidos-RVAAP NACA_20181218 -

Method: **8081B**
Matrix: **AQ**

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCS 280-436649/6-A (SCLmw-002-181001-GW SCLmw-002-181002-GW)	TOXAPHENE	150	-	33.00-134.00	-	TOXAPHENE	J (all detects)

**CONFIRMED, all ND, no qual

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116469-1 **Laboratory: TA DEN**

EDD Filename: 280-116469-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-002-181001-GW	PHOSPHORUS	J J1	110	3000	LOQ	ug/L	J (all detects)
SCLmw-002-181002-GW	PHOSPHORUS	J	100	3000	LOQ	ug/L	J (all detects)

Method: 6020A
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-002-181001-GW	ARSENIC	J	1.9	5.0	LOQ	ug/L	J (all detects)
	COBALT	J	0.060	1.0	LOQ	ug/L	
SCLmw-002-181002-GW	ARSENIC	J	1.9	5.0	LOQ	ug/L	J (all detects)
	COBALT	J	0.070	1.0	LOQ	ug/L	
	ZINC	J	2.0	20	LOQ	ug/L	

Method: 6860
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-002-181001-GW	PERCHLORATE	J	0.0058	0.050	LOQ	ug/L	J (all detects)

Method: 7470A
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-002-181001-GW	MERCURY	J	0.033	0.20	LOQ	ug/L	J (all detects)
SCLmw-002-181002-GW	MERCURY	J	0.068	0.20	LOQ	ug/L	J (all detects)

Method: 8260B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-002-181002-GW	METHYLENE CHLORIDE	J	0.41	5.0	LOQ	ug/L	J (all detects)

Method: 8270D-SIM
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-002-181002-GW	CHRYSENE	J	0.017	0.11	LOQ	ug/L	J (all detects)
	FLUORANTHENE	J	0.012	0.11	LOQ	ug/L	

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116469-1 | **Laboratory: TA DEN**

EDD Filename: 280-116469-1 | **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 8270D-SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag

Method: 8330B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-002-181001-GW	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	J J1	0.10	0.21	LOQ	ug/L	J (all detects)

Method: 9056A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-002-181001-GW	Nitrate as N	J	0.047	0.50	LOQ	mg/L	J (all detects)
SCLmw-002-181002-GW	Nitrate as N	J	0.046	0.50	LOQ	mg/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-116469-1 **Laboratory: TA DEN**

EDD Filename: 280-116469-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 2320B
Matrix: AQ

Analyte	Concentration (mg/L) SCLmw-002-181001-GW	SCLmw-002-181002-GW	Sample RPD	eQAPP RPD	Flag
Alkalinity	390	410	5	50.00	No Qualifiers Applied

Method: 6010C
Matrix: AQ

Analyte	Concentration (ug/L) SCLmw-002-181001-GW (TOT)	SCLmw-002-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
CALCIUM	190000	190000	0	50.00	No Qualifiers Applied
IRON	7700	8000	4	50.00	
MAGNESIUM	24000	23000	4	50.00	
PHOSPHORUS	110	100	10	50.00	

Method: 6010C-KNA
Matrix: AQ

Analyte	Concentration (ug/L) SCLmw-002-181001-GW (TOT)	SCLmw-002-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
POTASSIUM	4500	4300	5	50.00	No Qualifiers Applied
SODIUM	8200	8200	0	50.00	

Method: 6020A
Matrix: AQ

Analyte	Concentration (ug/L) SCLmw-002-181001-GW (TOT)	SCLmw-002-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
ARSENIC	1.9	1.9	0	50.00	No Qualifiers Applied
BARIUM	55	54	2	50.00	
COBALT	0.060	0.070	15	50.00	
MANGANESE	760	750	1	50.00	
ZINC	20 U	2.0	200	50.00	

Method: 6860
Matrix: AQ

Analyte	Concentration (ug/L) SCLmw-002-181001-GW	SCLmw-002-181002-GW	Sample RPD	eQAPP RPD	Flag
PERCHLORATE	0.0058	0.050 U M	200	50.00	No Qualifiers Applied

Method: 7470A
Matrix: AQ

Analyte	Concentration (ug/L) SCLmw-002-181001-GW (TOT)	SCLmw-002-181002-GW (TOT)	Sample RPD	eQAPP RPD	Flag
MERCURY	0.033	0.068	69	50.00	No Qualifiers Applied

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-116469-1 **Laboratory: TA DEN**

EDD Filename: 280-116469-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8260B
Matrix: AQ

Analyte	Concentration (ug/L) SCLmw-002-181001-GW	Concentration (ug/L) SCLmw-002-181002-GW	Sample RPD	eQAPP RPD	Flag
METHYLENE CHLORIDE	5.0 U	0.41	200	50.00	No Qualifiers Applied

Method: 8270D-SIM
Matrix: AQ

Analyte	Concentration (ug/L) SCLmw-002-181001-GW	Concentration (ug/L) SCLmw-002-181002-GW	Sample RPD	eQAPP RPD	Flag
CHRYSENE	0.10 U	0.017	200	50.00	No Qualifiers Applied
FLUORANTHENE	0.10 U	0.012	200	50.00	

Method: 8330B
Matrix: AQ

Analyte	Concentration (ug/L) SCLmw-002-181001-GW	Concentration (ug/L) SCLmw-002-181002-GW	Sample RPD	eQAPP RPD	Flag
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.17	0.22 U	200	50.00	No Qualifiers Applied

Method: 9056A
Matrix: AQ

Analyte	Concentration (mg/L) SCLmw-002-181001-GW	Concentration (mg/L) SCLmw-002-181002-GW	Sample RPD	eQAPP RPD	Flag
Nitrate as N	0.047	0.046	2	50.00	No Qualifiers Applied
SULFATE	150	150	0	50.00	

Data Qualifier Summary

Lab Reporting Batch ID: 280-116469-1 **Laboratory: TA DEN**

EDD Filename: 280-116469-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: GENCHEM
Method: 353.2 **Matrix:** AQ

Sample ID: SCLmw-002-181001-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrocellulose	1000	U	1000	LOD	2000	LOQ	ug/L	UJ	~~Ms~~

wrong limits applied to MS, results were compliant

Method Category: GENCHEM
Method: 6860 **Matrix:** AQ

Sample ID: SCLmw-002-181001-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PERCHLORATE	0.0058	J	0.010	LOD	0.050	LOQ	ug/L	J	RI

Method Category: GENCHEM
Method: 9056A **Matrix:** AQ

Sample ID: SCLmw-002-181001-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate as N	0.047	J	0.10	LOD	0.50	LOQ	mg/L	J	RI

Sample ID: SCLmw-002-181002-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate as N	0.046	J	0.10	LOD	0.50	LOQ	mg/L	J	RI

Method Category: METALS
Method: 6010C **Matrix:** AQ

Sample ID: SCLmw-002-181001-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RE/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
IRON	7700	J1	85	LOD	100	LOQ	ug/L	J	~~Ms~~

native sample > 4x spike therefore no data qual

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116469-1 **Laboratory: TA DEN**

EDD Filename: 280-116469-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 6010C **Matrix: AQ**

Sample ID: SCLmw-002-181001-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

SCLmw-002-181002-GW
APPLIED QUALIFERS TO FD SINCE SAME MATRIX

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CALCIUM	190000	J1	140	LOD	1000	LOQ	ug/L	J	Ms
PHOSPHORUS	110	J J1	50	LOD	3000	LOQ	ug/L	J	RI, Ms OK

Sample ID: SCLmw-002-181002-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PHOSPHORUS	100	J	50	LOD	3000	LOQ	ug/L	J	RI

Method Category: METALS

Method: 6020A **Matrix: AQ**

Sample ID: SCLmw-002-181001-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	1.9	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
BARIUM	55	J1	0.95	LOD	3.0	LOQ	ug/L	J	Ms OK
COBALT	0.060	J	0.20	LOD	1.0	LOQ	ug/L	J	RI

Sample ID: SCLmw-002-181002-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	1.9	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
BARIUM	54		0.95	LOD	3.0	LOQ	ug/L	J	Ms OK
COBALT	0.070	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
ZINC	2.0	J	8.0	LOD	20	LOQ	ug/L	U	Mb OK

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116469-1 **Laboratory: TA DEN**

EDD Filename: 280-116469-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 7470A **Matrix: AQ**

Sample ID: SCLmw-002-181001-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code	
MERCURY	0.033	J	0.080	LOD	0.20	LOQ	ug/L	U	Mb	OK

Sample ID: SCLmw-002-181002-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code	
MERCURY	0.068	J	0.080	LOD	0.20	LOQ	ug/L	U	Mb	OK

Method Category: SVOA

Method: 8270D-SIM **Matrix: AQ**

Sample ID: SCLmw-002-181001-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code	
BENZO(A)PYRENE	0.012	U M J1	0.012	LOD	0.10	LOQ	ug/L	UJ	Ms	OK

Sample ID: SCLmw-002-181002-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

ADDED QUAL FOR BaP SINCE SAME MATRIX

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code	
CHRYSENE	0.017	J	0.013	LOD	0.11	LOQ	ug/L	J	RI	
FLUORANTHENE	0.012	J	0.013	LOD	0.11	LOQ	ug/L	U	Mb	OK
BaP	0.013	UM						UJ	Ms	**CONFIRMED

Method Category: SVOA

Method: 8330B **Matrix: AQ**

Sample ID: SCLmw-002-181001-GW **Collected:** 11/1/2018 10:45:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-NITROTOLUENE	0.21	U J1	0.21	LOD	0.41	LOQ	ug/L	UJ	Ms
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.17	J J1 M	0.12	LOD	0.21	LOQ	ug/L	J	RI

ADDED 2-NITROTOLUENE QUAL FOR SCLmw-002-181002-GW SINCE SAME MATRIX UJ Ms

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116469-1 **Laboratory: TA DEN**

EDD Filename: 280-116469-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: VOA

Method: 8260B *Matrix:* AQ

Sample ID: SCLmw-002-181002-GW *Collected:* 11/1/2018 10:45:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.41	J	0.80	LOD	5.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116469-1 **Laboratory: TA DEN**

EDD Filename: 280-116469-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
Lcs	Laboratory Control Spike Upper Estimation
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA CAN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116469-2						
Method: 7196A						
SCLmw-002-181001-GW	280-116469-3	AQ	N	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMS	280-116469-3MS	AQ	MS	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181001-GWMSD	280-116469-3MSD	AQ	MSD	METHOD	11/1/2018 10:45:00 AM	S2AVE
SCLmw-002-181002-GW	280-116469-2	AQ	FD	METHOD	11/1/2018 10:45:00 AM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116469-2
EDD Filename: 280-116469-2

Laboratory: TA CAN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	A
Surrogate/Tracer Spikes	N
Matrix Spike/Matrix Spike Duplicates	A
Laboratory Duplicates	N
Laboratory Replicates	N
Laboratory Control Samples	A
Compound Quantitation	SR
Field Duplicates	A
Field Triplicates	N
Field Blanks	N

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116469-2 **Laboratory: TA CAN**

EDD Filename: 280-116469-2 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 7196A

Matrix: AQ

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
SCLmw-002-181001-GW	HEXAVALENT CHROMIUM	J	0.0044	0.020	MRL	mg/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-116469-2 **Laboratory: TA CAN**

EDD Filename: 280-116469-2 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 7196A
Matrix: AQ

Analyte	Concentration (mg/L)		Sample RPD	eQAPP RPD	Flag
	SCLmw-002-181001-GW (TOT)	SCLmw-002-181002-GW (TOT)			
HEXAVALENT CHROMIUM	0.0044	0.020 U	200	50.00	No Qualifiers Applied

Data Qualifier Summary

Lab Reporting Batch ID: 280-116469-2 **Laboratory: TA CAN**

EDD Filename: 280-116469-2 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS

Method: 7196A *Matrix:* AQ

Sample ID: SCLmw-002-181001-GW *Collected:* 11/1/2018 10:45:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEXAVALENT CHROMIUM	0.0044	J	0.0030	MDL	0.020	MRL	mg/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116469-2 **Laboratory: TA CAN**

EDD Filename: 280-116469-2 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
RI	Reporting Limit Trace Value

LEIDOS
Laboratory Data Verification Checklist

Project: RVAAP

SDG No: J116538

Analyte Group: VOC, SVOC, PAH, Explosives, pest, PCB, Wet Chem, Metal

Sample Matrix: Water

EDD (Y/N):

Disposition of Data Package:

NCR No. (if applicable):

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)		Y
Check for LCS results (e.g., org. form III, inorg. form XII)		Y
Check for method blank results (e.g., org. form IV, inorg. form III)		Y
Check for MS/MSD results (e.g., inorg. form V)		Y
Check for laboratory duplicate results (e.g., inorg. form VI)		NA
Check for Method Calibration and Run Documentation		
organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	method linear range	Y
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	Y
other:	initial calibration data	Y
	continuing calibration data	Y
	method detection limits	Y
	sample run sequence	Y

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Brooke Francois Date: 12/19/18

QA Review By: Date: 01/02/2019

LEIDOS
Laboratory Data Package Detail Form

Project: RVAAP

SDG No: J116538

Analyte Group: VOC, SVOC, PAH, Explosives, pest, PCB, Wet Chem, Metal

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:
SCLmw-001-181001-GW	116538-1	W	VOC, SVOC, PAH, Explosives, pest, PCB, Wet Chem, Metals, Hex Chrom	
SCLmw-003-181001-GW	116538-2	↓	VOC, SVOC, PAH, Explosives, pest, PCB, Wet Chem, Metals, Hex Chrom	
FWGTB-181014-TB	116538-3	↓	~~SVOC, PAH, Explosives, pest, PCB, Wet Chem, Metals~~ VOC	
DA1tw-001-181001-GW	116538-6	↓	Explosives	

Comments:

FULL (LEVEL III) VALIDATION

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116538-1

Analysis: VOC

Method: 8260B

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: QSM & QAPP Guidance

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/19/18

QA Reviewed by: Richman Stark Date: 01/02/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: N o samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: All surrogates met control limits

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: All IS results met control limits

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MB and TB were free from contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: 10/29/18
VOC - Date(s) of continuing calibration: 11/15/18
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration:
SVOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected
Styrene	11/15/18			22.6	All ND, no qual

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks:

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-437714

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R results met control limits

FULL (LEVEL III) VALIDATION

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116538

Analysis: SVOCs, PAH

Method: 8270/SIM

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM & QAPP Guidance

Some results were qualified as non-detect due to blank contamination

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/19/18

QA Reviewed by: Richman Stark Date: 01/02/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
SCLmw-001-181001-GW				53							
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: No qual

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: All IS results met control limits

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs Yes / No
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)
11/5/18	MB 280-436346		Fluoranthene	0.0129 ug/L
	↓		Phenanthrene	0.0158 ug/L

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks:

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected
Fluoranthene	0.0129 ug/L	0.0645 ug/L	All SIM Samples
Phenanthrene	0.0158 ug/L	0.079 ug/L	All SIM Samples

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: ADR qualified appropriately

VII. Initial & Contining Calibration (VOC, SVOC)

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration:
VOC - Date(s) of continuing calibration:
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: 11/12/18 11/7/18
SVOC - Date(s) of continuing calibration: 11/14/18 11/8/18
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: All calibration results met control limits

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks: NA

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS 280-436342 LCS 280-436346

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS %R results met control limits

LEIDOS
Organic Data Review Checklist

Project: RVAAP

SDG No: J116538

Analysis: Pesticides/PCB

Method: 8081/8082

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

Overall Remarks: DoD QSM and QAPP Guidance

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/19/18

QA Reviewed by: Date: 01/02/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: SCLmw-001-181001-GW (280-116538-1) and SCLmw-003-181001-GW (280-116538-2).

The following samples required a sulfuric acid clean-up, via EPA Method 3665A, to reduce matrix interferences: SCLmw-001-181001-GW (280-116538-1) and SCLmw-003-181001-GW (280-116538-2).

The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: SCLmw-001-181001-GW (280-116538-1) and SCLmw-003-181001-GW (280-116538-2). The

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC - Soils - preserve or analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC, Pest., PCB - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC, Pest., PCB - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC		SVOC			Pest/PCB		
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	Date Collected	Date Extracted	Date Analyzed

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All Holding Times were met

IV. System Monitoring Compounds (SMC) Recoveries (VOC, SVOC, Pesticides, PCBs)

List SMC compounds with unacceptable recoveries:

Note: SMC formerly known as surrogates.

Deviations:

Sample #	VOC			SVOC B/N Compounds			SVOC Acid Compounds			Pest	PCB
	TOL	BFB	DCE	NBZ	FBP	TPH	PHL	2FP	TBP	TCX	DCB
QC Limits											

Actions:

1. If any SMC recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any SMC recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If SMC recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If SMC recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
5. Use professional judgement to qualify Pest/PCB results when SMC recoveries are >10%
6. Use professional judgement to qualify results when SMC recoveries have been diluted out of spec.
7. For SVOC, qualification of the data is required only when 2 or more SMC per fraction are not within control limits

Remarks: All surrogates met control limits

V. Internal Standards Performance (VOC, SVOC)

VOC internal standard area counts within -50% to +100% of standard (Y/N)
VOC internal standard retention times within ± 30 seconds of standard (Y/N)

SVOC internal standard area counts within -50% to +100% of standard (Y/N)
SVOC internal standard retention times within + 30 seconds of standard (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time varies more than 30 seconds, review the chromatographic profile for shifts and irregularities. Use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: NA

VI. Blanks

All blanks were reported per matrix per concentration level for each 12 hour period on each GC/ MS system used to analyze VOCs and SVOCs (Yes) / No

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MBs were free from contamination

VI. Blanks (continued)

Calculate action levels based on 10X the highest blank concentration of "common laboratory solvents", VOCs (methylene chloride, acetone, toluene, 2-butanone, cyclohexane) or SVOCs (phthalates), and 5X the highest blank concentration for all other VOC, SVOC, Pesticides, and PCB compounds. Sample weights, volumes, and dilution factors must be taken into account when applying the 5X and 10X criteria. This allows the total amount of contaminant present to be considered.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If gross contamination exists in blanks (i.e.,, saturated peaks by GC/ MS), all affected compounds in the associated samles should be qualifed as unusable (R) due to interference.
5. If blanks were not analyzed per matrix per concentration level for each 12 hour period on each GC/MS system used to analyze VOCs and SVOCs use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (~~VOC, SVOC~~) Pesticides

GC/MS instrument performance checks (BFB / DFTPP) Acceptable Y or N
All compounds must have and RRF > 0.01, %RSD < 30, and %D < 25

VOC - Date of initial calibration: _____
VOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

SVOC- Date of initial calibration: _____
SVOC - Date(s) of continuing calibration: _____
Was the 12 hour critieria met? Y or N

Deviations:

Compound	Date	RRF	%RSD	%D	Samples Affected
Toxaphene (average)	10/13			32.6	Average %D is >20% for ICV (both primary and secondary)
Methoxychlor	11/23			21	Secondary CCV passed)
Endosulfan sulfate				24.3	
Endrin Ketone				23.7	
Endosulfan sulfate	11/23			21.8	Secondary CCV passed 116538-1, 2
Endrin	11/24			22.4	Secondary CCV passed 116538-1, 2
Endrin aldehyde				24.2	
Methoxychlor				24.2	
Endosulfan sulfate				29.5	
Endrin Ketone				28.3	
Toxaphene	11/24			23.88	Secondary CCV passed 116538-1, 2

Actions:

1. If any compound has an intial or continuing RRF of < 0.01, qualify positive results as estimated (J)
2. If any compound has an intial or continuing RRF of < 0.01, qualify non-detects as unusable (R)
3. If any compound has a %RSD >30 or a %D >25, qualify positive results as estimated (J)
4. If any compound has a %RSD >40 or a %D >40, qualify non-detects as estimated (UJ)
5. If BFB or DFTPP mass assignment / ION abundance criteria are all associated data as unusable (R).
6. If samples were analyzed outside the 12 hour BFB or DFTPP performance check time period, qualify the affected sample data as estimated (J/UJ).
7. If separate calibration for water and soil were not performed, use professional judgement to evaluate the data. Data may be rejected (R).
8. If calibrations were not completed within the 12 hour criterion, qualifty all associated data as estimated (J/UJ). If the 12 hour criterion was grossly exceeded, reject all associated data (R).

Remarks: Average Toxaphene CCV was within limits for primary and secondary 11/23

Results reported from secondary column, no qual. Toxaphene results were non-detect and no analytes qualified based on ICV

VIII. Initial & Continuing Calibration (Pesticides, PCBs)

Linearity evaluation, are %RSD <20? Yes or No

Is the RPD between calibration factors ≤25? Yes or No

Are multicomponent calibration data provided for each analysis date? Yes or No

Is the difference between columns check ≤ 25%D? Yes or No

Are 4, 4'- DDT and endrin breakdown (PEM) ≤ 20% and combined breakdown ≤ 30% Yes or No

Deviations:

Compound	%RSD	RPD	Samples Affected
PCB 1248 (ICV)	20.1		Average peak %D was calculated All ND no qual
PCb 1262 (ICV)	21.6		Average peak %D was calculated All ND no qual

Actions:

1. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. If RPD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If breadkwon criteria are not met, positive 4, 4'-DDT and endrin should be qualified as estimated (J). And non-detects should be rejected (R).

Remarks:

If average PCB peaks were within control limits, no qualification was required.

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC	SVOC	Pest	PCB
percent recovery (%R)	70-130	45-135	40-140	40-140
relative percent difference (RPD)	<30	<50	<50	<50

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ) in the unspiked sample.
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
percent recovery (%R)

VOC	SVOC	Pest	PCB
80-120	60-120	50-130	50-130

Laboratory LCS Identifications: LCS/D 280-436649 LCS/D 280-436649

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied
Toxaphene		150	All ND, no qual

Actions:

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS/D %R and RPD results met control limits

LEIDOS
GC and LC Organic Data Review Checklist
(Explosives, PAHs, Herbicides, GRO/DRO, Methanol, etc.)

Project: RVAAP

SDG No: J116538

Analysis: Explosives, Nitroguanidine

Method: 8330B

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Analytical Surrogate Recoveries
Analytical Holding Times	MS/MSD Recoveries and Differences
Sample Preservation	LCS Recoveries
Method Calibration	Re-analysis and Secondary Dilution
Method and Project Blanks	

Overall Remarks: DoD QSM and QAPP Guidance

No sample results were qualifeid

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/19/18

QA Reviewed by: Date: 01/02/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: Missed holding times were not mentioned in the narrative for nitroguandine. ~~Results were qualified~~

NOTE: hold time for nitroguanidine specified in QAPP as 7 days; the lab provided documentation in their ELAP approved SOP of extended hold time:

"17.2. There are no regulatory holding times for nitroguanidine. The holding time used for direct aqueous injection is 47 days for aqueous samples, and 14 days for soils."

Results were not qualified

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

VOC types - Waters - unpreserved: aromatic within 7 days, non-aromatic within 14 days of sample collection
VOC types - Waters - preserved: aromatic and non-aromatic within 14 days of sample collection
VOC types - Soils - preserve/analyze within 48 hours of sample collection; analyze within 14 days of preservation

SVOC types - Waters - extract within 7 days of sample collection, analyze within 40 days of extraction
SVOC types - Soils - extract within 14 days of sample collection, analyze within 40 days of extraction

Deviations:

Sample #	VOC types		SVOC types			Notes:
	Date Collected	Date Analyzed	Date Collected	Date Extracted	Date Analyzed	

Actions:
1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: Holding times for Nitroguanidine were not met per UFP QAPP or DoD requirements, however the laboratory noted that the samples were within method holding time and no qualification is required. ~~All results were qualified~~

IV. Initial & Continuing Calibration

A blank and five standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be ≥ 0.995
The RSD of the calibration factor or the relative response factor (RRF) must be ≤ 20%
Continuing calibration %D must be within ± 15%

Deviations:

Compound	Correlation Coefficient	% RSD	%D	Samples Affected
Tetryl			20.1	CCV 280-436836/43 11/9 116538-1, 2, 6 All ND, no qual

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If %RSD criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
3. If %D criteria is not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)

Remarks:

V. Surrogate Recoveries

List surrogate compounds with unacceptable recoveries:

Deviations:

Sample #	Surrogate ID	% R	QC Limits	Samples Affected

Actions:

1. If any surrogate recovery is <10%, qualify all positive results in associated fractions as estimated (J)
2. If any surrogate recovery is <10%, qualify all nondetects in associated fractions as unusable (R)
3. If surrogate recoveries fall between 10% and the lower recovery limit, qualify results as estimated (J/UJ)
4. If surrogate recoveries fall above the upper recovery limit, qualify positive results as estimated (J)
6. Use professional judgement to qualify results when surrogate recoveries have been diluted out of spec.

Remarks: Surrogates were within control limits

VI. Blanks

Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Lab ID #	Fraction	Compound	Conc. (ppb)

Remarks: MBs were free from contamination

VI. Blanks (continued)

Calculate action levels based on 5X the highest blank concentration of any given compound
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: _____

VII. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:

	VOC types	SVOC types
percent recovery (%R)	70-130	45-135
relative percent difference (RPD)	<30	<50

Project Sample(s) Spiked: SCLmw-001-181001-GW

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all positive values in the unspiked sample as estimated (J)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
4. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
5. Use professional judgement for qualification of data for unspiked compounds

Remarks: MS/MSD %R and RPD for Nitroguanidine were within control limits

VIII. Laboratory Control Sample Information

General LCS Criteria:

	VOC types	SVOC types
percent recovery (%R)	80-120	60-120

Laboratory LCS Identifications: LCS 280-436459 LCS 320-259714

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R results met control limits

Leidos - Project Specific
Perchlorate by Mass Spectrometry Methods Data Verification/Validation

Project: RVAAP

SDG No: J116538

Analysis: Perchlorate

Method: 6860

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Isotope Ratios
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution
Mas Tuning	

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

* **If this SDG requires full validation; recalculations from the raw data are required where noted in the verification/validation checklist. Attach all calculations at the end of the validation checklist.**

Data verification and data validation are essentially identical, with the exception that validation requires results to be recalculated from the raw data.

Remarks: QSM and QAPP Guidance

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded

Verification/Validation by: Brooke Francis

Date: 12/19/18

QA Reviewed by: Richman Stark

Date: 01/02/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Waters - Cool 4°C with headspace to reduce anaerobic biodegradation; analysis within 28 days of sample collection

Soils - Cool 4°C ; extraction within 28 days of sample collection; analysis within 18 days of sample extraction

Deviations:

Sample #	Date Collected	Date Analyzed	Comments

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: All holding times were met

IV. $^{35}CL/^{37}CL$ Isotope Ratios

List any field samples, field QC samples, or laboratory QC samples where the $^{35}CL/^{37}CL$ Isotope ratio does not fall within 2.3 to 2.8:

Deviations:

Sample #	Provide the ratio below:

Sample #	Provide the ratio below:

Actions:

1. If the $^{35}CL/^{37}CL$ isotope ratio does not meet acceptance criteria the sample must be reanalyzed.
2. If any sample is reported with an unacceptable $^{35}CL/^{37}CL$ isotope ratio, the results must be rejected (R)

Remarks:

The ion ratio is outside of control (2.30-3.80) due to instrument drift caused. The target analytes are in control in the associated QC sample indicating positive identification despite the ion ratio failure.

V. Internal Standards Performance

Internal standard areas must be between ± 50% of the average areas from the initial calibrations (Y/N)
Relative retention times must be within 0.98-1.02 (Y/N)

Deviations:

Sample #	IS Affected	Area Counts	Acceptable Range	RT	Std. RT Value

Actions:

1. If area counts are outside limits, qualify positive results associated with that IS as estimated (J)
2. Non-detected compounds quantitated using an IS area count >100% should not be qualified
3. Non-detected compounds quantitated using an IS area count <50%, qualify as estimated (UJ)
4. If extremely low area counts are reported (<50% of the lower limit), qualify non-detects as unusable (R)
5. If an IS retention time is outside acceptance criteria use professional judgement to qualify the data estimated (J/UJ) or unusable (R)

Remarks: _____

VI. Blanks

A method blank was reported for each aqueous analytical batch and one method blank was reported for each soil extraction batch? (Y/N)
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks:

Date:	Sample ID #	Compound	Conc.

Associated Project Blanks (e.g., equipment rinsates, trip blanks, etc.)

Date	Sample ID #	Compound	Conc.

Remarks: All blanks were free from contamination

VI. Blanks (continued)

Calculate the action level based on 5X the highest blank concentration

Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria.

Deviations:

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If contamination exists in method blanks < 1/2 LOQ, samples must be re-extracted and reanalyzed. Use professional judgement to qualify the data if this occurs.
5. If method blanks were not analyzed use professional judgement to qualifty data. Data may be rejected (R).

Remarks: _____

VII. Initial & Contining Calibration (VOC, SVOC)

Mass Calibration Acceptable? (Y/N)

Date of initial calibration: _____
r>0.995? (Y/N)
ICV ≤ 15% drift? (Y/N)

Date(s) of continuing calibration: _____
CCV analyzed at beginning of analytical sequence and after every 10 field sample? (Y/N)
CCV ≤ 15% drift? (Y/N)

LOQ Standard ≤ 30% drift? (Y/N)
LOQ Standard analyzed daily? (Y/N)

Deviations:

Compound	Date	r value	%Drift	Samples Affected

Actions:

* **If this SDG requires full validation; recalculate the r value, a CCV% Drift, and a LOQ % Drift from the raw data. Attach all calculations at the end of the validation checklist.**

1. If initial calibration curve criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
2. Only evaluate the ICV if it brackets field samples. If the ICV does bracket field samples, then CCV actions apply
3. If a CCV is above the upper control limit, qualify detects as estimated (J). Nondects require no action.
4. If a CCV is below the lower control limit but > 30% recovery, qualify results as estimated (J/UJ).
5. If a CCV is ≤ 30% recovery, qualify detects as estimated (J) and nondetects as rejected (R)
6. If CCVs were not analyzed at the proper frequency, use professional judgement.
7. If an acceptable mass calibration was not performed, then all data should be rejected (R)
8. If a LOQ standard is above the upper control limit, qualify detects as estimated (J). Nondects require no action.
9. If a LOQ standard is below the lower control limit but > 10% recovery, qualify results as estimated (J/UJ).
10. If a LOQ standard is ≤ 10% recovery, qualify detects as estimated (J) and nondetects as rejected (R)
11. If LOQ standards were not analyzed at the proper frequency, use professional judgement.

Calibration results met control limits

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:
percent recovery (%R) 80-120% recovery
relative percent difference (RPD) 20% RPD

Project Sample(s) Spiked: _____

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ).
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

* **If this SDG requires full validation; recalculate at least one % recovery and one % RPD from the raw data. Attach all calculations at the end of the validation checklist.**

Remarks: NA

X. Laboratory Control Sample Information

General LCS Criteria:
Percent recovery (%R) = 80-120% recovery
RPD if LCSD performed = 20% RPD

Laboratory LCS Identifications: LCS 280-437280

Deviations:

Compound	Date	%R	Samples Affected/Qualifiers Applied

Actions:

*** If this SDG requires full validation; recalculate at least one % recovery and one % RPD (if LCSD was performed) from the raw data. Attach all calculations at the end of the validation checklist.**

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify all data for that analyte as unusable (R).
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).
4. If more than half the compounds in this LCS are not within recovery criteria, then qualify associated detected compounds as estimated (J).
5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS %R results met control limits

FULL (LEVEL III) VALIDATION

LEIDOS
Metals Data Review Checklist

Project: RVAAP

SDG No: J116538

Analysis: Metals/Mercury

Method: 6010, 6020, 7470

Laboratory: Test America

Matrix: water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on an examination of the following:

Case Narrative	MS/MSD Recoveries and Differences
Analytical Holding Times	Duplicate Relative Percent Differences
Sample Preservation	ICP Serial Dilution
Method Calibration	Furnace Atomic Absorption QC
Method and Project Blanks	Re-analysis and Secondary Dilution
LCS Recoveries	Internal Standard Performance (if applicable)

Project specific QA/QC or contract requirements may take priority over validation criteria in this proceudre.

Overall remarks: DoD QSM and QAPP Guidance

Some results were qualified as non-detect due to blank contamination

Some results were qualified as estimated due to calibration discrepancies

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooks Francis Date: 12/19/18

QA Reviewed by: Richman Stark Date: 01/02/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: Low level calibration discrepancies were not noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Metals - Waters - preserved to pH<2, 180 days from sample collection
Metals - Soils - 180 days from sample collection
Mercury - Waters - preserved to pH<2, 28 days from sample collection
Mercury - Soils - 28 days from sample collection

Deviations:

Sample #	Metals				Mercury			
	Date Collected	Date Analyzed	Days >HT	pH Check	Date Collected	Date Analyzed	Days >HT	pH Check

Actions:

1. If preserved samples exceed holding time, qualify all associated results as estimated (J/UJ).
2. If unpreserved samples exceed holding time, qualify all associated results as unusable (R).
3. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
4. If water samples are not acidified, use professional judgement. Minimally, qualify data as estimated (J) and non-detects unusable (R).
5. If soil samples exceed holding time, use professional judgement to qualify data.

Remarks: All holding times were met

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.)

Initial calibration linearity criteria is r ≥ 0.995
ICV and CCV criteria are ± 10% recovery, low level check standard allowed ± 30%
ICP inter-element check standard criteria ± 20%

Deviations: Brooke:

Element	Date	Intial Calib.	ICV/ CCV	%R	Samples Affected
Sodium	11/7 4:43		CCVL	121%	None Bracket
Sodium	11/7 5:54		CCVL	122%	116538-1, 2
Magnesium	11/7 9:38		ICVL	126%	None Bracket analyte not reported from sequence
Barium	11/13 13:00		ICVL	121%	~~None Bracket~~ ICV, applies to all
Barium	11:14 1:17		CCVL	125%	None Bracket
Manganese	11/14 1:59		CCVL	124	None Bracket rerun
Nickel	11/14 2:49		CCVL	70%	116538-1, 2
Beryllium	11/14 3:38		CCVL	127%	116538-1, 2
Vanadium	↓		↓	123	116538-1, 2

Actions:

1. If any elements initial claibration linearity is <0.995, qualify the data as estimated (J/UJ)
2. If any elements initial claibration linearity is <0.95, qualify the data as unusable (R)

3a. If any elements ICV or CCV recovery is <90%, qualify the data as estimated (J/UJ)

3b. If any elements ICV or CCV recovery is > 110%, qualify results ≥ MDL as estimated (J). Do not qualify non-detects.

4a. If any elements ICV or CCV recovery is <75%, qualify the data as unusable (R)

4b. If any elements ICV or CCV recovery is > 125% qualify positive results as estimated (J) or non-detects as unusable (R).

4c. If any element ICV or CCV recovery is ≥ 160%, qualify positive results ≥ MDL as unusable (R). Do not qualify non-detects.

5a. If any elements CRI recovery is 50 - 69% (30 - 49% for Sb, Pb, Tb), qualify results ≥ MDL (but < 2 times CRQL) as estimated (J/UJ) and results > 2 times CRQL are not qualified.

5b. If any elements CRI recovery is < 50% (<30% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) and non-detects as unusable (R). Results > 2 times CRQL are estimated (J).

5c. If any elements CRI recovery is > 130% but < 180% (>150% but ≤ 200% for Sb, Pb, Tl), qualify results ≥ MDL (but < 2 times CRQL) as esimated (J). And non-detects and results ≥ 2x CRQL are not qualified.

5d. If CRI or (R) > 180% (> 200% for Sb, Pb, Ti), qualify results that are ≥ MDL as unusable (R).

Remarks: _____

IV. Initial & Contining Calibration (ICP, GFAA, CVAA, etc.) (continued)

Analytical Sequence and MS Tune	(Y/N)
1. Were the appropriate number of ICP standards used?	Y
2. Were the appropriate number of AA standards used?	Y
3. Was calibration performed and documented at the beginning of each run?	Y
4. Were calibration check standards run at 10% frequency or every two hours?	Y
5. Were low level standard checks analyzed at approximately 2X the PQL?	Y
6. Was ICP-MS mass calibration within 0.1 AMU?	Y
7. Was ICP-MS % RSD of the aboslute signals for all analytes < 5%?	Y

Deviations:

Element	Deviation	Samples Affected	
Beryllium	79%	CCVL 11/14 15:14	116538-2
Silver	71%		
Barium	76%	CCVL 11/14 16:13	116538-1, 2
Beryllium	77%	CCVL 11/14 16:54	116538-1
Vanadium	128%		

Actions:

1. If instrument calibration is questionable, use professional judgement, qualify the data as estimated (J/UJ)
2. If instrument calibration documentation can not be obtained or is inadequate, qualify the data as unusable (R)
3. If mass calibration for ICP-MS was not within 0.1 AMU qualify analyte results as estimated (J/UJ)
4. If % RSD for ICP-MS was > 5% for any analyte in the tuning solution, qualify associated results as estimated (J/UJ).

Results:

V. Blanks (ICB, CCB, Method Blank, Equipment Rinsate Blank)

A. Blank Results

If the blank level is > CRQL for any analyte, check that the analyte's concentration in the samples is > 10 times the blank value. The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account when applying the action level.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
CCB 11/7 4:41	Sodium	197		None Bracket
CCB 11/7 5:16	Sodium	185	1850 ug/L	116538-1, 2 All >AL
	Aluminum	22.4	224 ug/L	
CCB 11/7 5:51	Sodium	168	1680 ug/L	116538-1, 2 All >AL
ICB 11/13 12:56	Vanadium	1.20		None Bracket
CCB 11/13 22:30	Antimony	0.485		None Bracket
	Vanadium	0.558		
CCB 11/14 1:14	Vanadium	1.42		None Bracket
CCB 11/14 1:55	Antimony	0.506		None Bracket
	Vanadium	1.52		
CCB 11/14 2:45	Antimony	0.495	4.95 ug/L	116538-1, 2 reason code F07
	Vanadium	1.23	12.3 ug/L	All ND, no qual

If additional space is required, use next page

Actions:

1. For blank results ≥ MDL but ≤ CRQL, qualify samples ≥ MDL but < CRQL as CRQL U.
   Use proffessional judgement to qualify sample results exceeding the CRQL.

2a. If blank results are > CRQL: For sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < 10 times the blank qualify results as unusable (R) or estimated (J). No action is taken for sample results ≥ 10 times the blank levels.

2b. If ICB/ CCB results are > CRQL; for sample values ≥ MDL but ≤ CRQL, qualify results as CRQL U; for sample values > CRQL but < blank results, qualify results as not detected (U) at the level of the blank or unusable (R). Use professional judgement for sample results > blank results.

Remarks: _____

V. Blanks (continued)

The highest blank concentration of observed elements is the action level.
Sample weights, volumes, and dilution factors must be taken into account.
Blank results given in ug/L must be converted to mg/kg to compare them with soil sample results.
use the following equation:

ug/L x V/W x 1L/1000mL x 1000g/1kg x 1mg/1000ug = mg/kg

where: V = volume of samples digest solution (usually 200 mL)
W = weight of sample digested (usually 1 g)

Deviations:

Blank ID	Element	Max. Conc. Detected	Action Level	Samples Affected
CCB 11/14 3:34	Antimony	0.599	5.99 ug/L	116538-1, 2
	Vanadium	1.62	16.2 ug/L	All ND, no qual
ICB 11/14 12:58	Vanadium	0.762		None Bracket
CCB 11/14 15:10	Antimony	0.537		None Bracket
CCB 11/14 16:09	Antimony	0.484	4.84 ug/l	116538-1, 2
	Vanadium	2.33	23.3 ug/L	All ND, no qual
CCB 11/14 16:50	Antimony	0.5	5.0 ug/L	116538-1, 2
Highest CCB	Mercury	0.0350	0.35 ug/L	116538-1, 2
MB 436445	Sodium	129 ug/L	1290 ug/L	116538-1, 2 All >AL
MB 437002	Zinc	2.43 ug/L	24.3 ug/L	116538-1, 2
MB 437885	Mercury	0.0317 ug/L	0.317 ug/L	116538-1, 2

V. Blanks (continued)

B. Frequency Requirements (Y/N)

1. Was a method (preparation) blank analyzed for each matrix? Y
2. Was a method blank processed for every analytical batch (20 samples)? Y
3. Was a calibration blank analyzed at 10% frequency or every two hours? Y

Deviations:

Element	Deviation	Samples Affected

Remarks:

C. Baseline Shift Evaluation

List the highest negative blank concentration for each analyte observed in laboratory or project blanks.

Deviations:

Blank ID	Element	Max. Neg Conc.	Action Level	Samples Affected

Actions:

1. If the absolute value of the maximum negative blank result is > the CRQL, qualify positive results as estimated (J) and non-detects as estimated (UJ).

Remarks:

VI. Laboratory Control Sample Evaluation

All LCS recovery criteria are set at 80-120%
An LCS must be analyzed for each matrix and for each digestion batch or set of twenty samples

Deviations:

Element	Date	%R	Matrix	Samples Affected

Actions:

1. If any element's LCS recovery is >120%, qualify positive results as (J).
2. If any element's LCS recovery is 50-79%, qualify positive results as (J) and non-detect results as (UJ)

3a. If any element's LCS recovery is <50%, qualify positive results as (J) and non-detect results as (R)
3b. If the LCS recovery is > 150%, qualify all results as unusable (R).

4. For soil LCS recovery > upper limit, qualify samples results ≥ MDL as estimated (J).
5. For soil LCS recovery < lower limit, qualify results ≥ MDL as esimated (J) and non-detected estimated (UJ).
6. Use professional judgement to qualify data if the LCS frequency criteria are not met.

Remarks: All LCS/D %R and RPD results met control limits

VII. Matrix Spike Evaluation

All MS recovery criteria are set at 75-125%
An MS must be analyzed for each matrix and for each digestion batch or set of twenty samples
Verify that a field blank or PE sample was not used for spiked sample analysis
Verify that a post-digestion spike was analyzed for those anlytes where the pre-digestion spike recovery is outside control limits and the sample result is < 4 times the spike added.
Project Sample(s) Spiked: _____

Deviations:

Element	Spiked Sample Result	Sample Result	Spike Amount	%R	Samples Affected

Actions:

1. If the sample concentration exceeds the spiking level by a factor of 4X or more, do not qualify the data
2. If the spike recovery is >125%, qualify all positive values as (J).
3. If the spike recovery is between 30-74%, qualify positive values as (J) and non-detect values as estimated (UJ)
4. If the spike recovery is <30%, qualify positive values as (J) and non-detects are qualified unusable (R)
if the post-digestion spike recovery is < 75% (or none was performed); non-detects are qualified as estimated (UJ)
If the post-digestion spike reocvery is ≥ 75%. There is no post-digestion spike performed for mercury.
5. Qualify all samples of similar matrix to the spiked sample in the same manner
6. Use professional judgement to qualify data if the MS frequency criteria are not met.
7. Use professional judgement for qualification of data for unspiked elements

Remarks: NA

VIII. Laboratory Duplicate Evaluation

Duplicate relative percent difference (RPD) for water is 20% (both results > 5 times CDRL) or < CRDL difference (if either result is < 5 times CRDL) and RPD for soil is 35% (if both results are > 5 times CRDL or < 2 times CRDL if either result is < 5 times CRDL).
When duplicate sample values are both less than the reporting level they are considered acceptable
When dupicate sample values are within 5X the reporting level they are acceptable if their absolute difference is within 3X the reporting level
Verify that a field blank on PE sample was not used for duplicate analysis.

Deviations: ____

Element	Sample #	Duplicate #	RPD	Samples Affected

Actions:

1. If an element's RPD is >20% (water) / >35% (soil), qualify positive results as (J) and non-detect results as (UJ)
2. For low concentrations, if an element's duplicate absolute difference is > 3X the reporting level, qualify positive results as (J) and non-detect results as (UJ)
3. Use professional judgement to qualify data if the duplicate frequency criteria are not met.

Remarks: NA

IX. Inductively Coupled Plasma (ICP) Serial Dilution Analysis

Verify that a field blank or PE sample was not used for serial dilution.
Serial dilution of positive results are performed when values exceed 50X the IDL
Results from serial dilutions should agree within 10% of the original undiluted analysis

Deviations:

Element	Sample #	Sample Result	Serial Dilution	%D	Action

Actions:

1. If the serial dilution %D is >10 and the analyte results are >50X the IDL, qualify all positive results as estimated (J) and non-detects as estimated (UJ).

Remarks: NA

X. Furnace Atomic Absorption QC

A. Duplicate Precision (Y/N)

1. Were duplicate injections performed for all samples? _____
2. Were one point analytical spikes performed for all samples? _____
3. Did duplicate injections agree within ± 20%? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If duplicate injection results are outside ± 20%, qualify positive results as (J) and non-detect results as (UJ)

Remarks: NA

B. Post Digestion Spike Recoveries (Y/N)

1. Did post digestion spike recoveries meet an 85-115% recovery criteria? _____
2. If spike recoveries did not meet recovery criteria were samples analyzed by MSA? _____
3. If MSA was used to analyze samples, was its' correlation coefficient ≥ 0.995? _____

Deviations:

Element	Deviation	Sample Affected

Actions:

1. If post digestion spike recoveries are >115%, qualify positive results as (J) and non-detect results as (U)
2. If post digestion spike recoveries are 11-84%, qualify positive results as (J) and non-detect results as (UJ)
3. If post digestion spike recoveries are <10%, qualify positive results as (R) and non-detect results as (R)
4. If MSA was used to quantitate values and the correlation coefficient was <0.995, qualify data as (J or UJ)
5. If MSA was used to quantitate values and the correlation coefficient was <0.95, qualify data as (R)

Remarks: NA

XI. Inductively Coupled Plasma (ICP) Interference Check Sample Evaluation

Interference check samples should be analyzed at the beginning and end of each analysis run, or at a minimum of twice per 8 hour working shift.
Results for the ICS solution AB must fall within control limits of 20% for analytes included in the solution.
Evaluate the ICS A solution raw data for results with an absolute value ≥ MDL for analytes that are not present in the ICS A solution.

Deviations:

Element	Sample #	Sample Result	Interferent Result	Action

Actions:

1. If the ICS AB %R for an analyte is > 120%, qualify sample results ≥ MDL as estimated (J) and non-detects should not be qualified.
2. If the ICS AB %R for an analyte is 50-79%, qualify sample results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ).
3. If the ICS AB %R for an analyte is <50%, qualify all sample results that are ≥ MDL and all non-detects as as unusable (R).
4. If results ≥ MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents and with analyte concentration that approximate those levels in the ICS A, sample results ≥ MDL should be qualified as estimated (J) and non-detects should not be qualified.
5. If negative results with absolute values > MDL are found for analytes not present in the ICS A solution, then in samples with comparable or higher levels of interferents, affected sample results > MDL should be qualified as estimated (J) and non-detects (UJ).

Remarks: The interference check standard solution (ICSA) associated with batch 280-437566 had results for one or more elements greater than the limit of detection (LOD). The initial ICSA result(1.5 ppb) was greater than the LOD for Manganese. Results were analyzed against the specific ICS were within control limits.

FULL (LEVEL III) VALIDATION

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116538

Analysis: Cyanide, Sulfide, Nitrate/Nitrite, Sulfate, Alkalinity

Method: 9012, 9034, 9056, 2320

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: DoD QSM and QAPP Guidance

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Francis Date: 12/19/18

QA Reviewed by: Date: 01/02/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: One sulfate result was reported at a dilution

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be ≥ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: All calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected
Sulfate	0.484 mg/L	4.84 mg/L	ICB 12:29 All samples >AL
Alkalinity	3.89 mg/L	38.9 mg/L	CCB 19:38 All samples > AL
Alkalinity	3.62 mg/L	38.2 mg/L	CCB 21:01 All samples > AL
Nitrite	0.0961 mg/L	0.961 mg/L	MB 436181 All ND
Alkalinity	3.21 mg/L	32.1 mg/L	MB 437553 All samples > AL

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks:

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: All LCS %R results met control limits

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected
Sulfide			37%RPD 116538-2 ND, no qual

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: All MS/MSD %R results met control limits

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: All duplicate results met control limits

LEIDOS
Inorganic Data Review Checklist
(Chloride, Fluoride, Nitrate/Nitrite, Sulfate, Sulfide, Phosphate, etc.)

Project: RVAAP

SDG No: J116538-3

Analysis: Hexavalent Chromium

Method: 7196A

Laboratory: Test America

Matrix: Water

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on an examination of the following:

Case Narrative	Method and Project Blanks
Analytical Holding Times	Matrix Spike Recoveries
Sample Preservation	Duplicate Differences
Method Calibration	LCS Recoveries
	Re-analysis and Secondary Dilution

Overall Remarks: Laboratory Limits, not DoD Accredited but approved by the Client, see FCR if needed

No sample results were qualified

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded
"=", compound properly identified and value positive

Reviewed by: Brooke Frances Date: 12/19/18

QA Reviewed by: Richman Stark Date: 01/02/2019

I. Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: No additional discrepancies were noted

II. Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: No samples were reanalyzed or diluted

III. Holding Times

Sample should be preserved and analyzed according to the appropriate analytical method
In general the following preservations and holding times for waters can be applied:

Sulfate, 4 degress C, 28 days
Sulfide, 4 degrees C, pH ≥9 with zinc acetate/sodium hydroxide, 7 days
Bromide/Chloride/Fluoride, no preservative required, 28 days
Nitrate/Nitrite or Ammonia, 4 degrees C, pH ≤ 2 with sulfuric acid, 28 days
Nitrate or Nitrite, 4 degrees C, 48 hours
Alkalinity, 4 degrees C, 14 days
TDS/TSS, 4degrees C, 7 days
Phosphate (total), 4 degrees C, pH < 2 with sulfuric acid, 28 days
Hexavalent Chromium, Cool 4 degress C, water- 24 hours, soil - 30 days

Deviations:

Sample #	Analyte	Date Collected	Date Extracted	Date Analyzed	Notes:

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)
3. If samples were not properly preserved, use professional judgement to qualify the data

Remarks: All holding times were met

IV. Initial & Continuing Calibration

A blank and at least three standards should be analyzed, with one of the standards being within 2X the MDL
Correlation coefficients must be $\geq$ 0.995
Initial calibration check recoveries must be within 90-110%
Continuing calibration check recoveries must be within 85-115%

Deviations:

Compound	Correlation Coefficient	ICV/ CCV	%R	Samples Affected

Actions:

1. If any compounds initial calibration linearity is <0.995, qualifiy the data as estimated (J/UJ)
2. If any compounds initial calibration linearity is <0.95, qualify the data as unusable (R)
3. If ICV or CCV criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ)
4. If ICV or CCV recoveries fall below 50%, qualify results as unusable (R)

Remarks: Calibration results met control limits

V. Blanks (Method Blanks and Project Blanks)

An analytical method blank must be analyzed with each batch of samples
Calculate action levels based on 5X the highest blank concentration of any given analyte
Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria

Deviations:

Analyte	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected

Actions:

1. If analyte results exceed the action levels, the data are not qualified
2. If analyte results are below the required reporting level, report results as non-detect (U) at the reporting level
3. If the analyte is detected above the reporting level, but below the action level, qualify as not-detected (U)

Remarks: MB and CCBs were free from contamination

VI. Laboratory Control Sample Information

Each analyte's LCS % recovery must be within the control limits established by the laboratory
In general LCS % recoveries should all be within 85-115%

Deviations:

Analyte	Date	%R	Samples Affected/Qualifiers Applied

Actions:

1. If the LCS recovery is outside limits but >10%, qualify all positive values as esimated (J)
2. If the LCS recovery is outside limits but >10%, qualify non-detect values as estimated (UJ)
3. If the LCS recovery is <10%, qualify all data for that analyte as unusable (R)
4. Use professional judgement for qualification of data for compounds with no LCS information

Remarks: LCS %R was within control limits

VII. Matrix Spike Information

Each analyte's Matrix Spike % recovery should be within the laboratory established control limits
In general matrix spike % recoveries should all be within 75-125%

Deviations:

Analyte	%R	%R Limits	Samples Affected

Actions:

1. If the spike recovery is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. If the spike recovery is <10%, qualify non-detect values as unusable (R)
3. Use professional judgement to qualify additional samples in the analytical group based on MS results
4. Use professional judgement for qualification of data for unspiked analytes

Remarks: NA

VIII. Laboratory Duplicate Information

Each analyte's RPD should be within the laboratory established control limits
In general RPDs should all be within 20%

Deviations:

Analyte	RPD	RPD Limits	Samples Affected

Actions:

1. If the RPD is outside limits, qualify all values in the unspiked sample as estimated (J/UJ)
2. Use professional judgement to qualify additional samples in the analytical group based on RPD results
3. Use professional judgement for qualification of data when laboratory duplicates were not analyzed

Remarks: NA

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

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:15	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/15/18 18:15	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/15/18 18:15	1
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		11/15/18 18:15	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		11/15/18 18:15	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/15/18 18:15	1
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/15/18 18:15	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/15/18 18:15	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/15/18 18:15	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/15/18 18:15	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/15/18 18:15	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/15/18 18:15	1
Acetone	6.4	U M U	10	6.4	1.9	ug/L		11/15/18 18:15	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:15	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:15	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/15/18 18:15	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:15	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/15/18 18:15	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/15/18 18:15	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		11/15/18 18:15	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/15/18 18:15	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:15	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/15/18 18:15	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:15	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/15/18 18:15	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:15	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:15	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:15	1
Methylene Chloride	**0.33**	**J**	5.0	0.80	0.32	ug/L		11/15/18 18:15	1
Styrene	0.40	U Q U	1.0	0.40	0.17	ug/L		11/15/18 18:15	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/15/18 18:15	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:15	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/15/18 18:15	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:15	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/15/18 18:15	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/15/18 18:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*11/15/18 18:15*	*1*
4-Bromofluorobenzene (Surr)	*97*		*85 - 114*		*11/15/18 18:15*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 119*		*11/15/18 18:15*	*1*
Toluene-d8 (Surr)	*98*		*89 - 112*		*11/15/18 18:15*	*1*

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:35	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/15/18 18:35	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/15/18 18:35	1

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

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		11/15/18 18:35	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		11/15/18 18:35	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/15/18 18:35	1
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/15/18 18:35	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/15/18 18:35	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/15/18 18:35	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/15/18 18:35	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/15/18 18:35	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/15/18 18:35	1
Acetone	6.4	U M U	10	6.4	1.9	ug/L		11/15/18 18:35	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:35	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:35	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/15/18 18:35	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:35	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/15/18 18:35	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/15/18 18:35	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		11/15/18 18:35	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/15/18 18:35	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:35	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/15/18 18:35	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:35	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/15/18 18:35	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:35	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:35	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:35	1
Methylene Chloride	**0.85**	**J**	5.0	0.80	0.32	ug/L		11/15/18 18:35	1
Styrene	0.40	U Q U	1.0	0.40	0.17	ug/L		11/15/18 18:35	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/15/18 18:35	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:35	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/15/18 18:35	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:35	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/15/18 18:35	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/15/18 18:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*81 - 118*		*11/15/18 18:35*	*1*
4-Bromofluorobenzene (Surr)	*107*		*85 - 114*		*11/15/18 18:35*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*11/15/18 18:35*	*1*
Toluene-d8 (Surr)	*101*		*89 - 112*		*11/15/18 18:35*	*1*

Client Sample ID: FWGTB-181014-TB **Lab Sample ID: 280-116538-3**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:56	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.80	0.21	ug/L		11/15/18 18:56	1
1,1,2-Trichloroethane	0.80	U	1.0	0.80	0.27	ug/L		11/15/18 18:56	1
1,1-Dichloroethane	0.80	U	1.0	0.80	0.22	ug/L		11/15/18 18:56	1
1,1-Dichloroethene	0.80	U	1.0	0.80	0.23	ug/L		11/15/18 18:56	1
1,2-Dibromoethane	0.40	U	1.0	0.40	0.18	ug/L		11/15/18 18:56	1

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

Client Sample ID: FWGTB-181014-TB **Lab Sample ID: 280-116538-3**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2-Dichloroethane	0.40	U	1.0	0.40	0.13	ug/L		11/15/18 18:56	1
1,2-Dichloroethene, Total	0.20	U	1.0	0.20	0.24	ug/L		11/15/18 18:56	1
1,2-Dichloropropane	0.40	U	1.0	0.40	0.18	ug/L		11/15/18 18:56	1
2-Butanone (MEK)	4.0	U	6.0	4.0	2.0	ug/L		11/15/18 18:56	1
2-Hexanone	4.0	U	5.0	4.0	1.7	ug/L		11/15/18 18:56	1
4-Methyl-2-pentanone (MIBK)	3.2	U	5.0	3.2	0.98	ug/L		11/15/18 18:56	1
Acetone	6.4	U	10	6.4	1.9	ug/L		11/15/18 18:56	1
Benzene	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:56	1
Bromobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:56	1
Bromochloromethane	0.20	U	1.0	0.20	0.10	ug/L		11/15/18 18:56	1
Bromodichloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:56	1
Bromoform	0.40	U	1.0	0.40	0.19	ug/L		11/15/18 18:56	1
Bromomethane	0.80	U	2.0	0.80	0.21	ug/L		11/15/18 18:56	1
Carbon disulfide	1.6	U	2.0	1.6	0.45	ug/L		11/15/18 18:56	1
Carbon tetrachloride	0.40	U	2.0	0.40	0.19	ug/L		11/15/18 18:56	1
Chlorobenzene	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:56	1
Chloroethane	1.6	U	2.0	1.6	0.41	ug/L		11/15/18 18:56	1
Chloroform	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:56	1
Chloromethane	0.80	U	2.0	0.80	0.30	ug/L		11/15/18 18:56	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:56	1
Dibromochloromethane	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:56	1
Ethylbenzene	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:56	1
Methylene Chloride	0.80	U	5.0	0.80	0.32	ug/L		11/15/18 18:56	1
Styrene	0.40	U Q U	1.0	0.40	0.17	ug/L		11/15/18 18:56	1
Tetrachloroethene	0.40	U	1.0	0.40	0.20	ug/L		11/15/18 18:56	1
Toluene	0.40	U	1.0	0.40	0.17	ug/L		11/15/18 18:56	1
trans-1,3-Dichloropropene	0.40	U	1.0	0.40	0.19	ug/L		11/15/18 18:56	1
Trichloroethene	0.40	U	1.0	0.40	0.16	ug/L		11/15/18 18:56	1
Vinyl chloride	0.20	U	1.5	0.20	0.10	ug/L		11/15/18 18:56	1
Xylenes, Total	0.80	U	1.0	0.80	0.19	ug/L		11/15/18 18:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*81 - 118*		*11/15/18 18:56*	*1*
4-Bromofluorobenzene (Surr)	*102*		*85 - 114*		*11/15/18 18:56*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 119*		*11/15/18 18:56*	*1*
Toluene-d8 (Surr)	*97*		*89 - 112*		*11/15/18 18:56*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.014	U Q U	0.12	0.014	0.0069	ug/L		11/09/18 00:23	1
2-Methylnaphthalene	0.014	U Q U	0.12	0.014	0.0070	ug/L		11/09/18 00:23	1
Acenaphthene	0.047	U M U	0.12	0.047	0.0049	ug/L		11/09/18 00:23	1
Acenaphthylene	0.047	U	0.12	0.047	0.0059	ug/L		11/09/18 00:23	1
Anthracene	0.047	U M U	0.12	0.047	0.0065	ug/L		11/09/18 00:23	1
Benzo[a]anthracene	0.014	U	0.12	0.014	0.0049	ug/L		11/09/18 00:23	1
Benzo[a]pyrene	0.014	U M U	0.12	0.014	0.0080	ug/L		11/09/18 00:23	1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Benzo[b]fluoranthene	0.014	U	0.12	0.014	0.0036	ug/L		11/09/18 00:23	1
Benzo[g,h,i]perylene	0.014	U	0.12	0.014	0.0072	ug/L		11/09/18 00:23	1
Benzo[k]fluoranthene	0.014	U	0.12	0.014	0.0073	ug/L		11/09/18 00:23	1
Chrysene	0.014	U	0.12	0.014	0.0038	ug/L		11/09/18 00:23	1
Dibenz(a,h)anthracene	0.014	U	0.12	0.014	0.0048	ug/L		11/09/18 00:23	1
Fluoranthene per ADR	0.014 **0.012**	**J** U F01	0.12	0.014	0.0056	ug/L		11/09/18 00:23	1
Fluorene	0.047	U	0.12	0.047	0.0064	ug/L		11/09/18 00:23	1
Indeno[1,2,3-cd]pyrene	0.047	U	0.12	0.047	0.0052	ug/L		11/09/18 00:23	1
Naphthalene	0.014	U Q U	0.12	0.014	0.0093	ug/L		11/09/18 00:23	1
Phenanthrene per ADR	0.023 **0.013**	**J** U F01	0.12	0.023	0.011	ug/L		11/09/18 00:23	1
Pyrene	0.023	U	0.12	0.023	0.0071	ug/L		11/09/18 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*59*		*53 - 106*	*11/05/18 13:07*	*11/09/18 00:23*	*1*
Nitrobenzene-d5	*53*	*Q*	*55 - 111*	*11/05/18 13:07*	*11/09/18 00:23*	*1*
Terphenyl-d14	*69*		*58 - 132*	*11/05/18 13:07*	*11/09/18 00:23*	*1*

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1-Methylnaphthalene	0.013	U	0.11	0.013	0.0066	ug/L		11/09/18 00:53	1
2-Methylnaphthalene	0.013	U	0.11	0.013	0.0067	ug/L		11/09/18 00:53	1
Acenaphthene	0.045	U M U	0.11	0.045	0.0047	ug/L		11/09/18 00:53	1
Acenaphthylene	0.045	U	0.11	0.045	0.0057	ug/L		11/09/18 00:53	1
Anthracene	0.045	U M U	0.11	0.045	0.0063	ug/L		11/09/18 00:53	1
Benzo[a]anthracene	**0.024**	**J**	0.11	0.013	0.0047	ug/L		11/09/18 00:53	1
Benzo[a]pyrene	**0.015**	**J**	0.11	0.013	0.0077	ug/L		11/09/18 00:53	1
Benzo[b]fluoranthene	**0.032**	**J**	0.11	0.013	0.0035	ug/L		11/09/18 00:53	1
Benzo[g,h,i]perylene	0.013	U M U	0.11	0.013	0.0069	ug/L		11/09/18 00:53	1
Benzo[k]fluoranthene	**0.030**	**J**	0.11	0.013	0.0070	ug/L		11/09/18 00:53	1
Chrysene	**0.053**	**J**	0.11	0.013	0.0037	ug/L		11/09/18 00:53	1
Dibenz(a,h)anthracene	0.013	U M U	0.11	0.013	0.0046	ug/L		11/09/18 00:53	1
Fluoranthene	0.013	U	0.11	0.013	0.0054	ug/L		11/09/18 00:53	1
Fluorene	0.045	U	0.11	0.045	0.0061	ug/L		11/09/18 00:53	1
Indeno[1,2,3-cd]pyrene	**0.022**	**J**	0.11	0.045	0.0050	ug/L		11/09/18 00:53	1
Naphthalene	0.013	U	0.11	0.013	0.0089	ug/L		11/09/18 00:53	1
Phenanthrene per ADR	0.022 **0.014**	**J** U F01	0.11	0.022	0.010	ug/L		11/09/18 00:53	1
Pyrene	0.022	U	0.11	0.022	0.0068	ug/L		11/09/18 00:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*80*		*53 - 106*	*11/05/18 13:07*	*11/09/18 00:53*	*1*
Nitrobenzene-d5	*69*		*55 - 111*	*11/05/18 13:07*	*11/09/18 00:53*	*1*
Terphenyl-d14	*90*		*58 - 132*	*11/05/18 13:07*	*11/09/18 00:53*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	1.2	U	12	1.2	0.32	ug/L		11/15/18 01:34	1
1,2-Dichlorobenzene	0.58	U	12	0.58	0.27	ug/L		11/15/18 01:34	1
1,3-Dichlorobenzene	1.2	U	12	1.2	0.35	ug/L		11/15/18 01:34	1
1,4-Dichlorobenzene	1.2	U	12	1.2	0.37	ug/L		11/15/18 01:34	1
1,4-Dioxane	5.1	U	21	5.1	2.0	ug/L		11/15/18 01:34	1
2,4,5-Trichlorophenol	1.2	U	23	1.2	0.52	ug/L		11/15/18 01:34	1
2,4,6-Trichlorophenol	1.2	U	23	1.2	0.34	ug/L		11/15/18 01:34	1
2,4-Dichlorophenol	2.3	U	12	2.3	0.74	ug/L		11/15/18 01:34	1
2,4-Dimethylphenol	2.3	U	12	2.3	0.67	ug/L		11/15/18 01:34	1
2,4-Dinitrophenol	35	U	92	35	12	ug/L		11/15/18 01:34	1
2,4-Dinitrotoluene	5.1	U	23	5.1	1.9	ug/L		11/15/18 01:34	1
2,6-Dinitrotoluene	5.1	U	23	5.1	2.2	ug/L		11/15/18 01:34	1
2-Chloronaphthalene	1.2	U	12	1.2	0.30	ug/L		11/15/18 01:34	1
2-Chlorophenol	5.1	U	12	5.1	2.3	ug/L		11/15/18 01:34	1
2-Methylphenol	2.3	U	12	2.3	1.1	ug/L		11/15/18 01:34	1
2-Nitroaniline	5.1	U	58	5.1	2.0	ug/L		11/15/18 01:34	1
2-Nitrophenol	1.2	U	23	1.2	0.45	ug/L		11/15/18 01:34	1
3 & 4 Methylphenol	0.58	U	23	0.58	0.29	ug/L		11/15/18 01:34	1
3,3'-Dichlorobenzidine	5.1	U	58	5.1	2.3	ug/L		11/15/18 01:34	1
3-Nitroaniline	5.1	U	58	5.1	2.3	ug/L		11/15/18 01:34	1
4,6-Dinitro-2-methylphenol	10	U	92	10	4.6	ug/L		11/15/18 01:34	1
4-Bromophenyl phenyl ether	1.2	U	12	1.2	0.50	ug/L		11/15/18 01:34	1
4-Chloro-3-methylphenol	5.8	U	23	5.8	2.8	ug/L		11/15/18 01:34	1
4-Chloroaniline	5.1	U	29	5.1	2.5	ug/L		11/15/18 01:34	1
4-Chlorophenyl phenyl ether	5.1	U	12	5.1	1.9	ug/L		11/15/18 01:34	1
4-Nitroaniline	5.1	U	58	5.1	2.3	ug/L		11/15/18 01:34	1
4-Nitrophenol	4.6	U	58	4.6	1.4	ug/L		11/15/18 01:34	1
Benzoic acid	35	U	92	35	12	ug/L		11/15/18 01:34	1
Benzyl alcohol	0.58	U	29	0.58	0.27	ug/L		11/15/18 01:34	1
bis (2-chloroisopropyl) ether	1.2	U	12	1.2	0.32	ug/L		11/15/18 01:34	1
Bis(2-chloroethoxy)methane	2.3	U	12	2.3	1.1	ug/L		11/15/18 01:34	1
Bis(2-chloroethyl)ether	1.2	U	23	1.2	0.47	ug/L		11/15/18 01:34	1
Bis(2-ethylhexyl) phthalate	2.3	U	12	2.3	0.65	ug/L		11/15/18 01:34	1
Butyl benzyl phthalate	2.3	U	23	2.3	1.2	ug/L		11/15/18 01:34	1
Carbazole	1.2	U	12	1.2	0.50	ug/L		11/15/18 01:34	1
Dibenzofuran	1.2	U	12	1.2	0.34	ug/L		11/15/18 01:34	1
Diethyl phthalate	1.2	U	23	1.2	0.44	ug/L		11/15/18 01:34	1
Dimethyl phthalate	0.58	U	23	0.58	0.24	ug/L		11/15/18 01:34	1
Di-n-butyl phthalate	5.1	U	23	5.1	1.3	ug/L		11/15/18 01:34	1
Di-n-octyl phthalate	1.2	U	23	1.2	0.40	ug/L		11/15/18 01:34	1
Hexachlorobenzene	2.3	U	12	2.3	0.76	ug/L		11/15/18 01:34	1
Hexachlorobutadiene	12	U	35	12	3.8	ug/L		11/15/18 01:34	1
Hexachlorocyclopentadiene	35	U	58	35	12	ug/L		11/15/18 01:34	1
Hexachloroethane	5.1	U	12	5.1	2.4	ug/L		11/15/18 01:34	1
Isophorone	0.58	U	12	0.58	0.24	ug/L		11/15/18 01:34	1
Nitrobenzene	2.3	U	23	2.3	0.94	ug/L		11/15/18 01:34	1
N-Nitrosodi-n-propylamine	1.2	U	23	1.2	0.40	ug/L		11/15/18 01:34	1
N-Nitrosodiphenylamine	1.2	U	12	1.2	0.51	ug/L		11/15/18 01:34	1
Pentachlorophenol	69	U	92	69	23	ug/L		11/15/18 01:34	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Phenol	5.1	U	12	5.1	2.3	ug/L		11/15/18 01:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*89*		*43 - 140*	*11/05/18 12:30*	*11/15/18 01:34*	*1*
2-Fluorobiphenyl	*83*		*44 - 119*	*11/05/18 12:30*	*11/15/18 01:34*	*1*
2-Fluorophenol (Surr)	*91*		*19 - 119*	*11/05/18 12:30*	*11/15/18 01:34*	*1*
Nitrobenzene-d5 (Surr)	*91*		*44 - 120*	*11/05/18 12:30*	*11/15/18 01:34*	*1*
Phenol-d5 (Surr)	*92*		*10 - 115*	*11/05/18 12:30*	*11/15/18 01:34*	*1*
Terphenyl-d14 (Surr)	*95*		*50 - 134*	*11/05/18 12:30*	*11/15/18 01:34*	*1*

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	1.1	U	11	1.1	0.30	ug/L		11/14/18 21:42	1
1,2-Dichlorobenzene	0.53	U	11	0.53	0.24	ug/L		11/14/18 21:42	1
1,3-Dichlorobenzene	1.1	U	11	1.1	0.32	ug/L		11/14/18 21:42	1
1,4-Dichlorobenzene	1.1	U	11	1.1	0.34	ug/L		11/14/18 21:42	1
1,4-Dioxane	4.7	U	19	4.7	1.8	ug/L		11/14/18 21:42	1
2,4,5-Trichlorophenol	1.1	U	21	1.1	0.48	ug/L		11/14/18 21:42	1
2,4,6-Trichlorophenol	1.1	U	21	1.1	0.31	ug/L		11/14/18 21:42	1
2,4-Dichlorophenol	2.1	U	11	2.1	0.68	ug/L		11/14/18 21:42	1
2,4-Dimethylphenol	2.1	U	11	2.1	0.62	ug/L		11/14/18 21:42	1
2,4-Dinitrophenol	32	U	85	32	11	ug/L		11/14/18 21:42	1
2,4-Dinitrotoluene	4.7	U	21	4.7	1.8	ug/L		11/14/18 21:42	1
2,6-Dinitrotoluene	4.7	U	21	4.7	2.0	ug/L		11/14/18 21:42	1
2-Chloronaphthalene	1.1	U	11	1.1	0.28	ug/L		11/14/18 21:42	1
2-Chlorophenol	4.7	U	11	4.7	2.1	ug/L		11/14/18 21:42	1
2-Methylphenol	2.1	U	11	2.1	1.0	ug/L		11/14/18 21:42	1
2-Nitroaniline	4.7	U	53	4.7	1.8	ug/L		11/14/18 21:42	1
2-Nitrophenol	1.1	U	21	1.1	0.41	ug/L		11/14/18 21:42	1
3 & 4 Methylphenol	0.53	U	21	0.53	0.27	ug/L		11/14/18 21:42	1
3,3'-Dichlorobenzidine	4.7	U	53	4.7	2.1	ug/L		11/14/18 21:42	1
3-Nitroaniline	4.7	U	53	4.7	2.1	ug/L		11/14/18 21:42	1
4,6-Dinitro-2-methylphenol	9.3	U	85	9.3	4.2	ug/L		11/14/18 21:42	1
4-Bromophenyl phenyl ether	1.1	U	11	1.1	0.46	ug/L		11/14/18 21:42	1
4-Chloro-3-methylphenol	5.3	U	21	5.3	2.6	ug/L		11/14/18 21:42	1
4-Chloroaniline	4.7	U	27	4.7	2.3	ug/L		11/14/18 21:42	1
4-Chlorophenyl phenyl ether	4.7	U	11	4.7	1.8	ug/L		11/14/18 21:42	1
4-Nitroaniline	4.7	U	53	4.7	2.1	ug/L		11/14/18 21:42	1
4-Nitrophenol	4.2	U	53	4.2	1.3	ug/L		11/14/18 21:42	1
Benzoic acid	32	U	85	32	11	ug/L		11/14/18 21:42	1
Benzyl alcohol	0.53	U	27	0.53	0.24	ug/L		11/14/18 21:42	1
bis (2-chloroisopropyl) ether	1.1	U	11	1.1	0.30	ug/L		11/14/18 21:42	1
Bis(2-chloroethoxy)methane	2.1	U	11	2.1	1.0	ug/L		11/14/18 21:42	1
Bis(2-chloroethyl)ether	1.1	U	21	1.1	0.44	ug/L		11/14/18 21:42	1
Bis(2-ethylhexyl) phthalate	2.1	U	11	2.1	0.59	ug/L		11/14/18 21:42	1
Butyl benzyl phthalate	2.1	U	21	2.1	1.1	ug/L		11/14/18 21:42	1
Carbazole	1.1	U	11	1.1	0.46	ug/L		11/14/18 21:42	1
Dibenzofuran	1.1	U	11	1.1	0.31	ug/L		11/14/18 21:42	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Diethyl phthalate	1.1	U	21	1.1	0.40	ug/L		11/14/18 21:42	1
Dimethyl phthalate	0.53	U	21	0.53	0.22	ug/L		11/14/18 21:42	1
Di-n-butyl phthalate	4.7	U	21	4.7	1.2	ug/L		11/14/18 21:42	1
Di-n-octyl phthalate	1.1	U	21	1.1	0.37	ug/L		11/14/18 21:42	1
Hexachlorobenzene	2.1	U	11	2.1	0.70	ug/L		11/14/18 21:42	1
Hexachlorobutadiene	11	U	32	11	3.5	ug/L		11/14/18 21:42	1
Hexachlorocyclopentadiene	32	U	53	32	11	ug/L		11/14/18 21:42	1
Hexachloroethane	4.7	U	11	4.7	2.2	ug/L		11/14/18 21:42	1
Isophorone	0.53	U	11	0.53	0.22	ug/L		11/14/18 21:42	1
Nitrobenzene	2.1	U	21	2.1	0.86	ug/L		11/14/18 21:42	1
N-Nitrosodi-n-propylamine	1.1	U	21	1.1	0.37	ug/L		11/14/18 21:42	1
N-Nitrosodiphenylamine	1.1	U	11	1.1	0.47	ug/L		11/14/18 21:42	1
Pentachlorophenol	64	U	85	64	21	ug/L		11/14/18 21:42	1
Phenol	4.7	U	11	4.7	2.1	ug/L		11/14/18 21:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*84*		*43 - 140*	*11/05/18 12:30*	*11/14/18 21:42*	*1*
2-Fluorobiphenyl	*71*		*44 - 119*	*11/05/18 12:30*	*11/14/18 21:42*	*1*
2-Fluorophenol (Surr)	*77*		*19 - 119*	*11/05/18 12:30*	*11/14/18 21:42*	*1*
Nitrobenzene-d5 (Surr)	*77*		*44 - 120*	*11/05/18 12:30*	*11/14/18 21:42*	*1*
Phenol-d5 (Surr)	*80*		*10 - 115*	*11/05/18 12:30*	*11/14/18 21:42*	*1*
Terphenyl-d14 (Surr)	*97*		*50 - 134*	*11/05/18 12:30*	*11/14/18 21:42*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.022	U		0.055	0.022	0.0085	ug/L		11/24/18 02:38	1
4,4'-DDE	0.022	U		0.055	0.022	0.0083	ug/L		11/24/18 02:38	1
4,4'-DDT	0.055	U		0.055	0.055	0.016	ug/L		11/24/18 02:38	1
Aldrin	0.022	U		0.055	0.022	0.0065	ug/L		11/24/18 02:38	1
alpha-BHC	0.022	U		0.055	0.022	0.0059	ug/L		11/24/18 02:38	1
alpha-Chlordane	0.022	U		0.055	0.022	0.0059	ug/L		11/24/18 02:38	1
beta-BHC	0.022	U M	U	0.055	0.022	0.0096	ug/L		11/24/18 02:38	1
delta-BHC	0.022	U		0.055	0.022	0.0064	ug/L		11/24/18 02:38	1
Dieldrin	0.022	U		0.055	0.022	0.0070	ug/L		11/24/18 02:38	1
Endosulfan I	0.022	U		0.055	0.022	0.0064	ug/L		11/24/18 02:38	1
Endosulfan II	0.022	U		0.055	0.022	0.0077	ug/L		11/24/18 02:38	1
Endosulfan sulfate	0.022	U		0.055	0.022	0.0063	ug/L		11/24/18 02:38	1
Endrin	0.022	U		0.055	0.022	0.0087	ug/L		11/24/18 02:38	1
Endrin aldehyde	0.022	U		0.055	0.022	0.0097	ug/L		11/24/18 02:38	1
Endrin ketone	0.022	U		0.055	0.022	0.0077	ug/L		11/24/18 02:38	1
gamma-BHC (Lindane)	0.022	U		0.055	0.022	0.0076	ug/L		11/24/18 02:38	1
gamma-Chlordane	0.022	U		0.055	0.022	0.010	ug/L		11/24/18 02:38	1
Heptachlor	0.022	U M	U	0.055	0.022	0.0085	ug/L		11/24/18 02:38	1
Heptachlor epoxide	0.022	U		0.055	0.022	0.0083	ug/L		11/24/18 02:38	1
Methoxychlor	0.055	U		0.055	0.055	0.014	ug/L		11/24/18 02:38	1
Toxaphene	0.89	U Q	U	2.2	0.89	0.41	ug/L		11/24/18 02:38	1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	91		34 - 122	11/07/18 10:54	11/24/18 02:38	1
Tetrachloro-m-xylene	83		44 - 124	11/07/18 10:54	11/24/18 02:38	1

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.022	U	0.054	0.022	0.0083	ug/L		11/24/18 02:55	1
4,4'-DDE	0.022	U	0.054	0.022	0.0081	ug/L		11/24/18 02:55	1
4,4'-DDT	0.054	U	0.054	0.054	0.016	ug/L		11/24/18 02:55	1
Aldrin	0.022	U	0.054	0.022	0.0064	ug/L		11/24/18 02:55	1
alpha-BHC	0.022	U	0.054	0.022	0.0057	ug/L		11/24/18 02:55	1
alpha-Chlordane	0.022	U	0.054	0.022	0.0057	ug/L		11/24/18 02:55	1
beta-BHC	0.022	U	0.054	0.022	0.0094	ug/L		11/24/18 02:55	1
delta-BHC	0.022	U	0.054	0.022	0.0063	ug/L		11/24/18 02:55	1
Dieldrin	0.022	U	0.054	0.022	0.0068	ug/L		11/24/18 02:55	1
Endosulfan I	0.022	U	0.054	0.022	0.0063	ug/L		11/24/18 02:55	1
Endosulfan II	0.022	U	0.054	0.022	0.0076	ug/L		11/24/18 02:55	1
Endosulfan sulfate	0.022	U	0.054	0.022	0.0062	ug/L		11/24/18 02:55	1
Endrin	0.022	U	0.054	0.022	0.0086	ug/L		11/24/18 02:55	1
Endrin aldehyde	0.022	U	0.054	0.022	0.0095	ug/L		11/24/18 02:55	1
Endrin ketone	0.022	U	0.054	0.022	0.0076	ug/L		11/24/18 02:55	1
gamma-BHC (Lindane)	0.022	U	0.054	0.022	0.0075	ug/L		11/24/18 02:55	1
gamma-Chlordane	0.022	U	0.054	0.022	0.0099	ug/L		11/24/18 02:55	1
Heptachlor	0.022	U	0.054	0.022	0.0083	ug/L		11/24/18 02:55	1
Heptachlor epoxide	0.022	U	0.054	0.022	0.0081	ug/L		11/24/18 02:55	1
Methoxychlor	0.054	U	0.054	0.054	0.014	ug/L		11/24/18 02:55	1
Toxaphene	0.87	U Q U	2.2	0.87	0.40	ug/L		11/24/18 02:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	89		34 - 122	11/07/18 10:54	11/24/18 02:55	1
Tetrachloro-m-xylene	82		44 - 124	11/07/18 10:54	11/24/18 02:55	1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.44	U M U	1.1	0.44	0.14	ug/L		11/27/18 18:24	1
PCB-1221	0.28	U M	1.1	0.28	0.24	ug/L		11/27/18 18:24	1
PCB-1232	0.66	U M	1.1	0.66	0.18	ug/L		11/27/18 18:24	1
PCB-1242	0.33	U M	1.1	0.33	0.12	ug/L		11/27/18 18:24	1
PCB-1248	0.33	U Q M	1.1	0.33	0.10	ug/L		11/27/18 18:24	1
PCB-1254	0.28	U M	1.1	0.28	0.13	ug/L		11/27/18 18:24	1
PCB-1260	0.44	U M	1.1	0.44	0.18	ug/L		11/27/18 18:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	88		25 - 120	11/07/18 10:54	11/27/18 18:24	1
DCB Decachlorobiphenyl	96	Q	30 - 136	11/07/18 10:54	11/27/18 18:24	1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.43	U M	U	1.1	0.43	0.13	ug/L		11/27/18 18:45	1
PCB-1221	0.27	U M		1.1	0.27	0.23	ug/L		11/27/18 18:45	1
PCB-1232	0.65	U M		1.1	0.65	0.18	ug/L		11/27/18 18:45	1
PCB-1242	0.32	U M		1.1	0.32	0.11	ug/L		11/27/18 18:45	1
PCB-1248	0.32	U Q M		1.1	0.32	0.099	ug/L		11/27/18 18:45	1
PCB-1254	0.27	U M		1.1	0.27	0.12	ug/L		11/27/18 18:45	1
PCB-1260	0.43	U M		1.1	0.43	0.17	ug/L		11/27/18 18:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*86*		*25 - 120*	*11/07/18 10:54*	*11/27/18 18:45*	*1*
DCB Decachlorobiphenyl	*97*	*Q*	*30 - 136*	*11/07/18 10:54*	*11/27/18 18:45*	*1*

Method: 8330 Modified - Nitroguanidine (HPLC)

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		11/19/18 18:09	1

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitroguanidine	6.0	U	20	6.0	2.4	ug/L		11/19/18 18:59	1

Method: 8330B - Nitroaromatics and Nitramines (HPLC)

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.49	U		1.2	0.49	0.24	ug/L		11/09/18 05:14	1
1,3-Dinitrobenzene	0.24	U		0.49	0.24	0.11	ug/L		11/09/18 05:14	1
2,4,6-Trinitrotoluene	0.24	U		0.49	0.24	0.088	ug/L		11/09/18 05:14	1
2,4-Dinitrotoluene	0.24	U		0.49	0.24	0.10	ug/L		11/09/18 05:14	1
2,6-Dinitrotoluene	0.24	U		0.24	0.24	0.079	ug/L		11/09/18 05:14	1
2-Amino-4,6-dinitrotoluene	0.15	U		0.24	0.15	0.062	ug/L		11/09/18 05:14	1
2-Nitrotoluene	0.24	U		0.49	0.24	0.10	ug/L		11/09/18 05:14	1
3-Nitrotoluene	0.24	U		0.49	0.24	0.10	ug/L		11/09/18 05:14	1
4-Amino-2,6-dinitrotoluene	0.15	U		0.24	0.15	0.070	ug/L		11/09/18 05:14	1
4-Nitrotoluene	0.49	U		1.2	0.49	0.24	ug/L		11/09/18 05:14	1
HMX	0.24	U		0.49	0.24	0.11	ug/L		11/09/18 05:14	1
Nitrobenzene	0.24	U		0.49	0.24	0.11	ug/L		11/09/18 05:14	1
Nitroglycerin	2.4	U		3.7	2.4	1.1	ug/L		11/09/18 05:14	1
PETN	1.5	U		2.4	1.5	0.51	ug/L		11/09/18 05:14	1
RDX	0.15	U		0.24	0.15	0.064	ug/L		11/09/18 05:14	1
Tetryl	0.24	U Q	U	0.29	0.24	0.097	ug/L		11/09/18 05:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*101*		*83 - 119*	*11/06/18 12:18*	*11/09/18 05:14*	*1*

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.43	U		1.1	0.43	0.21	ug/L		11/09/18 05:36	1
1,3-Dinitrobenzene	0.21	U		0.43	0.21	0.095	ug/L		11/09/18 05:36	1
2,4,6-Trinitrotoluene	0.21	U		0.43	0.21	0.078	ug/L		11/09/18 05:36	1
2,4-Dinitrotoluene	0.21	U		0.43	0.21	0.090	ug/L		11/09/18 05:36	1
2,6-Dinitrotoluene	0.21	U		0.21	0.21	0.069	ug/L		11/09/18 05:36	1
2-Amino-4,6-dinitrotoluene	0.13	U		0.21	0.13	0.054	ug/L		11/09/18 05:36	1
2-Nitrotoluene	0.21	U		0.43	0.21	0.092	ug/L		11/09/18 05:36	1
3-Nitrotoluene	0.21	U		0.43	0.21	0.089	ug/L		11/09/18 05:36	1
4-Amino-2,6-dinitrotoluene	0.13	U		0.21	0.13	0.062	ug/L		11/09/18 05:36	1
4-Nitrotoluene	0.43	U		1.1	0.43	0.21	ug/L		11/09/18 05:36	1
HMX	0.21	U		0.43	0.21	0.094	ug/L		11/09/18 05:36	1
Nitrobenzene	0.21	U		0.43	0.21	0.098	ug/L		11/09/18 05:36	1
Nitroglycerin	2.1	U		3.2	2.1	0.99	ug/L		11/09/18 05:36	1
PETN	1.3	U		2.1	1.3	0.45	ug/L		11/09/18 05:36	1
RDX	0.13	U		0.21	0.13	0.056	ug/L		11/09/18 05:36	1
Tetryl	0.21	U Q	U	0.26	0.21	0.085	ug/L		11/09/18 05:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*102*		*83 - 119*	*11/06/18 12:18*	*11/09/18 05:36*	*1*

Client Sample ID: DA1tw-001-181001-GW **Lab Sample ID: 280-116538-6**
Date Collected: 11/01/18 15:50 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3,5-Trinitrobenzene	0.43	U M	U	1.1	0.43	0.22	ug/L		11/09/18 05:59	1
1,3-Dinitrobenzene	0.22	U		0.43	0.22	0.096	ug/L		11/09/18 05:59	1
2,4,6-Trinitrotoluene	0.22	U M	U	0.43	0.22	0.079	ug/L		11/09/18 05:59	1
2,4-Dinitrotoluene	0.22	U		0.43	0.22	0.091	ug/L		11/09/18 05:59	1
2,6-Dinitrotoluene	0.22	U		0.22	0.22	0.070	ug/L		11/09/18 05:59	1
2-Amino-4,6-dinitrotoluene	0.13	U		0.22	0.13	0.055	ug/L		11/09/18 05:59	1
2-Nitrotoluene	0.22	U		0.43	0.22	0.093	ug/L		11/09/18 05:59	1
3-Nitrotoluene	0.22	U		0.43	0.22	0.091	ug/L		11/09/18 05:59	1
4-Amino-2,6-dinitrotoluene	0.13	U		0.22	0.13	0.063	ug/L		11/09/18 05:59	1
4-Nitrotoluene	0.43	U		1.1	0.43	0.22	ug/L		11/09/18 05:59	1
HMX	0.22	U		0.43	0.22	0.095	ug/L		11/09/18 05:59	1
Nitrobenzene	0.22	U		0.43	0.22	0.099	ug/L		11/09/18 05:59	1
Nitroglycerin	2.2	U		3.3	2.2	1.0	ug/L		11/09/18 05:59	1
PETN	1.3	U		2.2	1.3	0.45	ug/L		11/09/18 05:59	1
RDX	0.13	U		0.22	0.13	0.057	ug/L		11/09/18 05:59	1
Tetryl	0.22	U Q	U	0.26	0.22	0.086	ug/L		11/09/18 05:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dinitrobenzene	*99*		*83 - 119*	*11/06/18 12:18*	*11/09/18 05:59*	*1*

Method: 6860 - Perchlorate by IC/MS or IC/MS/MS

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perchlorate	**0.023**	**J**	0.050	0.010	0.0040	ug/L		11/12/18 16:18	1

Method: 6860 - Perchlorate by IC/MS or IC/MS/MS

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perchlorate	0.010	U M U	0.050	0.010	0.0040	ug/L		11/12/18 16:23	1

Method: 6010C - Metals (ICP)

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	70 **62**	**J** U F06	300	70	18	ug/L		11/07/18 15:49	1
Calcium	**170000**		1000	140	35	ug/L		11/07/18 05:34	1
Iron	**90**	**J**	100	85	22	ug/L		11/07/18 15:49	1
Magnesium	**32000**		500	40	11	ug/L		11/07/18 05:34	1
Potassium	**4500**		3000	940	240	ug/L		11/07/18 05:34	1
Sodium	**24000**	J D10	5000	350	120	ug/L		11/07/18 05:34	1
Phosphorus	50	U	3000	50	14	ug/L		11/07/18 05:34	1

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	**330**		300	70	18	ug/L		11/07/18 15:52	1
Calcium	**120000**		1000	140	35	ug/L		11/07/18 05:36	1
Iron	**610**		100	85	22	ug/L		11/07/18 15:52	1
Magnesium	**51000**		500	40	11	ug/L		11/07/18 05:36	1
Potassium	**5500**		3000	940	240	ug/L		11/07/18 05:36	1
Sodium	**26000**	J D10	5000	350	120	ug/L		11/07/18 05:36	1
Phosphorus	50	U	3000	50	14	ug/L		11/07/18 05:36	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	**16**		6.0	1.0	0.40	ug/L		11/14/18 03:19	1
Arsenic	**4.8**	**J**	5.0	1.0	0.33	ug/L		11/14/18 03:19	1
Barium	**110**	J D10	3.0	0.95	0.29	ug/L		11/14/18 03:19	1
Beryllium	**0.087**	**J** J D10	1.0	0.30	0.080	ug/L		11/14/18 03:19	1
Cadmium	**0.34**	**J**	1.0	1.0	0.27	ug/L		11/14/18 03:19	1
Chromium	1.8	U	10	1.8	0.50	ug/L		11/14/18 03:19	1
Cobalt	**2.5**		1.0	0.20	0.054	ug/L		11/14/18 03:19	1
Copper	**1.7**	**J**	2.0	1.8	0.56	ug/L		11/14/18 03:19	1
Lead	**0.31**	**J**	3.0	0.70	0.18	ug/L		11/14/18 03:19	1
Manganese	**210**		3.5	0.95	0.31	ug/L		11/14/18 16:43	1
Nickel	**9.8**	J D10	3.0	1.0	0.30	ug/L		11/14/18 03:19	1
Selenium	**0.85**	**J**	5.0	2.0	0.70	ug/L		11/14/18 03:19	1
Silver	**0.18**	**J** J D10	5.0	0.10	0.033	ug/L		11/14/18 03:19	1
Thallium	0.20	U	1.0	0.20	0.050	ug/L		11/14/18 03:19	1
Vanadium	2.0	U	6.0	2.0	0.50	ug/L		11/14/18 03:19	1
Zinc per ADR	8.0 **4.8**	**J** U F06 F01	20	8.0	2.0	ug/L		11/14/18 03:19	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Antimony	**1.4**	**J**	U F07	6.0	1.0	0.40	ug/L		11/14/18 03:23	1
Arsenic	**10**			5.0	1.0	0.33	ug/L		11/14/18 03:23	1
Barium	**41**		J D10	3.0	0.95	0.29	ug/L		11/14/18 03:23	1
Beryllium	0.30	U	UJ D10	1.0	0.30	0.080	ug/L		11/14/18 03:23	1
Cadmium	1.0	U		1.0	1.0	0.27	ug/L		11/14/18 03:23	1
Chromium	**0.86**	**J**		10	1.8	0.50	ug/L		11/14/18 03:23	1
Cobalt	**6.6**			1.0	0.20	0.054	ug/L		11/14/18 03:23	1
Copper	**1.3**	**J**		2.0	1.8	0.56	ug/L		11/14/18 03:23	1
Lead	**0.61**	**J**		3.0	0.70	0.18	ug/L		11/14/18 03:23	1
Manganese	**250**			3.5	0.95	0.31	ug/L		11/14/18 16:01	1
Nickel	**14**		J D10	3.0	1.0	0.30	ug/L		11/14/18 03:23	1
Selenium	**0.90**	**J**		5.0	2.0	0.70	ug/L		11/14/18 03:23	1
Silver	0.10	U	UJ D10	5.0	0.10	0.033	ug/L		11/14/18 03:23	1
Thallium	**0.096**	**J**		1.0	0.20	0.050	ug/L		11/14/18 03:23	1
Vanadium	2.0	U		6.0	2.0	0.50	ug/L		11/14/18 03:23	1
Zinc per ADR	8.0 **3.8**	**J**	U F06 F01	20	8.0	2.0	ug/L		11/14/18 03:23	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury per ADR	0.08 **0.063**	**J**	U F06 F01	0.20	0.080	0.027	ug/L		11/16/18 21:02	1

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury per ADR	~~0.08~~ 0.8 **0.067**	**J**	U F06 F01	0.20	0.080	0.027	ug/L		11/16/18 21:04	1

General Chemistry

Client Sample ID: SCLmw-001-181001-GW **Lab Sample ID: 280-116538-1**
Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier		LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1000	U		2000	1000	480	ug/L		11/15/18 13:49	1
Cyanide, Total	**0.0093**	**J**		0.010	0.0050	0.0020	mg/L		11/15/18 18:42	1
Sulfide	1.9	U		4.0	1.9	0.79	mg/L		11/07/18 20:06	1
Nitrate as N	**0.13**	**J**		0.50	0.10	0.042	mg/L		11/03/18 12:49	1
Nitrite as N	0.10	U		0.50	0.10	0.049	mg/L		11/03/18 12:49	1
Sulfate	**230**	**D**	=	25	2.5	1.2	mg/L		11/03/18 16:53	5
Alkalinity	**370**	**B**	=	5.0	5.0	1.1	mg/L		11/13/18 20:03	1

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrocellulose	1000	U	2000	1000	480	ug/L		11/15/18 13:51	1

General Chemistry (Continued)

Client Sample ID: SCLmw-003-181001-GW **Lab Sample ID: 280-116538-2**
Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	**0.0060**	**J**	0.010	0.0050	0.0020	mg/L		11/15/18 18:44	1
Sulfide	1.9	U J1 U	4.0	1.9	0.79	mg/L		11/07/18 20:06	1
Nitrate as N	0.10	U	0.50	0.10	0.042	mg/L		11/03/18 13:59	1
Nitrite as N	0.10	U	0.50	0.10	0.049	mg/L		11/03/18 13:59	1
Sulfate	**190**		5.0	0.50	0.23	mg/L		11/03/18 13:59	1
Alkalinity	**340**	**B** =	5.0	5.0	1.1	mg/L		11/13/18 20:11	1

ADR qualified UJ; since result is ND do not qualify for RPD outlier

Client Sample ID: SCLmw-001-181001-GW — Lab Sample ID: 280-116538-1

Date Collected: 11/02/18 10:45 **Matrix: Water**
Date Received: 11/03/18 09:00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexavalent chromium	ND	U	0.020	0.0030	mg/L			11/02/18 18:00	1

Client Sample ID: SCLmw-003-181001-GW — Lab Sample ID: 280-116538-2

Date Collected: 11/02/18 11:10 **Matrix: Water**
Date Received: 11/03/18 09:00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexavalent chromium	ND	U	0.020	0.0030	mg/L			11/02/18 18:01	1

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Lab Reporting Batch: 280-116538-1						
Method: 2320B						
SCLmw-001-181001-GW	280-116538-1	AQ	N	METHOD	11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	METHOD	11/2/2018 11:10:00 AM	S2AVE
Method: 353.2						
SCLmw-001-181001-GW	280-116538-1	AQ	N	METHOD	11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	METHOD	11/2/2018 11:10:00 AM	S2AVE
Method: 6010C						
SCLmw-001-181001-GW	280-116538-1	AQ	N	3010A	11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	3010A	11/2/2018 11:10:00 AM	S2AVE
Method: 6010C-KNA						
SCLmw-001-181001-GW	280-116538-1	AQ	N	3010A	11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	3010A	11/2/2018 11:10:00 AM	S2AVE
Method: 6020A						
SCLmw-001-181001-GW	280-116538-1	AQ	N	3020A	11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	3020A	11/2/2018 11:10:00 AM	S2AVE
Method: 6860						
SCLmw-001-181001-GW	280-116538-1	AQ	N	METHOD	11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	METHOD	11/2/2018 11:10:00 AM	S2AVE
Method: 7470A						
SCLmw-001-181001-GW	280-116538-1	AQ	N	7470A	11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	7470A	11/2/2018 11:10:00 AM	S2AVE
Method: 8081B						
SCLmw-001-181001-GW	280-116538-1	AQ	N	3510C	11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	3510C	11/2/2018 11:10:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method		Collection Date	Validation Code
Method: 8082A							
SCLmw-001-181001-GW	280-116538-1	AQ	N	3510C		11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	3510C		11/2/2018 11:10:00 AM	S2AVE
Method: 8260B							
FWGTB-181014-TB	280-116538-3	AQ	TB	METHOD		11/2/2018 10:45:00 AM	S2AVE
SCLmw-001-181001-GW	280-116538-1	AQ	N	METHOD		11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	METHOD		11/2/2018 11:10:00 AM	S2AVE
Method: 8270D							
SCLmw-001-181001-GW	280-116538-1	AQ	N	3520C		11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	3520C		11/2/2018 11:10:00 AM	S2AVE
Method: 8270D-SIM							
SCLmw-001-181001-GW	280-116538-1	AQ	N	3510C		11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	3510C		11/2/2018 11:10:00 AM	S2AVE
Method: 8330							
SCLmw-001-181001-GW	280-116538-1	AQ	N	METHOD		11/2/2018 10:45:00 AM	S2AVE
SCLmw-001-181001-GWMS	280-116538-1MS	AQ	MS	METHOD		11/2/2018 10:45:00 AM	S2AVE
SCLmw-001-181001-GWMSD	280-116538-1MSD	AQ	MSD	METHOD		11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	METHOD		11/2/2018 11:10:00 AM	S2AVE
Method: 8330B							
DA1tw-001-181001-GW	280-116538-6	AQ	N		3535	11/1/2018 3:50:00 PM	S2AVE
SCLmw-001-181001-GW	280-116538-1	AQ	N		3535	11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N		3535	11/2/2018 11:10:00 AM	S2AVE
Method: 9012B							
SCLmw-001-181001-GW	280-116538-1	AQ	N	Gen Prep		11/2/2018 10:45:00 AM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	Gen Prep		11/2/2018 11:10:00 AM	S2AVE

Data Review Sample Summary Report by Analysis Method

Reviewed By: **Approved By:** **Laboratory: TA DEN**

Client Sample ID	Lab Sample ID	Matrix	Sample Type	Preparation Method	Collection Date	Validation Code
Method: 9034						
SCLmw-001-181001-GW	280-116538-1	AQ	N	Gen Prep	11/2/2018 10:45:00 ΔM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	Gen Prep	11/2/2018 11:10:00 ΔM	S2AVE
SCLmw-003-181001-GWMS	280-116538-2MS	AQ	MS	Gen Prep	11/2/2018 11:10:00 ΔM	S2AVE
SCLmw-003-181001-GWMSD	280-116538-2MSD	AQ	MSD	Gen Prep	11/2/2018 11:10:00 ΔM	S2AVE
Method: 9056A						
SCLmw-001-181001-GW	280-116538-1	AQ	N	METHOD	11/2/2018 10:45:00 ΔM	S2AVE
SCLmw-001-181001-GWDUP	280-116538-1DUP	AQ	DUP	METHOD	11/2/2018 10:45:00 ΔM	S2AVE
SCLmw-001-181001-GWMS	280-116538-1MS	AQ	MS	METHOD	11/2/2018 10:45:00 ΔM	S2AVE
SCLmw-001-181001-GWMSD	280-116538-1MSD	AQ	MSD	METHOD	11/2/2018 10:45:00 ΔM	S2AVE
SCLmw-003-181001-GW	280-116538-2	AQ	N	METHOD	11/2/2018 11:10:00 ΔM	S2AVE

Data Review Summary

Lab Reporting Batch ID: 280-116538-1
EDD Filename: 280-116538-1

Laboratory: TA DEN
eQAPP Name: Leidos-RVAAP NACA_20181218 -

Validation Area	*Note*
Technical Holding Times	A
Temperature	A
Initial Calibration	N
Continuing Calibration/Initial Calibration Verification	N
Method Blanks	SR
Surrogate/Tracer Spikes	SR
Matrix Spike/Matrix Spike Duplicates	SR
Laboratory Duplicates	A
Laboratory Replicates	N
Laboratory Control Samples	SR
Compound Quantitation	SR
Field Duplicates	N
Field Triplicates	N
Field Blanks	A

A = Acceptable, N = Not provided/applicable, SR = See report

The contents of this report reflect findings made by ADR during Automated Data Review, manual applied qualifiers are not considered. Please refer to the Overall Qualifier Summary report for manual qualifiers.

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116538-1 **Laboratory: TA DEN**

EDD Filename: 280-116538-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 2320B
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-437553/5	11/13/2018 7:03:00 PM	Alkalinity	3.21 mg/L	SCLmw-001-181001-GW SCLmw-003-181001-GW

CONFIRMED

Method: 6010C-KNA
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436445/1-A	11/7/2018 4:46:00 AM	SODIUM	129 ug/L	SCLmw-001-181001-GW SCLmw-003-181001-GW

*CONFIRMED

Method: 6020A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-437002/1-A	11/14/2018 1:21:00 AM	ZINC	2.43 ug/L	SCLmw-001-181001-GW SCLmw-003-181001-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

*CONFIRMED

Sample ID	Analyte	Reported Result	Modified Final Result
SCLmw-001-181001-GW(RES/TOT)	ZINC	4.8 ug/L	4.8U ug/L
SCLmw-003-181001-GW(RES/TOT)	ZINC	3.8 ug/L	3.8U ug/L

Method: 7470A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-437885/1-A	11/16/2018 8:33:00 PM	MERCURY	0.0317 ug/L	SCLmw-001-181001-GW SCLmw-003-181001-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

*CONFIRMED

Sample ID	Analyte	Reported Result	Modified Final Result
SCLmw-001-181001-GW(RES/TOT)	MERCURY	0.063 ug/L	0.063U ug/L
SCLmw-003-181001-GW(RES/TOT)	MERCURY	0.067 ug/L	0.067U ug/L

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116538-1 **Laboratory: TA DEN**

EDD Filename: 280-116538-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 8270D-SIM
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436346/1-A	11/8/2018 4:59:00 PM	FLUORANTHENE PHENANTHRENE	0.0120 ug/L 0.0158 ug/L	SCLmw-001-181001-GW SCLmw-003-181001-GW

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Confirmed

Sample ID	Analyte	Reported Result	Modified Final Result
SCLmw-001-181001-GW(RES)	FLUORANTHENE	0.012 ug/L	0.012U ug/L
SCLmw-001-181001-GW(RES)	PHENANTHRENE	0.013 ug/L	0.013U ug/L
SCLmw-003-181001-GW(RES)	PHENANTHRENE	0.014 ug/L	0.014U ug/L

Method: 9056A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-436181/6	11/3/2018 12:07:00 PM	Nitrite as N	0.0961 mg/L	SCLmw-001-181001-GW SCLmw-003-181001-GW

CONFIRMED

Surrogate Outlier Report

Lab Reporting Batch ID: 280-116538-1 **Laboratory: TA DEN**

EDD Filename: 280-116538-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 8270D-SIM
Matrix: AQ

Sample ID (Analysis Type)	Surrogate	Sample % Recovery	% Recovery Limits	Affected Compounds	Flag
SCLmw-001-181001-GW	Nitrobenzene-d5	53	55-111	No Affected Compounds	

Confirmed

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-116538-1 **Laboratory: TA DEN**

EDD Filename: 280-116538-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 -**

Method: 9034
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SCLmw-003-181001-GWMSD (SCLmw-001-181001-GW SCLmw-003-181001-GW)	SULFIDE	-	-	44.00-110.00	37 (20.00)	SULFIDE	J (all detects) UJ (all non-detects)

CONFIRMED

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-116538-1

Laboratory: TA DEN

EDD Filename: 280-116538-1

eQAPP Name: Leidos-RVAAP NACA_20181218 -

Method: 8081B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCS 280-436649/6-A (SCLmw-001-181001-GW SCLmw-003-181001-GW)	TOXAPHENE	150	-	33.00-134.00	-	TOXAPHENE	J (all detects)

Confirmed

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116538-1 **Laboratory: TA DEN**

EDD Filename: 280-116538-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 6010C
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-001-181001-GW	ALUMINUM	J	62	300	LOQ	ug/L	J (all detects)
	IRON	J	90	100	LOQ	ug/L	

Method: 6020A
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-001-181001-GW	ARSENIC	J	4.8	5.0	LOQ	ug/L	J (all detects)
	BERYLLIUM	J	0.087	1.0	LOQ	ug/L	
	CADMIUM	J	0.34	1.0	LOQ	ug/L	
	COPPER	J	1.7	2.0	LOQ	ug/L	
	LEAD	J	0.31	3.0	LOQ	ug/L	
	SELENIUM	J	0.85	5.0	LOQ	ug/L	
	SILVER	J	0.18	5.0	LOQ	ug/L	
	ZINC	J	4.8	20	LOQ	ug/L	
SCLmw-003-181001-GW	ANTIMONY	J	1.4	6.0	LOQ	ug/L	J (all detects)
	CHROMIUM	J	0.86	10	LOQ	ug/L	
	COPPER	J	1.3	2.0	LOQ	ug/L	
	LEAD	J	0.61	3.0	LOQ	ug/L	
	SELENIUM	J	0.90	5.0	LOQ	ug/L	
	THALLIUM	J	0.096	1.0	LOQ	ug/L	
	ZINC	J	3.8	20	LOQ	ug/L	

Method: 6860
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-001-181001-GW	PERCHLORATE	J	0.023	0.050	LOQ	ug/L	J (all detects)

Method: 7470A
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-001-181001-GW	MERCURY	J	0.063	0.20	LOQ	ug/L	J (all detects)
SCLmw-003-181001-GW	MERCURY	J	0.067	0.20	LOQ	ug/L	J (all detects)

Method: 8260B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-001-181001-GW	METHYLENE CHLORIDE	J	0.33	5.0	LOQ	ug/L	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116538-1 **Laboratory: TA DEN**

EDD Filename: 280-116538-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-003-181001-GW	METHYLENE CHLORIDE	J	0.85	5.0	LOQ	ug/L	J (all detects)

Method: 8270D-SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-001-181001-GW	FLUORANTHENE	J	0.012	0.12	LOQ	ug/L	J (all detects)
	PHENANTHRENE	J	0.013	0.12	LOQ	ug/L	
SCLmw-003-181001-GW	BENZO(A)ANTHRACENE	J	0.024	0.11	LOQ	ug/L	J (all detects)
	BENZO(A)PYRENE	J	0.015	0.11	LOQ	ug/L	
	BENZO(B)FLUORANTHENE	J	0.032	0.11	LOQ	ug/L	
	BENZO(K)FLUORANTHENE	J	0.030	0.11	LOQ	ug/L	
	CHRYSENE	J	0.053	0.11	LOQ	ug/L	
	INDENO(1,2,3-CD)PYRENE	J	0.022	0.11	LOQ	ug/L	
	PHENANTHRENE	J	0.014	0.11	LOQ	ug/L	

Method: 9012B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-001-181001-GW	Cyanide, Total	J	0.0093	0.010	LOQ	mg/L	J (all detects)
SCLmw-003-181001-GW	Cyanide, Total	J	0.0060	0.010	LOQ	mg/L	J (all detects)

Method: 9056A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SCLmw-001-181001-GW	Nitrate as N	J	0.13	0.50	LOQ	mg/L	J (all detects)

Data Qualifier Summary

Lab Reporting Batch ID: 280-116538-1 **Laboratory: TA DEN**

EDD Filename: 280-116538-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: GENCHEM
Method: 6860 **Matrix:** AQ

Sample ID: SCLmw-001-181001-GW **Collected:** 11/2/2018 10:45:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PERCHLORATE	0.023	J	0.010	LOD	0.050	LOQ	ug/L	J	RI

Method Category: GENCHEM
Method: 9012B **Matrix:** AQ

Sample ID: SCLmw-001-181001-GW **Collected:** 11/2/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Cyanide, Total	0.0093	J	0.0050	LOD	0.010	LOQ	mg/L	J	RI

Sample ID: SCLmw-003-181001-GW **Collected:** 11/2/2018 11:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Cyanide, Total	0.0060	J	0.0050	LOD	0.010	LOQ	mg/L	J	RI

Method Category: GENCHEM
Method: 9034 **Matrix:** AQ

Sample ID: SCLmw-001-181001-GW **Collected:** 11/2/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SULFIDE	1.9	U	1.9	LOD	4.0	LOQ	mg/L	U ~~UJ~~	Ms

Sample ID: SCLmw-003-181001-GW **Collected:** 11/2/2018 11:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SULFIDE	1.9	U J1	1.9	LOD	4.0	LOQ	mg/L	U ~~UJ~~	Ms

since result is ND do not qualify for RPD outlier

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116538-1 **Laboratory: TA DEN**

EDD Filename: 280-116538-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: GENCHEM
Method: 9056A **Matrix:** AQ

Sample ID: SCLmw-001-181001-GW **Collected:** 11/2/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Nitrate as N	0.13	J	0.10	LOD	0.50	LOQ	mg/L	J	RI

Method Category: METALS
Method: 6010C **Matrix:** AQ

Sample ID: SCLmw-001-181001-GW **Collected:** 11/2/2018 10:45:00 AM **Analysis Type:** RE/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	62	J	70	LOD	300	LOQ	ug/L	J	RI
IRON	90	J	85	LOD	100	LOQ	ug/L	J	RI

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: SCLmw-001-181001-GW **Collected:** 11/2/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	4.8	J	1.0	LOD	5.0	LOQ	ug/L	J	RI
BERYLLIUM	0.087	J	0.30	LOD	1.0	LOQ	ug/L	J	RI
CADMIUM	0.34	J	1.0	LOD	1.0	LOQ	ug/L	J	RI
COPPER	1.7	J	1.8	LOD	2.0	LOQ	ug/L	J	RI
LEAD	0.31	J	0.70	LOD	3.0	LOQ	ug/L	J	RI
SELENIUM	0.85	J	2.0	LOD	5.0	LOQ	ug/L	J	RI
SILVER	0.18	J	0.10	LOD	5.0	LOQ	ug/L	J	RI
ZINC	4.8	J	8.0	LOD	20	LOQ	ug/L	U	Mb

Sample ID: SCLmw-003-181001-GW **Collected:** 11/2/2018 11:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	1.4	J	1.0	LOD	6.0	LOQ	ug/L	J	RI
CHROMIUM	0.86	J	1.8	LOD	10	LOQ	ug/L	J	RI
COPPER	1.3	J	1.8	LOD	2.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116538-1 **Laboratory: TA DEN**

EDD Filename: 280-116538-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: METALS
Method: 6020A **Matrix:** AQ

Sample ID: SCLmw-003-181001-GW **Collected:** 11/2/2018 11:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
LEAD	0.61	J	0.70	LOD	3.0	LOQ	ug/L	J	RI
SELENIUM	0.90	J	2.0	LOD	5.0	LOQ	ug/L	J	RI
THALLIUM	0.096	J	0.20	LOD	1.0	LOQ	ug/L	J	RI
ZINC	3.8	J	8.0	LOD	20	LOQ	ug/L	U	Mb

Method Category: METALS
Method: 7470A **Matrix:** AQ

Sample ID: SCLmw-001-181001-GW **Collected:** 11/2/2018 10:45:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.063	J	0.080	LOD	0.20	LOQ	ug/L	U	Mb

Sample ID: SCLmw-003-181001-GW **Collected:** 11/2/2018 11:10:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.067	J	0.080	LOD	0.20	LOQ	ug/L	U	Mb

Method Category: SVOA
Method: 8270D-SIM **Matrix:** AQ

Sample ID: SCLmw-001-181001-GW **Collected:** 11/2/2018 10:45:00 AM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
FLUORANTHENE	0.012	J	0.014	LOD	0.12	LOQ	ug/L	U	Mb
PHENANTHRENE	0.013	J	0.023	LOD	0.12	LOQ	ug/L	U	Mb

Sample ID: SCLmw-003-181001-GW **Collected:** 11/2/2018 11:10:00 AM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)ANTHRACENE	0.024	J	0.013	LOD	0.11	LOQ	ug/L	J	RI
BENZO(A)PYRENE	0.015	J	0.013	LOD	0.11	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116538-1 **Laboratory: TA DEN**

EDD Filename: 280-116538-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Method Category: SVOA

Method: 8270D-SIM **Matrix:** AQ

Sample ID: SCLmw-003-181001-GW **Collected:** 11/2/2018 11:10:00 AM **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(B)FLUORANTHENE	0.032	J	0.013	LOD	0.11	LOQ	ug/L	J	RI
BENZO(K)FLUORANTHENE	0.030	J	0.013	LOD	0.11	LOQ	ug/L	J	RI
CHRYSENE	0.053	J	0.013	LOD	0.11	LOQ	ug/L	J	RI
INDENO(1,2,3-CD)PYRENE	0.022	J	0.045	LOD	0.11	LOQ	ug/L	J	RI
PHENANTHRENE	0.014	J	0.022	LOD	0.11	LOQ	ug/L	U	Mb

Method Category: VOA

Method: 8260B **Matrix:** AQ

Sample ID: SCLmw-001-181001-GW **Collected:** 11/2/2018 10:45:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.33	J	0.80	LOD	5.0	LOQ	ug/L	J	RI

Sample ID: SCLmw-003-181001-GW **Collected:** 11/2/2018 11:10:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
METHYLENE CHLORIDE	0.85	J	0.80	LOD	5.0	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-116538-1 **Laboratory: TA DEN**

EDD Filename: 280-116538-1 **eQAPP Name: Leidos-RVAAP NACA_20181218 - Combined**

Reason Code Legend

Reason Code	*Description*
Lcs	Laboratory Control Spike Upper Estimation
Mb	Method Blank Contamination
Ms	Matrix Spike Precision
RI	Reporting Limit Trace Value
Surr	Surrogate/Tracer Recovery Lower Estimation