

Data Validation Summary Report (DVSR ID: TetraTech-M11-2019 rev1) Seep Well Field Area Bioremediation Treatability Study Nevada Environmental Response Trust Site Henderson, Nevada

PREPARED FOR

Nevada Environmental Response Trust
35 E. Wacker Drive, Suite 690
Chicago, IL 60601

PRESENTED BY

Tetra Tech, Inc.
150 S. 4th Street, Unit A
Henderson, NV 89015

June 25, 2019

TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 PRECISION AND ACCURACY OF ENVIRONMENTAL DATA.....	2
2.1 Precision	2
2.2 Accuracy	3
2.3 Representativeness	3
2.4 Comparability	4
2.5 Completeness	4
2.6 Sensitivity	5
3.0 VALIDATION RESULTS AND PARCCS.....	6
3.1 Precision	6
3.1.1 Instrument Calibration	6
3.1.2 MS/MSD and Laboratory Duplicate Samples.....	6
3.1.3 Field Duplicate Samples.....	6
3.2 Accuracy	7
3.2.1 Calibration and Continuing Calibration.....	7
3.2.2 MS/MSD Samples	7
3.2.3 LCS Samples.....	7
3.2.4 Serial Dilutions.....	7
3.2.5 Interference Check Samples	8
3.2.6 Surrogates	8
3.2.7 Analyte Quantitation and Target Identification	8
3.3 Representativeness	8
3.3.1 Sample Preservation and Holding Times	8
3.3.2 Sample Containers	9
3.3.3 Blanks	9
3.3.3.1 Method and Calibration Blanks	9
3.3.3.2 Equipment Blanks and Field Blanks	9
3.4 Comparability	9
3.5 Completeness	9
3.6 Sensitivity	10
3.6.1 Internal Standards	10
4.0 CONCLUSIONS AND RECOMMENDATIONS	11

5.0 REFERENCES 12

LIST OF TABLES

Table 1	Analytical Methods
Table 2	Sample Cross-Reference
Table 3	Validation Qualifiers and Definitions
Table 4	Validation Checks and Stages
Table 5	Reason Codes
Table 6	Results Qualified During Validation
Table 7	Field Duplicate Exceedances
Table 8	Calibration Exceedances
Table 9	MS/MSD Recovery Exceedances
Table 10	Serial Dilution Exceedances
Table 11	Better Results Reported
Table 12	Sample Preservation Infractions
Table 13	Holding Time Exceedances
Table 14	Laboratory Blank Detections
Table 15	Equipment Blank and Field Blank Detections
Table 16	Completeness Summary

APPENDICES

Appendix L.1	Validation Checklists
Appendix L.2	Laboratory Data Packages
Appendix L.3	DVSR Electronic Data Deliverable

LIST OF ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
BW	blank water
CCB	continuing calibration blank
CCV	continuing calibration verification
DL	detection limit
DMC	deuterated monitoring compound
DQO	data quality objectives
DUP	duplicate
DVSR	data validation summary report
EB	equipment blank
EDD	electronic data delivery
FB	field blank
FD	field duplicate
GC-MS	gas chromatography-mass spectroscopy
ICAL	initial calibration
ICB	initial calibration blank
ICS	interference check samples
ICV	initial calibration verification
LCS	laboratory control sample
MDL	method detection limit
MS/MSD	matrix spike/matrix spike duplicate
NORM	normal field sample
NDEP	Nevada Division of Environmental Protection
NERT	Nevada Environmental Response Trust
NFG	National Functional Guidelines
%C	percent completeness
%D	percent difference or drift
%R	percent recovery
%RSD	percent relative standard deviation
PARCCS	precision, accuracy, representativeness, comparability, completeness, sensitivity
PQL	practical quantitation limit
QA	quality assurance
QAPP	quality assurance project plan

Acronyms/Abbreviations	Definition
QC	quality control
RL	reporting limit
RPD	relative percent difference
RRF	relative response factor
SDG	sample delivery group
SQL	sample quantitation limit
Tetra Tech	Tetra Tech, Inc.
Treatability Study	Seep Well Field Area Bioremediation Treatability Study
USEPA	United States Environmental Protection Agency
µg/L	micrograms per liter
WG	groundwater
WQ	water quality assurance sample

CERTIFICATION

**Data Validation Summary Report
(DVSR ID: TetraTech-M11-2019 rev1)
Seep Well Field Area Bioremediation Treatability Study**

**Nevada Environmental Response Trust Site
(Former Tronox LLC Site)
Henderson, Nevada**

Nevada Environmental Response Trust (NERT) Representative Certification

I certify that this document and all attachments submitted to the Division were prepared at the request of, or under the direction or supervision of NERT. Based on my own involvement and/or my inquiry of the person or persons who manage the systems(s) or those directly responsible for gathering the information or preparing the document, or the immediate supervisor of such person(s), the information submitted and provided herein is, to the best of my knowledge and belief, true, accurate, and complete in all material respects.

Office of the Nevada Environmental Response Trust

Le Petomane XXVII, not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

Signature: Jay A. Steinberg Not Individually, but Solely as President of the Trustee, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

Name: Jay A. Steinberg, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

Title: Solely as President and not individually

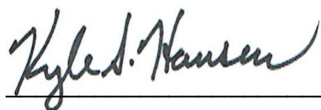
Company: Le Petomane XXVII, Inc., not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

Date: 6/25/19

CERTIFICATION

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been prepared in a manner consistent with the current standards of the profession, and to the best of my knowledge, comply with all applicable federal, state, and local statutes, regulations, and ordinances. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.

Description of Services Provided: Prepared Data Validation Summary Report (DVSR ID: TetraTech-M11-2019 rev1) Seep Well Field Area Bioremediation Treatability Study



Kyle Hansen, CEM
Field Operations Manager/Geologist
Tetra Tech, Inc.

June 25, 2019

Date

Nevada CEM Certificate Number: 2167
Nevada CEM Expiration Date: September 18, 2020

1.0 INTRODUCTION

On behalf of the Nevada Environmental Response Trust (NERT), Tetra Tech, Inc. (Tetra Tech) has prepared this Data Validation Summary Report (DVSR) to assess the validity and usability of laboratory analytical data from the samples associated with the Seep Well Field Area Bioremediation Treatability Study (Treatability Study) for the NERT site, located in Clark County, Nevada. Sampling protocol can be found in *Final Seep Well Field Area Bioremediation Treatability Study Work Plan* (Tetra Tech, 2016). Tetra Tech performed the Treatability Study, which included the collection and analyses of samples to assess the effectiveness of the Treatability Study. Tetra Tech collected additional quality assurance and quality control (QA/QC) samples to aid in assessing data quality. Tetra Tech collected 798 water samples and 68 soil samples during the investigation, for a total of 866 samples with lab analyses that underwent validation. Additionally, Tetra Tech collected 24 water samples that were used for geotechnical and microbial analyses that were not validated.

TestAmerica, Inc. provided laboratory analytical services. The analyses were performed by the methods shown in Table 1. Table 1 includes methods and sample numbers that underwent data validation.

The laboratory assigns job numbers, also called sample delivery groups (SDGs), to all samples. The samples associated with QA/QC are designed to document the data quality of the samples in each sampling round or within an SDG. Table 2 cross-references each sample with its laboratory analysis, SDG, collection date, client sample number, laboratory sample number, QC type, matrix, and stage of validation. Samples in Table 2 are submitted in the DVSR electronic data deliverable (EDD) along with associated, unvalidated field readings, geotechnical data, and microbial data. Only the validated samples appear in Table 2.

The laboratory analytical data were verified and validated in accordance with procedures described in the *Quality Assurance Project Plan, Revision 2* (Ramboll Environ, 2017), *NDEP Data Verification and Validation Requirements* (NDEP, 2018), the Nevada Department of Environmental Protection (NDEP) December 2018 email (Dong, 2018) concerning multiple results, and the references contained therein. Aqueous samples were validated to Stage 2A. For soil samples, 90 percent of the data were validated to Stage 2B and 10 percent to Stage 4. The review process uses professional judgment and National Functional Guidelines (NFG) guidance to determine the final qualifiers, which are added to the database and presented in the DVSR tables.

The validation checklists are found in Appendix L.1. Laboratory data packages may be found in Appendix L.2. A database of the analytical results is provided in Appendix L.3.

This report summarizes the QA/QC evaluation of the data using precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) relative to the project data quality objectives (DQOs). This report provides a quantitative and qualitative assessment of the data and identifies potential sources of error, uncertainty, and bias that may affect the overall usability of the data.

2.0 PRECISION AND ACCURACY OF ENVIRONMENTAL DATA

Environmental data quality depends on sample collection procedures, analytical methods and instrumentation, documentation, and sample matrix properties. Both sampling procedures and laboratory analyses contain potential sources of uncertainty, error, and/or bias, which may affect the overall quality of a measurement. Errors for sample data may result from incomplete equipment decontamination, inappropriate sampling techniques, sample heterogeneity, improper filtering, and improper preservation. The accuracy of analytical results is dependent on selecting appropriate analytical methods, maintaining equipment properly, and complying with QC requirements. The sample matrix also is an important factor in the ability to obtain precise and accurate results within a given medium.

Environmental and laboratory QA/QC samples provide information on the effects of sampling procedures and evaluate laboratory contamination, laboratory performance, and matrix effects. Field QA/QC samples include equipment blanks (EBs), field blanks (FBs), field duplicates (FDs), and matrix spike/matrix spike duplicates (MS/MSDs). Laboratory QA/QC samples include method blanks, laboratory control samples (LCSs), laboratory duplicates (DUP), and additional MS/MSDs needed to meet method requirements.

2.1 PRECISION

Precision is a measure of the agreement of analytical results under a given set of conditions. It is a quantity that is not measured directly but is calculated from concentrations. Precision can be expressed as the relative percent difference (RPD) between two measurements:

$$RPD = \frac{(C1 - C2) * 100}{(C1 + C2) / 2}$$

where:

C1 = reported concentration for the sample

C2 = reported concentration for the duplicate

Precision can be expressed as the percent relative standard deviation (%RSD) between three or more measurements:

$$\%RSD = (s/\bar{a}) * 100$$

where:

%RSD = percent relative standard deviation

s = standard deviation

\bar{a} = mean of replicate analyses

Precision is assessed by calculating %RSD during an initial calibration (ICAL) and RPD from the percent recoveries of the spiked compounds for each sample in the MS/MSD pair. In the absence of an MS/MSD pair, a laboratory duplicate can be analyzed as an alternative means of assessing precision. An additional measure of sampling precision is obtained by collecting and analyzing FD samples, which are compared using the RPD results as the evaluation criteria.

MS and MSD samples are field samples which have been spiked by the laboratory with target analytes prior to preparation and analysis. These samples measure the appropriateness of the analytical method and effectiveness in recovering target analytes from a specific environmental matrix. The LCS sample is spiked with the same target analytes as the MS/MSD using an interference-free matrix instead of a field sample aliquot. The LCS measures laboratory efficiency in recovering target analytes in the absence of matrix interferences. It is used to verify that the analyses are being performed in control.

The laboratory analyzes laboratory replicates. A field sample is analyzed and an unspiked duplicate of that sample is also analyzed. The data reviewer compares the reported results of the primary analysis and the laboratory duplicate and calculates RPDs to assess laboratory precision.

Calibration precision is determined by calculating %RSD. Laboratory and field sampling precision are evaluated by calculating RPDs for field sample duplicate pairs, if collected. The sampler collects two field samples at the same location and under identical conditions. The laboratory then analyzes the samples under identical conditions.

An RPD outside the allowed limit between MS/MSD samples or DUP samples indicates imprecision. Imprecision is the variance in the consistency with which the laboratory arrives at a reported result. The actual analyte concentration may be higher or lower than the reported result.

Possible causes of poor precision include sample heterogeneity, sample matrix interference, improper sample collection or handling, inconsistent sample preparation, instrument column fouling, and poor instrument stability. In duplicate pairs, results may be reported in either the primary or duplicate samples at levels below the practical quantitation limit (PQL) or non-detected. Since these values are estimated, RPD exceedances from these duplicate pairs do not suggest a significant impact to data quality.

2.2 ACCURACY

Accuracy is a measure of the closeness of agreement between a measured value and the true value of an analytical parameter. It may be used to identify bias in each measurement system. Recoveries outside acceptable QC limits may be caused by factors such as instrumentation, analyst error, or matrix interference. Accuracy is assessed through the analysis of continuing calibrations, MS, MSD, LCS, and surrogates. In some cases, samples from multiple SDGs were within one QC batch and therefore are associated with the same laboratory QC samples. Accuracy is determined using the percent recovery (%R) of MS and LCS analyses.

Percent recovery is calculated using the following equation:

$$\%R = (A-B)/C \times 100$$

where:

A = measured concentration in the spiked sample

B = measured native concentration in the unspiked sample

C = concentration of the spike

The percent recovery of each analyte spiked in MS/MSD samples and LCS is evaluated with the acceptance criteria specified by the QAPPs and laboratory limits. Spike recoveries outside the acceptable QC accuracy limits provide an indication of bias, where the reported data may overestimate or underestimate the actual concentration of compounds detected or quantitation limits reported for environmental samples.

2.3 REPRESENTATIVENESS

Representativeness is a qualitative parameter that expresses the degree to which the sample data are characteristic of a population. It is evaluated by reviewing the QC results of blanks, samples, and holding times. Positive detects of compounds in the blank samples identify compounds that may have been introduced into the samples during sample collection, transport, preparation, or analysis. The QA/QC blanks collected and analyzed are method blanks, calibration blanks, EBs, and FBs.

A method blank is a laboratory grade water or solid matrix that contains the method reagents and has undergone the same preparation and analysis as the environmental samples. The method blank provides a measure of the combined contamination derived from the laboratory source water, glassware, instruments, reagents, and sample preparation steps. Method blanks are prepared for each sample of a similar matrix extracted by the same method at a similar concentration level.

Several methods require the use of initial calibration blanks (ICBs) and continuing calibration blanks (CCBs). ICBs and CCBs are laboratory-grade water samples that are analyzed at the beginning, during, and at the end of sample analysis runs. The frequency is dependent on the analytical method. These blanks estimate residual contaminants from the previous sample or standards analysis and measure baseline shifts that commonly occur in emission and absorption spectroscopy.

EBs consist of analyte-free water poured over or through the sample collection equipment. The water is collected in a sample container for laboratory analysis. These blanks are collected after the sampling equipment is decontaminated; they are used to measure effectiveness of the decontamination procedure. Equipment blanks are collected and analyzed for all target analytes.

FBs consist of analyte-free source water stored at the sample collection site. The water is collected from each source water used during each sampling event. Field blanks were collected and analyzed for all target analytes.

Contaminants found in both the environmental sample and the blank sample are assumed to be laboratory artifacts if both values are less than the PQL or if a sample result and blank contaminant value are greater than the PQL and the sample result is less than 10 times the blank contaminant value.

Holding times are evaluated to assure that the sample integrity is intact for accurate sample preparation and analysis. Holding times are specific for each method and matrix analyzed. Holding time exceedance can cause loss of sample constituents due to biodegradation, precipitation, volatilization, and chemical degradation. Sample results for analyses that were performed after the method holding time are qualified according to NDEP requirements using the qualifiers and bias recommendations found in the NFGs.

2.4 COMPARABILITY

Comparability is a qualitative characteristic that defines the extent to which the data for a chemical parameter measurement are consistent with, and may be compared with, data from other sampling events. Comparability is dependent upon the design of the sampling plans and execution of activities consistent with approved plans. Factors affecting comparability include sample collection and handling techniques, matrix type, and analytical method. Comparability is achieved through the use of standard techniques to collect representative samples, consistent application of analytical method protocols, and use of appropriate units in reporting analytical results. Comparability is also dependent upon other PARCCS criteria, because only when precision, accuracy, and representativeness are known can datasets be compared with confidence.

2.5 COMPLETENESS

Completeness is defined as the percentage of acceptable sample results compared to the total number of sample results. Completeness is evaluated to determine if an acceptable amount of usable data were obtained so that a valid scientific site assessment can be completed. Completeness equals the total number of sample results for each fraction minus the total number of rejected sample results divided by the total number of sample results multiplied by 100. As specified in the project DQOs, the goal for completeness for target analytes in each analytical fraction is 90 percent.

Percent completeness is calculated using the following equation:

$$\%C = (T - R)/T \times 100$$

where:

%C = percent completeness

T = total number of sample results

R = total number of rejected sample results

Completeness is also determined by comparing the planned number of samples per method and matrix as specified in the QAPPs, with the number determined above. In cases where multiple results are reported for a

single analyte due to dilutions or re-analysis using a single method, the most technically sound value will be reported, and the other result will be qualified "R". Data rejected in favor of alternate results are not used in the completion calculation.

2.6 SENSITIVITY

Sensitivity is the ability of an analytical method or instrument to discriminate between measurement responses representing different concentrations. It is generally used to describe the instrument detection limits (DLs) or PQLs established to meet project DQOs. The method detection limit (MDL) represents the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. Sample quantitation limits (SQLs) are adjusted MDL values that reflect sample-specific actions, such as dilutions or varying aliquot sizes. The laboratory data reports show MDL in place of the SQL. The MDL was adjusted to reflect the sample analysis conditions. The PQL is the minimum concentration that can be reported based on the analysis of a specific matrix. The PQL is often the lowest acceptable calibration point for the analyte.

For this project, the laboratory data reports show reporting limit (RL) in place of the PQL. The laboratory reported detected analytes down to the adjusted MDL/SQL. All results reported between the SQL and PQL were qualified "J" by the laboratory. Sample results are compared to method and field quality blank results to identify possible effects of laboratory background and field procedures on sensitivity.

3.0 VALIDATION RESULTS AND PARCCS

This section discusses the validation results and the associated PARCCS criteria. Before conducting the PARCCS evaluation, the analytical data were validated.

Samples not meeting the acceptance criteria were denoted with a validation qualifier that indicates a deficiency with the data. Table 3 contains validation qualifiers used in data validation.

When more than one validation qualifier is applicable to a data point, the final validation qualifier applied is based on the following hierarchy:

R > J	R takes precedence over the J qualifier.
J+	The high bias (J+) qualifier is applied to detected results only.
J > J+ or J-	The unbiased (J) qualifier supersedes biased (J+ or J-) qualifiers since it is not possible to assess the direction of the potential bias.
J = J+ plus J-	Adding biased (J+ or J-) qualifiers with opposite signs results in an unbiased qualifier (J).
UJ = U plus J	The UJ qualifier is used when a non-detected (U) flag is added to a (J) flag.

Table 4 identifies the QC elements reviewed for each validation level. The actual elements are method-dependent.

Table 5 lists the reason codes used. Reason codes explain why data were qualified and identify possible limitations of data use. Reason codes are cumulative except when one of the flags is R. In that case, only the reason code associated with the R flag is used.

Table 6 presents the overall qualified results after the validation qualifiers and associated reason codes were applied.

3.1 PRECISION

3.1.1 Instrument Calibration

The objective of the ICAL is to ensure that an instrument can produce acceptable qualitative and quantitative data by determining the ratio of instrument response to analyte concentration. %RSD is used to evaluate ICAL results in RSK-175 and provides a means of evaluating precision within an analytical system. All %RSDs were acceptable. No data were qualified for imprecision in the ICAL.

3.1.2 MS/MSD and Laboratory Duplicate Samples

Most MS/MSD and lab duplicate RPDs were within the acceptance criteria as stated in the QAPP. One sulfate result was qualified “J” for a high MS/MSD RPD of 45 percent. The limit is 20 percent. The result is denoted with reason code “ld” in Table 6.

3.1.3 Field Duplicate Samples

For results > 5X the PQL, the FDs were evaluated for acceptable precision with RPDs. For results < 5X the PQL, samples were evaluated by the difference between the two measurements. Table 7 includes results where RPDs exceeded 30% for water or 50% for soils or the difference between the values was greater than the absolute value of the PQL. Eighteen results were qualified for FD imprecision. Results qualified for FD imprecision are found in Table 6 with reason code “fd”. The parent sample and the FD were qualified “J” for detects and “UJ” for non-detects.

3.2 ACCURACY

3.2.1 Calibration and Continuing Calibration

As stated previously, the objective of initial calibration is to ensure that an instrument is capable of producing acceptable qualitative and quantitative data by determining the ratio of instrument response to analyte concentrations. Typically, inorganic methods use regression models for initial calibration. Regression may also be used in organic analyses. The correlation coefficient indicates the linearity of the calibration curve. The coefficient of determination is an overall measure of the accuracy of the regression calibration curve. The objective of continuing calibration is to ensure that the instrument continues to meet the sensitivity and linearity criteria throughout each analytical sequence. Initial and continuing calibration verification (CCV) results provide a means of evaluating accuracy. Percent difference or drift (%D), percent recovery (%R), correlation coefficient, and coefficient of determination are the parameters used to measure the effectiveness of instrument calibration. %R and %D are used to verify the ongoing calibration acceptability of the analytical system.

Most calibration %D and %R criteria were met. Ten volatile fatty acid (VFA) results were qualified "UJ" for high %Rs in the CCVs. VFAs are analyzed by ion chromatography and are considered inorganic for purposes of validation. The CCV %Rs were high and the results were non-detect. Typically, the results would not be qualified, but the validator, using professional judgment, applied qualification because the recoveries were notably high. All results qualified for calibration exceedances are found in Table 6 with reason code "c." The calibration outliers are presented in Table 8.

3.2.2 MS/MSD Samples

Several MS/MSD %Rs were outside of acceptance criteria shown in the QAPPs. MS/MSD %R exceedances can be found in Table 9. Analytes that were present in the parent sample in concentrations greater than 4 times the amount spiked were not qualified and are not shown in the table. In cases where the recoveries were high and the parent sample was non-detect, no qualification was applied. Qualifiers were applied to parent samples only, unless FD samples or samples of known similarity were analyzed in the same SDG. Table 9 contains the spiked parent sample only. Per the inorganic NFG, MS/MSD recoveries < 30 percent resulted in rejection of the non-detected data point. In cases where dilutions caused the low recoveries, the data were not rejected or qualified. The effect of dilution on matrix spike recoveries is determined on a case-by-case-basis using professional judgment, knowledge of the lab's procedures, and input from the lab. For some analyses, the lab may dilute the sample prior to preparation for analyses and prior to addition of the matrix spike compounds. The lab also approaches this on a case-by-case basis. Sixty-nine results were qualified for MS/MSD %Rs. Two non-detected results were rejected for recoveries less than 30%, per the inorganic NFG. The validator, using professional judgment, did not assign bias to the perchlorate result in SWFTS-MW09B-SO-39. The perchlorate result in the FD of SWFTS-MW09B-SO-39 was detected at a higher concentration even though it was associated with an interference check sample with a low recovery. The direction of bias is not clear. Associated results qualified or rejected for MS/MSD recoveries can be found in Table 6 with reason code "m."

3.2.3 LCS Samples

No data were qualified for LCS %R outliers.

3.2.4 Serial Dilutions

The serial dilution is used to determine whether physical or chemical interferences exist due to matrix. Most serial dilution %Ds were less than 10 percent as required in the inorganic NFG. Ten SW-6010B results were qualified for high %Ds in the serial dilution. Associated results qualified for serial dilution %Ds can be found in Table 6 with reason code "sd." Serial dilution %D exceedances can be found in Table 10.

3.2.5 Interference Check Samples

Interference check samples (ICS) are analyzed in the following methods: EPA 314.0, SW-6010B, and SW-6020A. All 6010B and 6020A interference check %Rs met acceptance criteria of 80 to 120 percent. Seventeen perchlorate results were qualified for low %R in the associated ICS. The results are denoted with reason code “z” in Table 6. The perchlorate samples were all associated with sample INF 440-395408/6, which had a recovery of 79 percent.

3.2.6 Surrogates

Surrogates are added to all samples analyzed by EPA 300.1B to measure the efficiency of the analytical method. One chlorite result in sample SWFTS-MW25-BL02 was qualified “UJ” for a surrogate %R of 79 percent. The acceptance limits are 90 to 115 percent. The result is denoted with reason code “s” in Table 6.

3.2.7 Analyte Quantitation and Target Identification

Raw data were evaluated in Stage 4 validation. All analyte quantitation and target identifications reviewed matched the reported values.

Two soil total organic carbon results exceeded the calibration range of the instrument. They were not reanalyzed by the lab and were qualified “J” in validation. The results are denoted with reason code “e” in Table 6.

Twenty-nine sulfate results exceeded the calibration range of the instrument and were re-analyzed by the lab. The original results were assigned a validation qualifier “R” and are shown with reason code “br” in Table 6. The most technically sound results were used. Sixty-nine rejected results are shown in Table 11 with a comment describing the logic for using the alternate result. Data rejected in favor of alternate results such as dilution runs are not used in the completion calculation.

3.3 REPRESENTATIVENESS

3.3.1 Sample Preservation and Holding Times

Sample preservation, including temperature, and holding times were evaluated to verify compliance with the analytical methods.

Forty-eight volatile fatty acid results were qualified “UJ” for sample receipt temperatures greater than 6 degrees C. They are designated with reason code “st” in Table 6.

Thirty results were qualified for preservation. Two total Kjeldahl nitrogen samples were not analyzed from preserved aliquots. They were qualified “UJ” and designated with reason code “pH” in Table 6. Twenty-eight TOC results were qualified for improper preservation and designated with reason codes “h, pH” in Table 6. The samples were collected in jars containing HCl, but when checked, the pH was >2. The lab adjusted the pH of the samples to pH < 2 prior to analysis. Since the samples were not analyzed within the 4-hour holding time for unpreserved samples, the holding time was grossly exceeded. The TOC results were qualified “J-”.

Fifteen results were qualified for holding time only and are designated with reason code “h” in Table 6.

The preservation and temperature exceedances are shown in Table 12. The holding time exceedances are shown in Table 13.

3.3.2 Sample Containers

Three perchlorate sterile sample bottles arrived empty at the laboratory. The lab analyzed the samples from non-sterile aliquots. Three perchlorate results were qualified “J” and are designated with reason code “o” in Table 6. Bias was not applied because it is not known.

3.3.3 Blanks

Method blanks, ICBs, CCBs, EBs, and FBs were analyzed to evaluate representativeness. The concentration of an analyte in any blank was used for data qualification. If contaminants were detected in a blank, the blank concentration was compared to the sample results. If the analyte was not detected in the sample, no qualification was applied to the sample. If the sample concentration was greater than 10 times the amount in the blank, after dilutions were considered, no qualification was applied.

For concentrations detected in the sample below the PQL, the sample result was qualified “J”. Based on hierarchy of validation qualification, the “J” qualifier, in this case applied to detected results below the PQL, supersedes the positive bias associated with blank contamination. For concentrations detected in the sample above the PQL and less than 10 times the amount in the blank, the sample result was qualified “J+”.

3.3.3.1 Method and Calibration Blanks

Several inorganic analytes were detected in the method and calibration blanks. Forty-one sample results were qualified because of analytes found in both the samples and the lab blanks. Qualified results are shown in Table 6 with reason codes “bl.” Laboratory blank detections that resulted in qualification are shown in Table 14.

3.3.3.2 Equipment Blanks and Field Blanks

There were several detections in the EBs and FBs. Twelve results were qualified because of EB detections. The qualified results are shown in Table 6 with reason code “be.” Fifteen results were qualified because of FB detections. Qualified results are shown in Table 6 with reason code “bf.”

EB and FB detections that resulted in qualification are shown in Table 15 with the associated samples. EBs and FBs may not appear in the same SDG as their associated samples.

3.4 COMPARABILITY

The laboratory used standard analytical methods for all analyses. In all cases, the SQLs attained were at or below the PQLs. Target compounds detected below the PQLs were flagged “J” by the laboratory and should be considered estimated. All 447 results detected between the SQL and PQL, and used as reported, are shown with reason code “sp” in Table 6. The comparability of the data is acceptable.

3.5 COMPLETENESS

The overall completeness level attained for the field samples, EBs, and FBs is 99.99 percent and meets the project goal of 90 percent. Chlorite in SWFTS-MW14-EM08 and Phosphorus, Total in COH-2B1-EM15 were rejected for MS/MSD recoveries less than 30%, per the inorganic NFG. The percentage was calculated as the total number of accepted (non-rejected) sample results divided by the total number of sample results multiplied by 100. Completeness by method is presented in Table 16. Data rejected in favor of alternate results such as dilution runs are not used in the completion calculation.

3.6 SENSITIVITY

The calibrations were evaluated for instrument sensitivity and were determined to be technically acceptable. Due to high analyte concentrations, many analytical runs were analyzed at dilutions. For diluted analyses, SQLs and PQLs were elevated. Several analyses were run at multiple dilutions because of high concentrations of other target analytes. The most technically sound result was used. Typically, where multiple non-detected results were reported, and quality control criteria were comparable, the result with the lowest PQL was used. Typically, where multiple detected results were reported, and quality control criteria were comparable, the result with the highest concentration was used, unless the lab indicated it should not be used. Unused results were assigned a validation qualifier “R” and are shown with reason code “brr” in Table 6. The unused results are shown in Table 11 with a comment describing the logic for using the alternate result. Data rejected in favor of alternate results such as dilution runs are not used in the completion calculation. It is recommended that these data be excluded from the NDEP database.

3.6.1 Internal Standards

Internal standards were added to samples analyzed by methods SW-6010B and SW-6020A. The internal standards in methods SW-6010B and SW-6020A were used to determine the existence and magnitude of instrument drift and physical interferences. No analytes were qualified for internal standard anomalies.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Data were qualified for issues affecting precision, accuracy, representativeness, and comparability. Two results out of 14472 analyzed, validated, and reported were rejected for low MS/MSD recoveries. Multiple runs were analyzed for 29 samples with high sulfate concentrations that exceeded the calibration range of the instrument. They were assigned a validation qualifier “R” because more technically sound results were used. Data rejected in favor of alternate results such as dilution runs were not used in the completion calculation. It is recommended that they be excluded from the NDEP database.

The analytical data quality assessment for the analytical results generated during the Seep Well Field Area Bioremediation Treatability Study at the NERT site in Henderson, Nevada, established that the overall project requirements and completeness levels were met.

5.0 REFERENCES

- Dong, Weiwan to Steve Clough. (2018). "2018 11 26 Facility ID H-000539 NERT." Email. December 7.
- Nevada Division of Environmental Protection (NDEP). (2018). *NDEP Data Verification and Validation Requirements*.
- Ramboll Environ. (2017). *Quality Assurance Project Plan, Revision 2, Nevada Environmental Response Trust Site, Henderson, Nevada*.
- Tetra Tech. (2016). *Final Seep Well Field Area Bioremediation Treatability Study Work Plan*.

Tables

Table 1 Analytical Methods

Method	Parameters	Number of Water Samples	Number of Soil Samples
Calculated	Total Nitrogen	119	0
EPA 300.0	Chloride	124	0
EPA 300.0	Nitrate [as N]	719	0
EPA 300.0	Nitrite [as N]	119	0
EPA 300.0	Sulfate	667	0
EPA 300.1B	Chlorate	731	0
EPA 300.1B	Chlorite	53	0
EPA 314.0	Perchlorate	764	63
EPA 351.2	Total Kjeldahl Nitrogen [TKN]	121	5
EPA 365.3	Phosphorus, Total	197	0
RSK175	Methane	102	0
SM2320B	Alkalinity as CaCO ₃	384	0
SM2320B	Alkalinity, Bicarbonate [As CaCO ₃]	384	0
SM2320B	Alkalinity, Hydroxide [As CaCO ₃]	384	0
SM2320B	Alkalinity, Carbonate [As CaCO ₃]	384	0
SM2540C	Total Dissolved Solids [TDS]	137	0
SM2540C-soluble	Total Dissolved Solids [TDS]	0	7
SM4500-H+	pH	4	0
SM5310B	Total Organic Carbon	668	0
SW-6010B	Dissolved Metals	245	0
SW-6010B	Total Metals	237	5
SW-6020A	Dissolved Metals	245	0
SW-6020A	Total Metals	4	0
SW-7199	Chromium [VI]	22	0
SW-9045C-soluble	pH	0	4
SW-9060	Total Organic Carbon	57	11
VFA-IC	Volatile Fatty Acids	89	0

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-177629-1/2	SWFTS-BH02-WG-26	440-177629-1	WG	NORM	02/21/17	Stage 2A		X		X				
440-177629-1/2	SWFTS-BH02-WG-35	440-177629-2	WG	NORM	02/21/17	Stage 2A		X		X				
440-177629-1/2	SWFTS-BH02-WG-35-FD	440-177629-3	WG	FD	02/21/17	Stage 2A		X		X				
440-177682-1	SWFTS-BH02-SO-34	440-177682-1	SO	NORM	02/21/17	Stage 2B				X				
440-177819-1	SWFTS-BH07-WG-25	440-177819-1	WG	NORM	02/22/17	Stage 2A				X				
440-177822-1	SWFTS-BH07-SO-14.5	440-177822-1	SO	NORM	02/22/17	Stage 2B				X				
440-177995-1/2	SWFTS-BH08-WG-22	440-177995-2	WG	NORM	02/23/17	Stage 2A		X		X				
440-177995-2	SWFTS-BH07-WG-35	440-177995-1	WG	NORM	02/22/17	Stage 2A				X				
440-177998-1	SWFTS-BH08-SO-14.5	440-177998-1	SO	NORM	02/23/17	Stage 2B				X				
440-178093-1/2	SWFTS-BH08-WG-36	440-178093-1	WG	NORM	02/23/17	Stage 2A		X		X				
440-178093-2	SWFTS-BH08-WG-46	440-178093-2	WG	NORM	02/24/17	Stage 2A				X				
440-178093-2	SWFTS-BH10-WG-21	440-178093-4	WG	NORM	02/24/17	Stage 2A				X				
440-178093-2	SWFTS-BH10-WG-36	440-178093-3	WG	NORM	02/24/17	Stage 2A				X				
440-178098-1	SWFTS-BH08-SO-52.5	440-178098-1	SO	NORM	02/24/17	Stage 2B				X				
440-178098-1	SWFTS-BH10-SO-12	440-178098-2	SO	NORM	02/24/17	Stage 2B				X				
440-178282-1	SWFTS-BH01-WG-22	440-178282-3	WG	NORM	02/26/17	Stage 2A				X				
440-178282-1	SWFTS-BH01-WG-36	440-178282-4	WG	NORM	02/26/17	Stage 2A				X				
440-178282-1	SWFTS-BH03-WG-26	440-178282-1	WG	NORM	02/25/17	Stage 2A				X				
440-178282-1	SWFTS-BH03-WG-41	440-178282-2	WG	NORM	02/25/17	Stage 2A				X				
440-178282-1	SWFTS-BH04-WG-21	440-178282-5	WG	NORM	02/26/17	Stage 2A				X				
440-178282-1	SWFTS-BH04-WG-36	440-178282-6	WG	NORM	02/26/17	Stage 2A				X				
440-178282-1	SWFTS-BH09-WG-13.5	440-178282-7	WG	NORM	02/27/17	Stage 2A				X				
440-178303-1	SWFTS-BH01-SO-16	440-178303-4	SO	NORM	02/26/17	Stage 2B				X				
440-178303-1	SWFTS-BH03-SO-24	440-178303-3	SO	NORM	02/25/17	Stage 2B				X				
440-178303-1	SWFTS-BH04-SO-14	440-178303-5	SO	NORM	02/26/17	Stage 2B				X				
440-178303-1	SWFTS-BH09-SO-16	440-178303-6	SO	NORM	02/27/17	Stage 2B				X				
440-178303-1	SWFTS-BH09-SO-33	440-178303-7	SO	NORM	02/27/17	Stage 2B				X				
440-178303-1	SWFTS-BH10-SO-51	440-178303-1	SO	NORM	02/24/17	Stage 2B				X				
440-178303-1	SWFTS-BH10-SO-51-FD	440-178303-2	SO	FD	02/24/17	Stage 2B				X				
440-178410-1	SWFTS-MW02-SO-6	440-178410-5	SO	NORM	02/28/17	Stage 2B				X				
440-178410-1	SWFTS-MW02-SO-6-FD	440-178410-6	SO	FD	02/28/17	Stage 2B				X				
440-178410-1	SWFTS-MW02-SO-7	440-178410-7	SO	NORM	02/28/17	Stage 2B				X				
440-178410-1	SWFTS-MW04-SO-1	440-178410-3	SO	NORM	02/28/17	Stage 2B				X				
440-178410-1	SWFTS-MW04-SO-15	440-178410-2	SO	NORM	02/28/17	Stage 2B				X				
440-178410-1	SWFTS-MW04-SO-25	440-178410-1	SO	NORM	02/28/17	Stage 2B				X				
440-178410-1	SWFTS-MW04-SO-5	440-178410-4	SO	NORM	02/28/17	Stage 2B				X				
440-178495-1	SWFTS-MW03-WG-21	440-178495-1	WG	NORM	03/01/17	Stage 2A				X				

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-178495-1	SWFTS-MW03-WG-32	440-178495-2	WG	NORM	03/01/17	Stage 2A				X				
440-178495-1	SWFTS-MW03-WG-32-FD	440-178495-3	WG	FD	03/01/17	Stage 2A				X				
440-178497-1	SWFTS-MW02-SO-14	440-178497-1	SO	NORM	02/28/17	Stage 2B				X				
440-178497-1	SWFTS-MW02-SO-25	440-178497-2	SO	NORM	02/28/17	Stage 2B				X				
440-178497-1	SWFTS-MW03-SO-14	440-178497-3	SO	NORM	03/01/17	Stage 2B				X				
440-178497-1	SWFTS-MW03-SO-14-FD	440-178497-4	SO	FD	03/01/17	Stage 2B				X				
440-178497-1	SWFTS-MW03-SO-46	440-178497-5	SO	NORM	03/01/17	Stage 2B				X				
440-178689-1	SWFTS-MW03-SO-57	440-178689-1	SO	NORM	03/01/17	Stage 2B				X				
440-178689-1	SWFTS-MW03-SO-58	440-178689-2	SO	NORM	03/01/17	Stage 2B				X				
440-179122-1	SWFTS-MW01-SO-17	440-179122-1	SO	NORM	03/07/17	Stage 2B				X				
440-179122-1	SWFTS-MW01-SO-21	440-179122-2	SO	NORM	03/07/17	Stage 2B				X				
440-179122-1	SWFTS-MW01-SO-30	440-179122-3	SO	NORM	03/07/17	Stage 2B				X				
440-179122-1	SWFTS-MW01-SO-40.5	440-179122-4	SO	NORM	03/07/17	Stage 2B				X				
440-179273-1	SWFTS-MW06B-SO-12	440-179273-1	SO	NORM	03/07/17	Stage 2B				X				
440-179273-1	SWFTS-MW06B-SO-29.5	440-179273-2	SO	NORM	03/07/17	Stage 2B				X				
440-179273-1	SWFTS-MW06B-SO-36.5	440-179273-3	SO	NORM	03/07/17	Stage 2B				X				
440-179384-1	SWFTS-MW08C-WG-50	440-179384-1	WG	NORM	03/09/17	Stage 2A				X				
440-179386-1	SWFTS-MW08C-SO-28	440-179386-1	SO	NORM	03/08/17	Stage 4				X				
440-179386-1	SWFTS-MW08C-SO-28-FD	440-179386-2	SO	FD	03/08/17	Stage 4				X				
440-179386-1	SWFTS-MW08C-SO-43	440-179386-6	SO	NORM	03/08/17	Stage 4				X				
440-179386-1	SWFTS-MW08C-SO-49	440-179386-3	SO	NORM	03/09/17	Stage 4				X				
440-179386-1	SWFTS-MW08C-SO-51	440-179386-4	SO	NORM	03/09/17	Stage 4				X				
440-179386-1	SWFTS-MW08C-SO-55	440-179386-5	SO	NORM	03/09/17	Stage 4				X				
440-179386-1	SWFTS-MW08C-SO-60	440-179386-7	SO	NORM	03/09/17	Stage 4				X				
440-179386-1	SWFTS-MW08C-SO-65	440-179386-8	SO	NORM	03/09/17	Stage 4				X				
440-179386-1	SWFTS-MW08C-SO-69	440-179386-9	SO	NORM	03/09/17	Stage 4				X				
440-179551-1	SWFTS-MW05B-SO-26.5	440-179551-1	SO	NORM	03/10/17	Stage 2B				X				
440-179551-1	SWFTS-MW05B-SO-36.5	440-179551-2	SO	NORM	03/10/17	Stage 2B				X				
440-179551-1	SWFTS-MW07B-SO-15	440-179551-5	SO	NORM	03/11/17	Stage 2B				X				
440-179551-1	SWFTS-MW07B-SO-28	440-179551-6	SO	NORM	03/11/17	Stage 2B				X				
440-179551-1	SWFTS-MW07B-SO-28-FD	440-179551-7	SO	FD	03/11/17	Stage 2B				X				
440-179551-1	SWFTS-MW07B-SO-45	440-179551-8	SO	NORM	03/11/17	Stage 2B				X				
440-179551-1	SWFTS-MW07B-SO-45-FD	440-179551-9	SO	FD	03/11/17	Stage 2B				X				
440-179551-1	SWFTS-MW07B-SO-5	440-179551-3	SO	NORM	03/11/17	Stage 2B				X				
440-179551-1	SWFTS-MW07B-SO-53	440-179551-10	SO	NORM	03/11/17	Stage 2B				X				
440-179551-1	SWFTS-MW07B-SO-8	440-179551-4	SO	NORM	03/11/17	Stage 2B				X				
440-179551-1	SWFTS-MW10C-SO-14	440-179551-11	SO	NORM	03/12/17	Stage 2B				X				

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-179551-1	SWFTS-MW10C-SO-31.5	440-179551-12	SO	NORM	03/12/17	Stage 2B				X				
440-179551-1	SWFTS-MW10C-SO-51.5	440-179551-13	SO	NORM	03/13/17	Stage 2B				X				
440-179672-1	SWFTS-WG1-EB	440-179672-2	BW	EB	03/14/17	Stage 2A		X		X				
440-179672-1	SWFTS-WG1-FB	440-179672-1	BW	FB	03/14/17	Stage 2A		X		X				
440-179673-1	SWFTS-MW09B-SO-19	440-179673-1	SO	NORM	03/14/17	Stage 2B				X				
440-179673-1	SWFTS-MW09B-SO-39	440-179673-2	SO	NORM	03/14/17	Stage 2B				X				
440-179673-1	SWFTS-MW09B-SO-39-FD	440-179673-3	SO	FD	03/14/17	Stage 2B				X				
440-179673-1	SWFTS-SO1-EB	440-179673-4	BW	EB	03/14/17	Stage 2A				X				
440-179673-1	SWFTS-SO1-FB	440-179673-5	BW	FB	03/14/17	Stage 2A				X				
440-179802-1	SWFTS-BH05-SO-20.5	440-179802-1	SO	NORM	03/15/17	Stage 2B				X				
440-179802-1	SWFTS-BH05-SO-31	440-179802-2	SO	NORM	03/15/17	Stage 2B				X				
440-179802-1	SWFTS-BH05-SO-31-FD	440-179802-3	SO	FD	03/15/17	Stage 2B				X				
440-179802-1	SWFTS-BH05-SO-36	440-179802-4	SO	NORM	03/15/17	Stage 2B				X				
440-179802-1	SWFTS-BH06-SO-14	440-179802-7	SO	NORM	03/15/17	Stage 2B				X				
440-179802-1	SWFTS-SO2-EB	440-179802-5	BW	EB	03/15/17	Stage 2A				X				
440-179802-1	SWFTS-SO2-FB	440-179802-6	BW	FB	03/15/17	Stage 2A				X				
440-180820-1	SWFTS-FIELDQC-BL01-EB	440-180820-6	BW	EB	03/28/17	Stage 2A		X	X	X		X		
440-180820-1	SWFTS-FIELDQC-BL01-FB	440-180820-5	BW	FB	03/28/17	Stage 2A		X	X	X		X		
440-180820-1/2	SWFTS-MW08C-BL01	440-180820-3	WG	NORM	03/28/17	Stage 2A		X	X	X		X		
440-180820-1/2	SWFTS-MW10C-BL01	440-180820-4	WG	NORM	03/28/17	Stage 2A		X	X	X		X		
440-180820-1/3	PC-58-BL01	440-180820-1	WG	NORM	03/28/17	Stage 2A		X	X	X				
440-180820-1/3	PC-94-BL01	440-180820-2	WG	NORM	03/28/17	Stage 2A		X	X	X		X		
440-180937-1	PC-91-BL01	440-180937-1	WG	NORM	03/29/17	Stage 2A		X	X	X		X		
440-180937-1	PC-92-BL01	440-180937-2	WG	NORM	03/29/17	Stage 2A		X	X	X		X		
440-180937-1	SWFTS-MW01-BL01	440-180937-6	WG	NORM	03/29/17	Stage 2A		X	X	X		X		
440-180937-1	SWFTS-MW02-BL01	440-180937-7	WG	NORM	03/29/17	Stage 2A		X	X	X				
440-180937-1	SWFTS-MW09A-BL01	440-180937-3	WG	NORM	03/29/17	Stage 2A		X	X	X		X		
440-180937-1	SWFTS-MW09B-BL01	440-180937-4	WG	NORM	03/29/17	Stage 2A		X	X	X		X		
440-180937-1	SWFTS-MW09B-BL01-FD	440-180937-5	WG	FD	03/29/17	Stage 2A		X	X	X		X		
440-181045-1	SWFTS-MW03-BL01	440-181045-5	WG	NORM	03/30/17	Stage 2A		X	X	X				
440-181045-1	SWFTS-MW03-BL01-FD	440-181045-6	WG	FD	03/30/17	Stage 2A		X	X	X				
440-181045-1	SWFTS-MW05A-BL01	440-181045-7	WG	NORM	03/30/17	Stage 2A		X	X	X				
440-181045-1	SWFTS-MW05B-BL01	440-181045-8	WG	NORM	03/30/17	Stage 2A		X	X	X				
440-181045-1	SWFTS-MW06A-BL01	440-181045-1	WG	NORM	03/30/17	Stage 2A		X	X	X				
440-181045-1	SWFTS-MW06B-BL01	440-181045-2	WG	NORM	03/30/17	Stage 2A		X	X	X				
440-181045-1	SWFTS-MW07A-BL01	440-181045-3	WG	NORM	03/30/17	Stage 2A		X	X	X				
440-181045-1	SWFTS-MW07B-BL01	440-181045-4	WG	NORM	03/30/17	Stage 2A		X	X	X				

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-181045-1	SWFTS-MW08A-BL01	440-181045-9	WG	NORM	03/30/17	Stage 2A		X	X	X		X		
440-181122-1	SWFTS-MW04-BL01	440-181122-1	WG	NORM	03/31/17	Stage 2A		X	X	X				
440-181122-1	SWFTS-MW10A-BL01	440-181122-2	WG	NORM	03/31/17	Stage 2A		X	X	X		X		
440-186188-1	SWFTS-FIELDQC-IW-EB	440-186188-7	BW	EB	06/09/17	Stage 2A					X			
440-186188-1	SWFTS-FIELDQC-IW-FB	440-186188-6	BW	FB	06/09/17	Stage 2A					X			
440-186188-1	SWFTS-IW05-SO-28	440-186188-1	SO	NORM	06/09/17	Stage 4					X			
440-186188-1	SWFTS-IW10-SO-39	440-186188-2	SO	NORM	05/26/17	Stage 4					X			
440-186188-1	SWFTS-IW10-SO-39-FD	440-186188-3	SO	FD	05/26/17	Stage 4					X			
440-186188-1	SWFTS-IW12-SO-31	440-186188-4	SO	NORM	06/08/17	Stage 4					X			
440-186188-1	SWFTS-IW17-SO-33.5	440-186188-5	SO	NORM	05/31/17	Stage 4					X			
440-188133-1	SWFTS-IW01A-BL02	440-188133-3	WG	NORM	07/11/17	Stage 2A		X	X	X				
440-188133-1	SWFTS-IW01B-BL02	440-188133-13	WG	NORM	07/11/17	Stage 2A		X	X	X				
440-188133-1	SWFTS-IW02A-BL02	440-188133-14	WG	NORM	07/11/17	Stage 2A		X	X	X			X	
440-188133-1	SWFTS-IW02B-BL02	440-188133-2	WG	NORM	07/11/17	Stage 2A		X	X	X			X	
440-188133-1	SWFTS-IW03-BL02	440-188133-4	WG	NORM	07/11/17	Stage 2A		X	X	X				
440-188133-1	SWFTS-IW03-BL02-FD	440-188133-5	WG	FD	07/11/17	Stage 2A		X	X	X				
440-188133-1	SWFTS-IW04-BL02	440-188133-11	WG	NORM	07/11/17	Stage 2A		X	X	X				
440-188133-1	SWFTS-IW04-BL02-FD	440-188133-12	WG	FD	07/11/17	Stage 2A		X	X	X				
440-188133-1	SWFTS-IW05-BL02	440-188133-16	WG	NORM	07/11/17	Stage 2A		X	X	X			X	
440-188133-1	SWFTS-IW06A-BL02	440-188133-10	WG	NORM	07/11/17	Stage 2A		X	X	X				
440-188133-1	SWFTS-IW06B-BL02	440-188133-6	WG	NORM	07/11/17	Stage 2A		X	X	X				
440-188133-1	SWFTS-IW07-BL02	440-188133-7	WG	NORM	07/11/17	Stage 2A		X	X	X				
440-188133-1	SWFTS-IW13A-BL02	440-188133-1	WG	NORM	07/11/17	Stage 2A		X	X	X				
440-188133-1	SWFTS-IW13B-BL02	440-188133-15	WG	NORM	07/11/17	Stage 2A		X	X	X				
440-188133-1	SWFTS-IW16A-BL02	440-188133-9	WG	NORM	07/11/17	Stage 2A		X	X	X				
440-188133-1	SWFTS-IW16B-BL02	440-188133-8	WG	NORM	07/11/17	Stage 2A		X	X	X				
440-188133-1	SWFTS-MW18-BL02	440-188133-17	WG	NORM	07/11/17	Stage 2A	X	X	X	X	X	X	X	X
440-188244-1	PC-91-BL02-FD	440-188244-4	WG	FD	07/12/17	Stage 2A		X	X	X				
440-188244-1	SWFTS-IW09-BL02-FD	440-188244-3	WG	FD	07/12/17	Stage 2A		X	X	X			X	
440-188244-1	SWFTS-MW11-BL02	440-188244-7	WG	NORM	07/12/17	Stage 2A	X	X	X	X	X	X	X	X
440-188244-1	SWFTS-MW13-BL02	440-188244-6	WG	NORM	07/12/17	Stage 2A	X	X	X	X	X	X	X	X
440-188244-1	SWFTS-MW14-BL02	440-188244-8	WG	NORM	07/12/17	Stage 2A	X	X	X	X	X	X	X	X
440-188244-1	SWFTS-MW14-BL02-FD	440-188244-9	WG	FD	07/12/17	Stage 2A	X	X	X	X	X	X	X	X
440-188244-1	SWFTS-MW17-BL02	440-188244-1	WG	NORM	07/12/17	Stage 2A		X		X				
440-188244-1	SWFTS-MW19-BL02	440-188244-2	WG	NORM	07/12/17	Stage 2A	X	X	X	X	X	X	X	X
440-188244-1	SWFTS-MW20-BL02	440-188244-5	WG	NORM	07/12/17	Stage 2A		X	X	X				
440-188247-1	PC-91-BL02	440-188247-5	WG	NORM	07/12/17	Stage 2A		X	X	X				

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-188247-1	PC-92-BL02	440-188247-6	WG	NORM	07/12/17	Stage 2A		X	X	X				
440-188247-1	SWFTS-IW08-BL02	440-188247-7	WG	NORM	07/12/17	Stage 2A		X	X	X				
440-188247-1	SWFTS-IW09-BL02	440-188247-8	WG	NORM	07/12/17	Stage 2A		X	X	X			X	
440-188247-1	SWFTS-IW10-BL02	440-188247-9	WG	NORM	07/12/17	Stage 2A		X	X	X				
440-188247-1	SWFTS-IW11-BL02	440-188247-3	WG	NORM	07/12/17	Stage 2A		X	X	X			X	
440-188247-1	SWFTS-IW12-BL02	440-188247-4	WG	NORM	07/12/17	Stage 2A		X	X	X				
440-188247-1	SWFTS-IW14-BL02	440-188247-1	WG	NORM	07/12/17	Stage 2A		X	X	X			X	
440-188247-1	SWFTS-IW15-BL02	440-188247-2	WG	NORM	07/12/17	Stage 2A		X	X	X				
440-188247-1	SWFTS-IW20-BL02	440-188247-10	WG	NORM	07/12/17	Stage 2A		X	X	X			X	
440-188324-1	PC-58-BL02	440-188324-3	WG	NORM	07/13/17	Stage 2A		X	X	X				
440-188324-1	SWFTS-MW12-BL02	440-188324-6	WG	NORM	07/13/17	Stage 2A		X	X	X				
440-188324-1	SWFTS-MW21-BL02	440-188324-5	WG	NORM	07/13/17	Stage 2A	X	X	X	X	X	X	X	X
440-188324-1	SWFTS-MW22-BL02	440-188324-1	WG	NORM	07/13/17	Stage 2A	X	X	X	X	X	X	X	X
440-188324-1	SWFTS-MW24-BL02	440-188324-2	WG	NORM	07/13/17	Stage 2A	X	X	X	X	X	X	X	X
440-188324-1	SWFTS-MW25-BL02	440-188324-4	WG	NORM	07/13/17	Stage 2A	X	X	X	X	X	X	X	X
440-188325-1	PC-94-BL02	440-188325-1	WG	NORM	07/13/17	Stage 2A		X	X	X				
440-188325-1	PC-97-BL02	440-188325-8	WG	NORM	07/13/17	Stage 2A		X	X	X				
440-188325-1	SWFTS-FIELDQC-BL02-EB	440-188325-9	BW	EB	07/13/17	Stage 2A	X	X	X	X	X	X	X	X
440-188325-1	SWFTS-FIELDQC-BL02-FB	440-188325-10	BW	FB	07/13/17	Stage 2A	X	X	X	X	X	X	X	X
440-188325-1	SWFTS-IW17-BL02	440-188325-6	WG	NORM	07/13/17	Stage 2A		X	X	X			X	
440-188325-1	SWFTS-IW18-BL02	440-188325-4	WG	NORM	07/13/17	Stage 2A		X	X	X				
440-188325-1	SWFTS-IW19-BL02	440-188325-5	WG	NORM	07/13/17	Stage 2A		X	X	X				
440-188325-1	SWFTS-MW15-BL02	440-188325-3	WG	NORM	07/13/17	Stage 2A	X	X	X	X	X	X	X	X
440-188325-1	SWFTS-MW16-BL02	440-188325-2	WG	NORM	07/13/17	Stage 2A		X	X	X				
440-188325-1	SWFTS-MW23-BL02	440-188325-7	WG	NORM	07/13/17	Stage 2A		X	X	X				
440-189933-1	COH-2B1-BL02	440-189933-1	WG	NORM	08/09/17	Stage 2A		X	X	X				
440-192627-1	SWFTS-EM01-20170920-EB	440-192627-13	BW	EB	09/20/17	Stage 2A		X	X	X				
440-192627-1	SWFTS-EM01-20170920-FB	440-192627-14	BW	FB	09/20/17	Stage 2A		X	X	X				
440-192627-1	SWFTS-MW07A-EM01	440-192627-7	WG	NORM	09/20/17	Stage 2A		X	X	X				
440-192627-1	SWFTS-MW07B-EM01	440-192627-8	WG	NORM	09/20/17	Stage 2A		X	X	X				
440-192627-1	SWFTS-MW08A-EM01	440-192627-9	WG	NORM	09/20/17	Stage 2A		X	X	X				
440-192627-1	SWFTS-MW08A-EM01-FD	440-192627-10	WG	FD	09/20/17	Stage 2A		X	X	X				
440-192627-1	SWFTS-MW11-EM01	440-192627-11	WG	NORM	09/20/17	Stage 2A		X	X	X				
440-192627-1	SWFTS-MW12-EM01	440-192627-2	WG	NORM	09/19/17	Stage 2A		X	X	X				
440-192627-1	SWFTS-MW13-EM01	440-192627-12	WG	NORM	09/20/17	Stage 2A		X	X	X				
440-192627-1	SWFTS-MW17-EM01	440-192627-3	WG	NORM	09/19/17	Stage 2A		X	X	X				
440-192627-1	SWFTS-MW17-EM01-FD	440-192627-4	WG	FD	09/19/17	Stage 2A		X	X	X				

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-192627-1/2	SWFTS-MW01-EM01	440-192627-1	WG	NORM	09/19/17	Stage 2A		X	X	X				
440-192627-1/2	SWFTS-MW04-EM01	440-192627-5	WG	NORM	09/20/17	Stage 2A		X	X	X				
440-192627-1/2	SWFTS-MW04-EM01-FD	440-192627-6	WG	FD	09/20/17	Stage 2A		X	X	X				
440-192728-1	SWFTS-MW03-EM01	440-192728-12	WG	NORM	09/21/17	Stage 2A		X	X	X				
440-192728-1	SWFTS-MW06B-EM01	440-192728-9	WG	NORM	09/21/17	Stage 2A		X	X	X				
440-192728-1	SWFTS-MW09B-EM01	440-192728-13	WG	NORM	09/21/17	Stage 2A		X	X	X				
440-192728-1	SWFTS-MW22-EM01	440-192728-4	WG	NORM	09/20/17	Stage 2A		X	X	X				
440-192728-1	SWFTS-PC-94-EM01	440-192728-5	WG	NORM	09/20/17	Stage 2A		X	X	X				
440-192728-1/2	SWFTS-MW05A-EM01	440-192728-3	WG	NORM	09/20/17	Stage 2A		X	X	X				
440-192728-1/2	SWFTS-MW14-EM01	440-192728-1	WG	NORM	09/20/17	Stage 2A		X	X	X				
440-192728-1/2	SWFTS-MW15-EM01	440-192728-2	WG	NORM	09/20/17	Stage 2A		X	X	X				
440-192728-1/2	SWFTS-MW18-EM01	440-192728-8	WG	NORM	09/21/17	Stage 2A		X	X	X				
440-192728-1/2	SWFTS-MW19-EM01	440-192728-10	WG	NORM	09/21/17	Stage 2A		X	X	X				
440-192728-1/2	SWFTS-MW21-EM01	440-192728-11	WG	NORM	09/21/17	Stage 2A		X	X	X				
440-192728-1/2	SWFTS-PC-91-EM01	440-192728-6	WG	NORM	09/21/17	Stage 2A		X	X	X				
440-192728-1/2	SWFTS-PC-92-EM01	440-192728-7	WG	NORM	09/21/17	Stage 2A		X	X	X				
440-192818-1	SWFTS-COH-2B1-EM01	440-192818-16	WG	NORM	09/22/17	Stage 2A		X	X	X				
440-192818-1	SWFTS-EM01-20170922-EB	440-192818-6	BW	EB	09/22/17	Stage 2A		X	X	X				
440-192818-1	SWFTS-EM01-20170922-FB	440-192818-11	BW	FB	09/22/17	Stage 2A		X	X	X				
440-192818-1	SWFTS-MW06A-EM01	440-192818-2	WG	NORM	09/21/17	Stage 2A		X	X	X				
440-192818-1	SWFTS-MW09A-EM01	440-192818-1	WG	NORM	09/21/17	Stage 2A		X	X	X				
440-192818-1	SWFTS-MW23-EM01	440-192818-15	WG	NORM	09/22/17	Stage 2A		X	X	X				
440-192818-1	SWFTS-MW24-EM01	440-192818-9	WG	NORM	09/22/17	Stage 2A		X	X	X				
440-192818-1	SWFTS-MW25-EM01	440-192818-14	WG	NORM	09/22/17	Stage 2A		X	X	X				
440-192818-1	SWFTS-PC-88-EM01	440-192818-10	WG	NORM	09/22/17	Stage 2A		X	X	X				
440-192818-1	SWFTS-PC-97-EM01	440-192818-13	WG	NORM	09/22/17	Stage 2A		X	X	X				
440-192818-1	SWFTS-PC-97-EM01-FD	440-192818-12	WG	FD	09/22/17	Stage 2A		X	X	X				
440-192818-1/2	SWFTS-MW02-EM01	440-192818-4	WG	NORM	09/21/17	Stage 2A		X	X	X				
440-192818-1/2	SWFTS-MW05B-EM01	440-192818-8	WG	NORM	09/22/17	Stage 2A		X	X	X				
440-192818-1/2	SWFTS-MW10A-EM01	440-192818-5	WG	NORM	09/21/17	Stage 2A		X	X	X				
440-192818-1/2	SWFTS-MW16-EM01	440-192818-7	WG	NORM	09/22/17	Stage 2A		X	X	X				
440-192818-1/2	SWFTS-MW20-EM01	440-192818-3	WG	NORM	09/21/17	Stage 2A		X	X	X				
440-192973-1	SWFTS-MW07A-EM02	440-192973-1	WG	NORM	09/26/17	Stage 2A		X	X	X				
440-192973-1	SWFTS-MW07B-EM02	440-192973-2	WG	NORM	09/26/17	Stage 2A		X	X	X				
440-192973-1	SWFTS-MW08A-EM02	440-192973-4	WG	NORM	09/26/17	Stage 2A		X	X	X				
440-192973-1	SWFTS-MW08A-EM02-FD	440-192973-5	WG	FD	09/26/17	Stage 2A		X	X	X				
440-192973-1	SWFTS-MW11-EM02	440-192973-3	WG	NORM	09/26/17	Stage 2A		X	X	X				

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-192973-1	SWFTS-MW12-EM02	440-192973-10	WG	NORM	09/26/17	Stage 2A		X	X	X				
440-192973-1	SWFTS-MW13-EM02	440-192973-9	WG	NORM	09/26/17	Stage 2A		X	X	X				
440-192973-1	SWFTS-MW17-EM02	440-192973-7	WG	NORM	09/26/17	Stage 2A		X	X	X				
440-192973-1	SWFTS-MW17-EM02-FD	440-192973-8	WG	FD	09/26/17	Stage 2A		X	X	X				
440-192973-1/2	SWFTS-MW16-EM02	440-192973-6	WG	NORM	09/26/17	Stage 2A		X	X	X				
440-193062-1	SWFTS-EM02-20170927-EB	440-193062-7	BW	EB	09/27/17	Stage 2A		X	X	X				
440-193062-1	SWFTS-EM02-20170927-FB	440-193062-6	BW	FB	09/27/17	Stage 2A		X	X	X				
440-193062-1	SWFTS-PC-94-EM02	440-193062-14	WG	NORM	09/26/17	Stage 2A		X	X	X				
440-193062-1/2	SWFTS-MW01-EM02	440-193062-2	WG	NORM	09/26/17	Stage 2A		X	X	X				
440-193062-1/2	SWFTS-MW02-EM02	440-193062-11	WG	NORM	09/27/17	Stage 2A		X	X	X				
440-193062-1/2	SWFTS-MW04-EM02	440-193062-3	WG	NORM	09/27/17	Stage 2A		X	X	X				
440-193062-1/2	SWFTS-MW04-EM02-FD	440-193062-4	WG	FD	09/27/17	Stage 2A		X	X	X				
440-193062-1/2	SWFTS-MW05A-EM02	440-193062-9	WG	NORM	09/27/17	Stage 2A		X	X	X				
440-193062-1/2	SWFTS-MW05B-EM02	440-193062-10	WG	NORM	09/27/17	Stage 2A		X	X	X				
440-193062-1/2	SWFTS-MW10A-EM02	440-193062-5	WG	NORM	09/27/17	Stage 2A		X	X	X				
440-193062-1/2	SWFTS-MW14-EM02	440-193062-15	WG	NORM	09/26/17	Stage 2A		X	X	X				
440-193062-1/2	SWFTS-MW15-EM02	440-193062-13	WG	NORM	09/26/17	Stage 2A		X	X	X				
440-193062-1/2	SWFTS-MW20-EM02	440-193062-1	WG	NORM	09/26/17	Stage 2A		X	X	X				
440-193062-1/2	SWFTS-MW21-EM02	440-193062-12	WG	NORM	09/27/17	Stage 2A		X	X	X				
440-193062-1/2	SWFTS-PC-91-EM02	440-193062-16	WG	NORM	09/27/17	Stage 2A		X	X	X				
440-193062-1/2	SWFTS-PC-92-EM02	440-193062-8	WG	NORM	09/27/17	Stage 2A		X	X	X				
440-193167-1	SWFTS-EM02-20170928-EB	440-193167-8	BW	EB	09/28/17	Stage 2A		X	X	X				
440-193167-1	SWFTS-MW03-EM02	440-193167-1	WG	NORM	09/27/17	Stage 2A		X	X	X				
440-193167-1	SWFTS-MW06A-EM02	440-193167-3	WG	NORM	09/27/17	Stage 2A		X	X	X				
440-193167-1	SWFTS-MW06B-EM02	440-193167-4	WG	NORM	09/27/17	Stage 2A		X	X	X				
440-193167-1	SWFTS-MW09A-EM02	440-193167-14	WG	NORM	09/28/17	Stage 2A		X	X	X				
440-193167-1	SWFTS-MW09B-EM02	440-193167-15	WG	NORM	09/28/17	Stage 2A		X	X	X				
440-193167-1	SWFTS-MW22-EM02	440-193167-2	WG	NORM	09/27/17	Stage 2A		X	X	X				
440-193167-1	SWFTS-MW23-EM02	440-193167-13	WG	NORM	09/28/17	Stage 2A		X	X	X				
440-193167-1	SWFTS-MW24-EM02	440-193167-12	WG	NORM	09/28/17	Stage 2A		X	X	X				
440-193167-1	SWFTS-MW25-EM02	440-193167-11	WG	NORM	09/28/17	Stage 2A		X	X	X				
440-193167-1	SWFTS-PC-88-EM02	440-193167-7	WG	NORM	09/28/17	Stage 2A		X	X	X				
440-193167-1	SWFTS-PC-97-EM02	440-193167-9	WG	NORM	09/28/17	Stage 2A		X	X	X				
440-193167-1	SWFTS-PC-97-EM02-FD	440-193167-10	WG	FD	09/28/17	Stage 2A		X	X	X				
440-193167-1/2	SWFTS-MW18-EM02	440-193167-5	WG	NORM	09/27/17	Stage 2A		X	X	X				
440-193167-1/2	SWFTS-MW19-EM02	440-193167-6	WG	NORM	09/28/17	Stage 2A		X	X	X				
440-193472-1	SWFTS-MW07A-EM03	440-193472-6	WG	NORM	10/03/17	Stage 2A		X	X	X				

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-193472-1	SWFTS-MW07B-EM03	440-193472-7	WG	NORM	10/03/17	Stage 2A		X	X	X				
440-193472-1	SWFTS-MW11-EM03	440-193472-1	WG	NORM	10/03/17	Stage 2A		X	X	X				
440-193472-1	SWFTS-MW17-EM03	440-193472-8	WG	NORM	10/03/17	Stage 2A		X	X	X				
440-193472-1	SWFTS-MW17-EM03-FD	440-193472-9	WG	FD	10/03/17	Stage 2A		X	X	X				
440-193472-1/2	SWFTS-MW05A-EM03	440-193472-4	WG	NORM	10/03/17	Stage 2A		X	X	X				
440-193472-1/2	SWFTS-MW05B-EM03	440-193472-5	WG	NORM	10/03/17	Stage 2A		X	X	X				
440-193472-1/2	SWFTS-MW16-EM03	440-193472-3	WG	NORM	10/03/17	Stage 2A		X	X	X				
440-193472-1/2	SWFTS-MW18-EM03	440-193472-2	WG	NORM	10/03/17	Stage 2A		X	X	X				
440-193622-1	SWFTS-EM03-20171004-EB	440-193622-7	BW	EB	10/04/17	Stage 2A		X	X	X				
440-193622-1	SWFTS-MW06A-EM03	440-193622-4	WG	NORM	10/03/17	Stage 2A		X	X	X				
440-193622-1	SWFTS-MW06B-EM03	440-193622-5	WG	NORM	10/03/17	Stage 2A		X	X	X				
440-193622-1	SWFTS-MW12-EM03	440-193622-2	WG	NORM	10/03/17	Stage 2A		X	X	X				
440-193622-1	SWFTS-MW13-EM03	440-193622-1	WG	NORM	10/03/17	Stage 2A		X	X	X				
440-193622-1	SWFTS-PC-88-EM03	440-193622-6	WG	NORM	10/04/17	Stage 2A		X	X	X				
440-193622-1	SWFTS-PC-97-EM03	440-193622-8	WG	NORM	10/04/17	Stage 2A		X	X	X				
440-193622-1/2	SWFTS-MW14-EM03	440-193622-3	WG	NORM	10/03/17	Stage 2A		X	X	X				
440-193625-1	SWFTS-EM03-20171004-FB	440-193625-7	BW	FB	10/04/17	Stage 2A								
440-193625-1	SWFTS-PC-97-EM03-FD	440-193625-1	WG	FD	10/04/17	Stage 2A		X	X	X				
440-193625-1/2	SWFTS-MW01-EM03	440-193625-6	WG	NORM	10/04/17	Stage 2A		X	X	X				
440-193625-1/2	SWFTS-MW10A-EM03	440-193625-5	WG	NORM	10/04/17	Stage 2A		X	X	X				
440-193625-1/2	SWFTS-MW-15-EM03	440-193625-4	WG	NORM	10/04/17	Stage 2A		X	X	X				
440-193625-1/2	SWFTS-PC-91-EM03	440-193625-2	WG	NORM	10/04/17	Stage 2A		X	X	X				
440-193625-1/2	SWFTS-PC-92-EM03	440-193625-3	WG	NORM	10/04/17	Stage 2A		X	X	X				
440-193712-1	SWFTS-COH-2B1-EM03	440-193712-10	WG	NORM	10/05/17	Stage 2A		X	X	X				
440-193712-1	SWFTS-MW03-20171005-EB	440-193712-8	BW	EB	10/05/17	Stage 2A		X	X	X				
440-193712-1	SWFTS-MW03-EM03	440-193712-7	WG	NORM	10/04/17	Stage 2A		X	X	X				
440-193712-1	SWFTS-MW08A-EM03	440-193712-16	WG	NORM	10/05/17	Stage 2A		X	X	X				
440-193712-1	SWFTS-MW08A-EM03-FD	440-193712-15	WG	FD	10/05/17	Stage 2A		X	X	X				
440-193712-1	SWFTS-MW09A-EM03	440-193712-5	WG	NORM	10/04/17	Stage 2A		X	X	X				
440-193712-1	SWFTS-MW09B-EM03	440-193712-6	WG	NORM	10/04/17	Stage 2A		X	X	X				
440-193712-1	SWFTS-MW22-EM03	440-193712-14	WG	NORM	10/05/17	Stage 2A		X	X	X				
440-193712-1	SWFTS-MW23-EM03	440-193712-11	WG	NORM	10/05/17	Stage 2A		X	X	X				
440-193712-1	SWFTS-MW24-EM03	440-193712-12	WG	NORM	10/05/17	Stage 2A		X	X	X				
440-193712-1	SWFTS-MW25-EM03	440-193712-9	WG	NORM	10/05/17	Stage 2A		X	X	X				
440-193712-1	SWFTS-PC-94-EM03	440-193712-18	WG	NORM	10/05/17	Stage 2A		X	X	X				
440-193712-1/2	SWFTS-MW02-EM03	440-193712-3	WG	NORM	10/04/17	Stage 2A		X	X	X				
440-193712-1/2	SWFTS-MW04-EM03	440-193712-1	WG	NORM	10/04/17	Stage 2A		X	X	X				

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-193712-1/2	SWFTS-MW04-EM03-FD	440-193712-2	WG	FD	10/04/17	Stage 2A		X	X	X				
440-193712-1/2	SWFTS-MW19-EM03	440-193712-13	WG	NORM	10/05/17	Stage 2A		X	X	X				
440-193712-1/2	SWFTS-MW20-EM03	440-193712-4	WG	NORM	10/04/17	Stage 2A		X	X	X				
440-193712-1/2	SWFTS-MW21-EM03	440-193712-17	WG	NORM	10/05/17	Stage 2A		X	X	X				
440-193989-1	SWFTS-EM04-20171010-EB	440-193989-6	BW	EB	10/10/17	Stage 2A	X	X	X	X	X	X	X	X
440-193989-1	SWFTS-EM04-20171010-FB	440-193989-5	BW	FB	10/10/17	Stage 2A	X	X	X	X	X	X	X	X
440-193989-1	SWFTS-MW13-EM04	440-193989-4	WG	NORM	10/10/17	Stage 2A		X	X	X				X
440-193989-1	SWFTS-MW17-EM04	440-193989-3	WG	NORM	10/10/17	Stage 2A	X	X	X	X	X	X	X	X
440-193989-1/2	SWFTS-MW05A-EM04	440-193989-2	WG	NORM	10/10/17	Stage 2A		X	X	X				X
440-193989-1/2	SWFTS-MW05B-EM04	440-193989-1	WG	NORM	10/10/17	Stage 2A		X	X	X				X
440-194090-1	SWFTS-MW12-EM04	440-194090-1	WG	NORM	10/11/17	Stage 2A	X	X	X	X	X	X	X	X
440-194090-1	SWFTS-MW23-EM04	440-194090-7	WG	NORM	10/11/17	Stage 2A	X	X	X	X	X	X	X	X
440-194090-1	SWFTS-MW6A-EM04	440-194090-4	WG	NORM	10/11/17	Stage 2A		X	X	X				X
440-194090-1	SWFTS-MW6B-EM04	440-194090-5	WG	NORM	10/11/17	Stage 2A		X	X	X				X
440-194090-1	SWFTS-PC-88-EM04	440-194090-2	WG	NORM	10/11/17	Stage 2A		X	X	X				X
440-194090-1	SWFTS-PC-88-EM04-FD	440-194090-3	WG	FD	10/11/17	Stage 2A		X	X	X				X
440-194090-1/2	SWFTS-MW21-EM04	440-194090-8	WG	NORM	10/11/17	Stage 2A	X	X	X	X	X	X	X	X
440-194090-1/2	SWFTS-PC-94-EM04	440-194090-6	WG	NORM	10/11/17	Stage 2A	X	X	X	X	X	X	X	X
440-194094-1	SWFTS-MW08A-EM04	440-194094-4	WG	NORM	10/10/17	Stage 2A		X	X	X				X
440-194094-1	SWFTS-MW09A-EM04	440-194094-7	WG	NORM	10/11/17	Stage 2A		X	X	X				X
440-194094-1	SWFTS-MW09B-EM04	440-194094-5	WG	NORM	10/11/17	Stage 2A		X	X	X				X
440-194094-1	SWFTS-MW11-EM04	440-194094-8	WG	NORM	10/11/17	Stage 2A	X	X	X	X	X	X	X	X
440-194094-1	SWFTS-PC-58-EM04	440-194094-6	WG	NORM	10/11/17	Stage 2A		X	X	X				X
440-194094-1/2	SWFTS-MW01-EM04	440-194094-2	WG	NORM	10/10/17	Stage 2A	X	X	X	X	X	X	X	X
440-194094-1/2	SWFTS-MW15-EM04	440-194094-1	WG	NORM	10/10/17	Stage 2A	X	X	X	X	X	X	X	X
440-194094-1/2	SWFTS-MW18-EM04	440-194094-3	WG	NORM	10/10/17	Stage 2A		X	X	X				X
440-194202-1	SWFTS-EM04-20171012-EB	440-194202-4	BW	EB	10/12/17	Stage 2A	X	X	X	X	X	X	X	X
440-194202-1	SWFTS-EM04-20171012-FB	440-194202-3	BW	FB	10/12/17	Stage 2A	X	X	X	X	X	X	X	X
440-194202-1/2	SWFTS-MW20-EM04	440-194202-1	WG	NORM	10/12/17	Stage 2A	X	X	X	X	X	X	X	X
440-194202-1/2	SWFTS-MW20-EM04-FD	440-194202-2	WG	FD	10/12/17	Stage 2A	X	X	X	X	X	X	X	X
440-194204-1	SWFTS-COH-2B1-EM04	440-194204-2	WG	NORM	10/12/17	Stage 2A		X	X	X				X
440-194204-1	SWFTS-MW03-EM04	440-194204-8	WG	NORM	10/12/17	Stage 2A	X	X	X	X	X	X	X	X
440-194204-1/2	SWFTS-MW02-EM04	440-194204-6	WG	NORM	10/12/17	Stage 2A	X	X	X	X	X	X	X	X
440-194204-1/2	SWFTS-MW16-EM04	440-194204-7	WG	NORM	10/12/17	Stage 2A	X	X	X	X	X	X	X	X
440-194204-1/2	SWFTS-MW19-EM04	440-194204-1	WG	NORM	10/12/17	Stage 2A		X	X	X				X
440-194204-1/2	SWFTS-PC-91-EM04	440-194204-3	WG	NORM	10/12/17	Stage 2A		X	X	X				X
440-194204-1/2	SWFTS-PC-92-EM04	440-194204-4	WG	NORM	10/12/17	Stage 2A	X	X	X	X	X	X	X	X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-194204-1/2	SWFTS-PC-92-EM04-FD	440-194204-5	WG	FD	10/12/17	Stage 2A	X	X	X	X	X	X	X	X
440-194242-1	SWFTS-MW07A-EM04	440-194242-3	WG	NORM	10/11/17	Stage 2A		X	X	X				X
440-194242-1	SWFTS-MW07B-EM04	440-194242-4	WG	NORM	10/11/17	Stage 2A		X	X	X				X
440-194242-1	SWFTS-MW22-EM04	440-194242-9	WG	NORM	10/12/17	Stage 2A		X	X	X				X
440-194242-1	SWFTS-MW24-EM04	440-194242-2	WG	NORM	10/11/17	Stage 2A		X	X	X				X
440-194242-1	SWFTS-MW25-EM04	440-194242-1	WG	NORM	10/11/17	Stage 2A		X	X	X				X
440-194242-1	SWFTS-PC-97-EM04	440-194242-5	WG	NORM	10/11/17	Stage 2A		X	X	X				X
440-194242-1	SWFTS-PC-97-EM04-FD	440-194242-6	WG	FD	10/11/17	Stage 2A		X	X	X				X
440-194242-1/2	SWFTS-MW04-EM04	440-194242-7	WG	NORM	10/11/17	Stage 2A	X	X	X	X	X	X	X	X
440-194242-1/2	SWFTS-MW10A-EM04	440-194242-10	WG	NORM	10/12/17	Stage 2A		X	X	X				X
440-194242-1/2	SWFTS-MW14-EM04	440-194242-8	WG	NORM	10/11/17	Stage 2A	X	X	X	X	X	X	X	X
440-194846-1	SWFTS-MW05A-EM05	440-194846-4	WG	NORM	10/23/17	Stage 2A		X	X	X				
440-194846-1	SWFTS-MW05B-EM05	440-194846-5	WG	NORM	10/23/17	Stage 2A		X	X	X				
440-194846-1	SWFTS-MW06A-EM05	440-194846-7	WG	NORM	10/23/17	Stage 2A		X	X	X				
440-194846-1	SWFTS-MW06B-EM05	440-194846-6	WG	NORM	10/23/17	Stage 2A		X	X	X				
440-194846-1	SWFTS-MW08A-EM05	440-194846-1	WG	NORM	10/23/17	Stage 2A		X	X	X				
440-194846-1	SWFTS-MW08A-EM05-FD	440-194846-2	WG	FD	10/23/17	Stage 2A		X	X	X				
440-194846-1	SWFTS-MW18-EM05	440-194846-3	WG	NORM	10/23/17	Stage 2A		X	X	X				
440-194947-1	SWFTS-MW04-EM05	440-194947-6	WG	NORM	10/24/17	Stage 2A		X	X	X				
440-194947-1	SWFTS-MW04-EM05-FD	440-194947-7	WG	FD	10/24/17	Stage 2A		X	X	X				
440-194947-1	SWFTS-MW07A-EM05	440-194947-4	WG	NORM	10/24/17	Stage 2A		X	X	X				
440-194947-1	SWFTS-MW07B-EM05	440-194947-3	WG	NORM	10/24/17	Stage 2A		X	X	X				
440-194947-1	SWFTS-MW10A-EM05	440-194947-8	WG	NORM	10/24/17	Stage 2A		X	X	X				
440-194947-1	SWFTS-MW11-EM05	440-194947-9	WG	NORM	10/24/17	Stage 2A		X	X	X				
440-194947-1	SWFTS-MW12-EM05	440-194947-10	WG	NORM	10/24/17	Stage 2A		X	X	X				
440-194947-1	SWFTS-MW13-EM05	440-194947-11	WG	NORM	10/24/17	Stage 2A		X	X	X				
440-194947-1	SWFTS-MW16-EM05	440-194947-2	WG	NORM	10/24/17	Stage 2A		X	X	X				
440-194947-1	SWFTS-MW17-EM05	440-194947-1	WG	NORM	10/24/17	Stage 2A		X	X	X				
440-194947-1	SWFTS-MW17-EM05-FD	440-194947-5	WG	FD	10/24/17	Stage 2A		X	X	X				
440-195026-1	SWFTS-MW01-EM05	440-195026-8	WG	NORM	10/25/17	Stage 2A		X	X	X				
440-195026-1	SWFTS-MW09A-EM05	440-195026-2	WG	NORM	10/25/17	Stage 2A		X	X	X				
440-195026-1	SWFTS-MW09B-EM05	440-195026-1	WG	NORM	10/25/17	Stage 2A		X	X	X				
440-195026-1	SWFTS-MW20-EM05	440-195026-5	WG	NORM	10/25/17	Stage 2A		X	X	X				
440-195026-1	SWFTS-PC-88-EM05	440-195026-9	WG	NORM	10/25/17	Stage 2A		X	X	X				
440-195026-1	SWFTS-PC-91-EM05	440-195026-4	WG	NORM	10/25/17	Stage 2A		X	X	X				
440-195026-1	SWFTS-PC-92-EM05	440-195026-3	WG	NORM	10/25/17	Stage 2A		X	X	X				
440-195026-1	SWFTS-PC-97-EM05	440-195026-6	WG	NORM	10/25/17	Stage 2A		X	X	X				

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-195026-1	SWFTS-PC-97-EM05-FD	440-195026-7	WG	FD	10/25/17	Stage 2A		X	X	X				
440-195136-1	SWFTS-COH-2B1-EM05	440-195136-4	WG	NORM	10/26/17	Stage 2A		X	X	X				
440-195136-1	SWFTS-EM05-20171025-EB	440-195136-8	BW	EB	10/26/17	Stage 2A		X	X	X				
440-195136-1	SWFTS-EM05-20171025-FB	440-195136-6	BW	FB	10/26/17	Stage 2A		X	X	X				
440-195136-1	SWFTS-EM05-20171026-EB	440-195136-7	BW	EB	10/26/17	Stage 2A		X	X	X				
440-195136-1	SWFTS-EM05-20171026-FB	440-195136-9	BW	FB	10/26/17	Stage 2A		X	X	X				
440-195136-1	SWFTS-MW03-EM05	440-195136-5	WG	NORM	10/26/17	Stage 2A		X	X	X				
440-195136-1	SWFTS-MW22-EM05	440-195136-10	WG	NORM	10/26/17	Stage 2A		X	X	X				
440-195136-1	SWFTS-MW23-EM05	440-195136-11	WG	NORM	10/26/17	Stage 2A		X	X	X				
440-195136-1	SWFTS-MW24-EM05	440-195136-3	WG	NORM	10/26/17	Stage 2A		X	X	X				
440-195136-1	SWFTS-MW25-EM05	440-195136-2	WG	NORM	10/26/17	Stage 2A		X	X	X				
440-195136-1	SWFTS-PC-94-EM05	440-195136-1	WG	NORM	10/26/17	Stage 2A		X	X	X				
440-195218-1	SWFTS-MW02-EM05	440-195218-2	WG	NORM	10/26/17	Stage 2A		X	X	X				
440-195218-1	SWFTS-MW14-EM05	440-195218-4	WG	NORM	10/27/17	Stage 2A		X	X	X				
440-195218-1	SWFTS-MW15-EM05	440-195218-3	WG	NORM	10/27/17	Stage 2A		X	X	X				
440-195218-1	SWFTS-MW19-EM05	440-195218-5	WG	NORM	10/27/17	Stage 2A		X	X	X				
440-195218-1	SWFTS-MW21-EM05	440-195218-6	WG	NORM	10/27/17	Stage 2A		X	X	X				
440-196558-1/2	SWFTS-IW01A-EM06	440-196558-6	WG	NORM	11/14/17	Stage 2A		X		X				
440-196558-1/2	SWFTS-MW02-EM06	440-196558-3	WG	NORM	11/14/17	Stage 2A		X	X	X				X
440-196558-1/2	SWFTS-MW05A-EM06	440-196558-1	WG	NORM	11/14/17	Stage 2A		X	X	X				X
440-196558-1/2	SWFTS-MW05B-EM06	440-196558-2	WG	NORM	11/14/17	Stage 2A		X	X	X				X
440-196558-1/2	SWFTS-MW12-EM06	440-196558-5	WG	NORM	11/14/17	Stage 2A		X	X	X				X
440-196558-1/2	SWFTS-MW15-EM06	440-196558-4	WG	NORM	11/14/17	Stage 2A		X	X	X				X
440-196558-2	SWFTS-IW01A-EM06B	440-196558-7	WG	NORM	11/14/17	Stage 2A								
440-196558-2	SWFTS-IW01B-EM06B	440-196558-8	WG	NORM	11/14/17	Stage 2A								
440-196558-2	SWFTS-IW02A-EM06B	440-196558-9	WG	NORM	11/14/17	Stage 2A								
440-196558-2	SWFTS-IW02B-EM06B	440-196558-10	WG	NORM	11/14/17	Stage 2A								
440-196558-2	SWFTS-IW06A-EM06B	440-196558-11	WG	NORM	11/14/17	Stage 2A								
440-196558-2	SWFTS-IW06B-EM06B	440-196558-12	WG	NORM	11/14/17	Stage 2A								
440-196558-2	SWFTS-IW13A-EM06B	440-196558-13	WG	NORM	11/14/17	Stage 2A								
440-196558-2	SWFTS-IW13B-EM06B	440-196558-14	WG	NORM	11/14/17	Stage 2A								
440-196558-2	SWFTS-IW14-EM06B	440-196558-15	WG	NORM	11/14/17	Stage 2A								
440-196558-2	SWFTS-IW14-EM06B-FD	440-196558-16	WG	FD	11/14/17	Stage 2A								
440-196558-2	SWFTS-IW17-EM06B	440-196558-17	WG	NORM	11/14/17	Stage 2A								
440-196558-2	SWFTS-IW18-EM06B	440-196558-18	WG	NORM	11/14/17	Stage 2A								
440-196558-2	SWFTS-IW20-EM06B	440-196558-19	WG	NORM	11/14/17	Stage 2A								
440-196659-1	SWFTS-MW07A-EM06	440-196659-7	WG	NORM	11/15/17	Stage 2A		X	X	X				X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-196659-1	SWFTS-MW07B-EM06	440-196659-8	WG	NORM	11/15/17	Stage 2A		X	X	X				X
440-196659-1	SWFTS-MW08A-EM06	440-196659-4	WG	NORM	11/15/17	Stage 2A		X	X	X				X
440-196659-1	SWFTS-MW13-EM06	440-196659-1	WG	NORM	11/15/17	Stage 2A		X	X	X				X
440-196659-1	SWFTS-MW17-EM06	440-196659-5	WG	NORM	11/15/17	Stage 2A		X	X	X				X
440-196659-1	SWFTS-MW17-EM06-FD	440-196659-6	WG	FD	11/15/17	Stage 2A		X	X	X				X
440-196659-1/2	SWFTS-MW04-EM06	440-196659-2	WG	NORM	11/15/17	Stage 2A		X	X	X				X
440-196659-1/2	SWFTS-MW14-EM06	440-196659-3	WG	NORM	11/15/17	Stage 2A	X	X	X	X	X	X	X	X
440-196665-1	SWFTS-MW23-EM06	440-196665-3	WG	NORM	11/15/17	Stage 2A		X	X	X				X
440-196665-1	SWFTS-MW24-EM06	440-196665-1	WG	NORM	11/15/17	Stage 2A		X	X	X				X
440-196665-1	SWFTS-MW25-EM06	440-196665-2	WG	NORM	11/15/17	Stage 2A	X	X	X	X	X	X		X
440-196665-1/2	SWFTS-MW01-EM06	440-196665-4	WG	NORM	11/15/17	Stage 2A		X	X	X				X
440-196665-1/2	SWFTS-MW21-EM06	440-196665-5	WG	NORM	11/15/17	Stage 2A		X	X	X				X
440-196690-1	PC-88-EM06	440-196690-9	WG	NORM	11/15/17	Stage 2A		X	X	X				X
440-196690-1	PC-88-EM06-FD	440-196690-10	WG	FD	11/15/17	Stage 2A		X	X	X				X
440-196690-1	SWFTS-EM06-20171114-EB	440-196690-2	BW	EB	11/14/17	Stage 2A	X	X	X	X	X	X	X	X
440-196690-1	SWFTS-EM06-20171114-FB	440-196690-1	BW	FB	11/14/17	Stage 2A	X	X	X	X	X	X	X	X
440-196690-1	SWFTS-EM06-20171115-EB	440-196690-4	BW	EB	11/15/17	Stage 2A		X	X	X				X
440-196690-1	SWFTS-EM06-20171115-FB	440-196690-3	BW	FB	11/15/17	Stage 2A		X	X	X				X
440-196690-1/2	SWFTS-IW01B-EM06	440-196690-5	WG	NORM	11/15/17	Stage 2A		X		X				
440-196690-1/2	SWFTS-IW06A-EM06	440-196690-6	WG	NORM	11/15/17	Stage 2A		X		X				
440-196690-1/2	SWFTS-IW06B-EM06	440-196690-7	WG	NORM	11/15/17	Stage 2A		X		X				
440-196690-1/2	SWFTS-IW17-EM06	440-196690-8	WG	NORM	11/15/17	Stage 2A		X		X				
440-196690-1/2	SWFTS-MW18-EM06	440-196690-11	WG	NORM	11/15/17	Stage 2A		X	X	X				X
440-196786-1	SWFTS-EM06-20171116-EB	440-196786-1	BW	EB	11/16/17	Stage 2A								
440-196786-1	SWFTS-EM06-20171116-FB	440-196786-2	BW	FB	11/16/17	Stage 2A								
440-196786-1	SWFTS-MW03-EM06	440-196786-16	WG	NORM	11/16/17	Stage 2A	X	X	X	X	X	X		X
440-196786-1	SWFTS-MW06A-EM06	440-196786-19	WG	NORM	11/16/17	Stage 2A		X	X	X				X
440-196786-1	SWFTS-MW06B-EM06	440-196786-20	WG	NORM	11/16/17	Stage 2A		X	X	X				X
440-196786-1	SWFTS-MW09A-EM06	440-196786-14	WG	NORM	11/16/17	Stage 2A		X	X	X				X
440-196786-1	SWFTS-MW09B-EM06	440-196786-15	WG	NORM	11/16/17	Stage 2A		X	X	X				X
440-196786-1	SWFTS-MW11-EM06	440-196786-3	WG	NORM	11/16/17	Stage 2A		X	X	X				X
440-196786-1	SWFTS-MW22-EM06	440-196786-18	WG	NORM	11/16/17	Stage 2A		X	X	X				X
440-196786-1	SWFTS-PC-58-EM06	440-196786-11	WG	NORM	11/16/17	Stage 2A		X	X	X				X
440-196786-1	SWFTS-PC-97-EM06	440-196786-13	WG	NORM	11/16/17	Stage 2A		X	X	X				X
440-196786-1/2	PC-94-EM06	440-196786-17	WG	NORM	11/16/17	Stage 2A	X	X	X	X	X	X		X
440-196786-1/2	SWFTS-MW10A-EM06	440-196786-5	WG	NORM	11/16/17	Stage 2A	X	X	X	X	X	X	X	X
440-196786-1/2	SWFTS-MW10A-EM06-FD	440-196786-6	WG	FD	11/16/17	Stage 2A	X	X	X	X	X	X	X	X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-196786-1/2	SWFTS-MW16-EM06	440-196786-4	WG	NORM	11/16/17	Stage 2A	X	X	X	X	X	X	X	X
440-196786-1/2	SWFTS-MW-19-EM06	440-196786-12	WG	NORM	11/16/17	Stage 2A		X	X	X				X
440-196786-1/2	SWFTS-MW20-EM06	440-196786-7	WG	NORM	11/16/17	Stage 2A		X	X	X				X
440-196786-1/2	SWFTS-PC-91-EM06	440-196786-8	WG	NORM	11/16/17	Stage 2A		X	X	X				X
440-196786-1/2	SWFTS-PC-92-EM06	440-196786-9	WG	NORM	11/16/17	Stage 2A		X	X	X				X
440-196786-1/2	SWFTS-PC-92-EM06-FD	440-196786-10	WG	FD	11/16/17	Stage 2A		X	X	X				X
440-198276-1	SWFTS-EM07-20171211-EB	440-198276-15	BW	EB	12/11/17	Stage 2A								
440-198276-1	SWFTS-EM07-20171211-FB	440-198276-16	BW	FB	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW03-EM07	440-198276-1	WG	NORM	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW04-EM07	440-198276-2	WG	NORM	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW05-EM07	440-198276-3	WG	NORM	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW07-EM07	440-198276-4	WG	NORM	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW08-EM07	440-198276-5	WG	NORM	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW09-EM07	440-198276-6	WG	NORM	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW10-EM07	440-198276-8	WG	NORM	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW11-EM07	440-198276-7	WG	NORM	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW12-EM07	440-198276-9	WG	NORM	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW15-EM07	440-198276-10	WG	NORM	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW15-EM07-FD	440-198276-11	WG	FD	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW16A-EM07	440-198276-12	WG	NORM	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW16B-EM07	440-198276-13	WG	NORM	12/11/17	Stage 2A								
440-198276-1	SWFTS-IW19-EM07	440-198276-14	WG	NORM	12/11/17	Stage 2A								
440-198371-1	SWFTS-MW10C-EM07	440-198371-9	WG	NORM	12/12/17	Stage 2A		X	X	X				
440-198371-1	SWFTS-MW23-EM07	440-198371-2	WG	NORM	12/12/17	Stage 2A		X	X	X				X
440-198371-1/2	PC-94-EM07	440-198371-14	WG	NORM	12/12/17	Stage 2A		X	X	X				X
440-198371-1/2	SWFTS-MW03-EM07	440-198371-13	WG	NORM	12/12/17	Stage 2A		X	X	X				X
440-198371-1/2	SWFTS-MW09A-EM07	440-198371-6	WG	NORM	12/12/17	Stage 2A		X	X	X				X
440-198371-1/2	SWFTS-MW09B-EM07	440-198371-7	WG	NORM	12/12/17	Stage 2A		X	X	X				X
440-198371-1/2	SWFTS-MW10A-EM07	440-198371-10	WG	NORM	12/12/17	Stage 2A		X	X	X				X
440-198371-1/2	SWFTS-MW10A-EM07-FD	440-198371-11	WG	FD	12/12/17	Stage 2A		X	X	X				X
440-198371-1/2	SWFTS-MW14-EM07	440-198371-12	WG	NORM	12/12/17	Stage 2A		X	X	X				X
440-198371-1/2	SWFTS-MW16-EM07	440-198371-4	WG	NORM	12/12/17	Stage 2A		X	X	X				X
440-198371-1/2	SWFTS-MW19-EM07	440-198371-8	WG	NORM	12/12/17	Stage 2A		X	X	X				X
440-198371-1/2	SWFTS-MW20-EM07	440-198371-3	WG	NORM	12/12/17	Stage 2A		X	X	X				X
440-198371-1/2	SWFTS-MW24-EM07	440-198371-5	WG	NORM	12/12/17	Stage 2A		X	X	X				X
440-198371-1/2	SWFTS-MW25-EM07	440-198371-1	WG	NORM	12/12/17	Stage 2A	X	X	X	X	X	X		X
440-198508-1	PC-91-EM07	440-198508-9	WG	NORM	12/13/17	Stage 2A	X	X	X	X	X	X		X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-198508-1	PC-97-EM07-FD	440-198508-12	WG	FD	12/13/17	Stage 2A		X	X	X				X
440-198508-1	SWFTS-EM07-20171213-EB	440-198508-14	BW	EB	12/13/17	Stage 2A	X	X	X	X	X	X	X	X
440-198508-1	SWFTS-EM07-20171213-FB	440-198508-15	BW	FB	12/13/17	Stage 2A	X	X	X	X	X	X	X	X
440-198508-1	SWFTS-MW06A-EM07	440-198508-1	WG	NORM	12/13/17	Stage 2A		X	X	X				X
440-198508-1	SWFTS-MW06B-EM07	440-198508-2	WG	NORM	12/13/17	Stage 2A		X	X	X				X
440-198508-1	SWFTS-MW17-EM07	440-198508-6	WG	NORM	12/13/17	Stage 2A		X	X	X				X
440-198508-1	SWFTS-MW17-EM07-FD	440-198508-7	WG	FD	12/13/17	Stage 2A		X	X	X				X
440-198508-1/2	PC-97-EM07	440-198508-11	WG	NORM	12/13/17	Stage 2A		X	X	X				X
440-198508-1/2	SWFTS-MW02-EM07	440-198508-8	WG	NORM	12/13/17	Stage 2A		X	X	X				X
440-198508-1/2	SWFTS-MW05A-EM07	440-198508-3	WG	NORM	12/13/17	Stage 2A		X	X	X				X
440-198508-1/2	SWFTS-MW05B-EM07	440-198508-4	WG	NORM	12/13/17	Stage 2A		X	X	X				X
440-198508-1/2	SWFTS-MW15-EM07	440-198508-13	WG	NORM	12/13/17	Stage 2A	X	X	X	X	X	X		X
440-198508-1/2	SWFTS-MW18-EM07	440-198508-5	WG	NORM	12/13/17	Stage 2A	X	X	X	X	X	X	X	X
440-198508-1/2	SWFTS-MW21-EM07	440-198508-10	WG	NORM	12/13/17	Stage 2A	X	X	X	X	X	X	X	X
440-198571-1	COH-2B1-EM07	440-198571-5	WG	NORM	12/14/17	Stage 2A		X	X	X				X
440-198571-1	PC-58-EM07	440-198571-9	WG	NORM	12/14/17	Stage 2A		X	X	X				X
440-198571-1	PC-88-EM07	440-198571-11	WG	NORM	12/14/17	Stage 2A		X	X	X				X
440-198571-1	PC-92-EM07-FD	440-198571-8	WG	FD	12/14/17	Stage 2A	X	X	X	X	X	X	X	X
440-198571-1	SWFTS-EM07-20171214-EB	440-198571-6	BW	EB	12/14/17	Stage 2A		X	X	X				X
440-198571-1	SWFTS-EW07-20171214-FB	440-198571-16	BW	FB	12/14/17	Stage 2A		X	X	X				X
440-198571-1	SWFTS-MW04-EM07	440-198571-12	WG	NORM	12/14/17	Stage 2A		X	X	X				X
440-198571-1	SWFTS-MW07A-EM07	440-198571-3	WG	NORM	12/14/17	Stage 2A		X	X	X				X
440-198571-1	SWFTS-MW07B-EM07	440-198571-4	WG	NORM	12/14/17	Stage 2A		X	X	X				X
440-198571-1	SWFTS-MW08A-EM07	440-198571-1	WG	NORM	12/14/17	Stage 2A		X	X	X				X
440-198571-1	SWFTS-MW08C-EM07	440-198571-2	WG	NORM	12/14/17	Stage 2A		X	X	X				X
440-198571-1	SWFTS-MW11-EM07	440-198571-13	WG	NORM	12/14/17	Stage 2A		X	X	X				X
440-198571-1	SWFTS-MW12-EM07	440-198571-15	WG	NORM	12/14/17	Stage 2A		X	X	X				X
440-198571-1	SWFTS-MW13-EM07	440-198571-14	WG	NORM	12/14/17	Stage 2A		X	X	X				X
440-198571-1	SWFTS-MW22-EM07	440-198571-17	WG	NORM	12/14/17	Stage 2A		X	X	X				X
440-198571-1/2	PC-92-EM07	440-198571-7	WG	NORM	12/14/17	Stage 2A	X	X	X	X	X	X	X	X
440-198571-1/2	SWFTS-MW01-EM07	440-198571-10	WG	NORM	12/14/17	Stage 2A		X	X	X				X
440-203775-1	SWFTS-MW07A-EM08	440-203775-3	WG	NORM	02/19/18	Stage 2A		X	X	X				X
440-203775-1	SWFTS-MW07B-EM08	440-203775-2	WG	NORM	02/19/18	Stage 2A		X	X	X				X
440-203775-1/2	SWFTS-MW02-EM08	440-203775-1	WG	NORM	02/19/18	Stage 2A		X	X	X				X
440-203775-1/2	SWFTS-MW15-EM08	440-203775-4	WG	NORM	02/19/18	Stage 2A		X	X	X				X
440-203775-1/2	SWFTS-MW20-EM08	440-203775-5	WG	NORM	02/19/18	Stage 2A		X	X	X				X
440-203841-1	PC-92-EM08-FD	440-203841-3	WG	FD	02/20/18	Stage 2A		X	X	X				X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-203841-1	SWFTS-MW21-EM08-FD	440-203841-10	WG	FD	02/20/18	Stage 2A		X	X	X				X
440-203841-1/2	PC-91-EM08	440-203841-1	WG	NORM	02/20/18	Stage 2A		X	X	X				X
440-203841-1/2	PC-92-EM08	440-203841-2	WG	NORM	02/20/18	Stage 2A		X	X	X				X
440-203841-1/2	SWFTS-MW01-EM08	440-203841-12	WG	NORM	02/20/18	Stage 2A		X	X	X				X
440-203841-1/2	SWFTS-MW05A-EM08	440-203841-7	WG	NORM	02/20/18	Stage 2A		X	X	X				X
440-203841-1/2	SWFTS-MW05B-EM08	440-203841-8	WG	NORM	02/20/18	Stage 2A		X	X	X				X
440-203841-1/2	SWFTS-MW09A-EM08	440-203841-14	WG	NORM	02/20/18	Stage 2A		X	X	X				X
440-203841-1/2	SWFTS-MW09B-EM08	440-203841-13	WG	NORM	02/20/18	Stage 2A		X	X	X				X
440-203841-1/2	SWFTS-MW10A-EM08	440-203841-4	WG	NORM	02/20/18	Stage 2A	X	X	X	X	X	X	X	X
440-203841-1/2	SWFTS-MW10A-EM08-FD	440-203841-5	WG	FD	02/20/18	Stage 2A	X	X	X	X	X	X	X	X
440-203841-1/2	SWFTS-MW14-EM08	440-203841-11	WG	NORM	02/20/18	Stage 2A	X	X	X	X	X	X	X	X
440-203841-1/2	SWFTS-MW19-EM08	440-203841-6	WG	NORM	02/20/18	Stage 2A		X	X	X				X
440-203841-1/2	SWFTS-MW21-EM08	440-203841-9	WG	NORM	02/20/18	Stage 2A		X	X	X				X
440-203937-1	PC-58-EM08	440-203937-13	WG	NORM	02/21/18	Stage 2A		X	X	X				X
440-203937-1	PC-97-EM08	440-203937-4	WG	NORM	02/21/18	Stage 2A		X	X	X				X
440-203937-1	SWFTS-20180221-FB	440-203937-9	BW	FB	02/21/18	Stage 2A		X	X	X				X
440-203937-1	SWFTS-MW04-EM08	440-203937-2	WG	NORM	02/21/18	Stage 2A		X	X	X				X
440-203937-1	SWFTS-MW11-EM08	440-203937-10	WG	NORM	02/21/18	Stage 2A		X	X	X				X
440-203937-1	SWFTS-MW11-EM08-FD	440-203937-11	WG	FD	02/21/18	Stage 2A		X	X	X				X
440-203937-1	SWFTS-MW22-EM08	440-203937-1	WG	NORM	02/21/18	Stage 2A		X	X	X				X
440-203937-1	SWFTS-MW23-EM08	440-203937-14	WG	NORM	02/21/18	Stage 2A		X	X	X				X
440-203937-1/2	PC-94-EM08	440-203937-12	WG	NORM	02/21/18	Stage 2A	X	X	X	X	X	X		X
440-203937-1/2	SWFTS-20180221-EM08-EB	440-203937-3	BW	EB	02/21/18	Stage 2A	X	X	X	X	X	X	X	X
440-203937-1/2	SWFTS-MW03-EM08	440-203937-5	WG	NORM	02/21/18	Stage 2A	X	X	X	X	X	X		X
440-203937-1/2	SWFTS-MW16-EM08	440-203937-6	WG	NORM	02/21/18	Stage 2A	X	X	X	X	X	X	X	X
440-203937-1/2	SWFTS-MW24-EM08	440-203937-8	WG	NORM	02/21/18	Stage 2A		X	X	X				X
440-203937-1/2	SWFTS-MW25-EM08	440-203937-7	WG	NORM	02/21/18	Stage 2A	X	X	X	X	X	X		X
440-204033-1	C0H-2B1-EM08	440-204033-6	WG	NORM	02/22/18	Stage 2A		X	X	X				X
440-204033-1	PC-88-EM08	440-204033-10	WG	NORM	02/22/18	Stage 2A		X	X	X				X
440-204033-1	SWFTS-20180222-EM08-EB	440-204033-3	BW	EB	02/22/18	Stage 2A		X	X	X				X
440-204033-1	SWFTS-20180222-EM08-FB	440-204033-9	BW	FB	02/22/18	Stage 2A	X	X	X	X	X	X	X	X
440-204033-1	SWFTS-MW06A-EM08	440-204033-1	WG	NORM	02/22/18	Stage 2A		X	X	X				X
440-204033-1	SWFTS-MW06B-EM08	440-204033-5	WG	NORM	02/22/18	Stage 2A		X	X	X				X
440-204033-1	SWFTS-MW08A-EM08	440-204033-8	WG	NORM	02/22/18	Stage 2A		X	X	X				X
440-204033-1	SWFTS-MW12-EM08	440-204033-2	WG	NORM	02/22/18	Stage 2A		X	X	X				X
440-204033-1	SWFTS-MW13-EM08	440-204033-7	WG	NORM	02/22/18	Stage 2A		X	X	X				X
440-204033-1	SWFTS-MW17-EM08	440-204033-11	WG	NORM	02/22/18	Stage 2A		X	X	X				X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-204033-1/2	SWFTS-MW18-EM08	440-204033-4	WG	NORM	02/22/18	Stage 2A		X	X	X				X
440-207137-1	PC-92-EM09-FD	440-207137-3	WG	FD	03/26/18	Stage 2A		X	X	X				X
440-207137-1	SWFTS-MW10A-EM09-FD	440-207137-8	WG	FD	03/26/18	Stage 2A	X	X	X	X	X	X	X	X
440-207137-1	SWFTS-MW13-EM09	440-207137-4	WG	NORM	03/26/18	Stage 2A		X	X	X				X
440-207137-1	SWFTS-MW15-EM09	440-207137-10	WG	NORM	03/26/18	Stage 2A		X	X	X				X
440-207137-1/2	PC-91-EM09	440-207137-1	WG	NORM	03/26/18	Stage 2A		X	X	X				X
440-207137-1/2	PC-92-EM09	440-207137-2	WG	NORM	03/26/18	Stage 2A		X	X	X				X
440-207137-1/2	SWFTS-MW05A-EM09	440-207137-5	WG	NORM	03/26/18	Stage 2A		X	X	X				X
440-207137-1/2	SWFTS-MW05B-EM09	440-207137-6	WG	NORM	03/26/18	Stage 2A		X	X	X				X
440-207137-1/2	SWFTS-MW10A-EM09	440-207137-7	WG	NORM	03/26/18	Stage 2A	X	X	X	X	X	X	X	X
440-207137-1/2	SWFTS-MW14-EM09	440-207137-9	WG	NORM	03/26/18	Stage 2A	X	X	X	X	X	X	X	X
440-207268-1	PC-97-EM09	440-207268-4	WG	NORM	03/27/18	Stage 2A		X	X	X				X
440-207268-1	SWFTS-20180327-EM09-EB	440-207268-2	BW	EB	03/27/18	Stage 2A	X	X	X	X	X	X	X	X
440-207268-1	SWFTS-20180327-EM09-FB	440-207268-16	BW	FB	03/27/18	Stage 2A		X	X	X				X
440-207268-1	SWFTS-MW04-EM09	440-207268-5	WG	NORM	03/27/18	Stage 2A		X	X	X				X
440-207268-1	SWFTS-MW18-EM09-FD	440-207268-12	WG	FD	03/27/18	Stage 2A		X	X	X				X
440-207268-1/2	PC-94-EM09	440-207268-8	WG	NORM	03/27/18	Stage 2A	X	X	X	X	X	X		X
440-207268-1/2	SWFTS-MW01-EM09	440-207268-10	WG	NORM	03/27/18	Stage 2A		X	X	X				X
440-207268-1/2	SWFTS-MW02-EM09	440-207268-1	WG	NORM	03/27/18	Stage 2A		X	X	X				X
440-207268-1/2	SWFTS-MW03-EM09	440-207268-15	WG	NORM	03/27/18	Stage 2A	X	X	X	X	X	X		X
440-207268-1/2	SWFTS-MW09A-EM09	440-207268-7	WG	NORM	03/27/18	Stage 2A		X	X	X				X
440-207268-1/2	SWFTS-MW09B-EM09	440-207268-6	WG	NORM	03/27/18	Stage 2A		X	X	X				X
440-207268-1/2	SWFTS-MW16-EM09	440-207268-13	WG	NORM	03/27/18	Stage 2A	X	X	X	X	X	X	X	X
440-207268-1/2	SWFTS-MW18-EM09	440-207268-11	WG	NORM	03/27/18	Stage 2A		X	X	X				X
440-207268-1/2	SWFTS-MW19-EM09	440-207268-3	WG	NORM	03/27/18	Stage 2A		X	X	X				X
440-207268-1/2	SWFTS-MW20-EM09	440-207268-9	WG	NORM	03/27/18	Stage 2A		X	X	X				X
440-207268-1/2	SWFTS-MW21-EM09	440-207268-14	WG	NORM	03/27/18	Stage 2A		X	X	X				X
440-207497-1	PC-58-EM09-EM09	440-207497-6	WG	NORM	03/28/18	Stage 2A		X	X	X				X
440-207497-1	SWFTS-20180328-EM09-EB	440-207497-15	BW	EB	03/28/18	Stage 2A		X	X	X				X
440-207497-1	SWFTS-20180328-EM09-FB	440-207497-14	BW	FB	03/28/18	Stage 2A	X	X	X	X	X	X	X	X
440-207497-1	SWFTS-MW06A-EM09	440-207497-3	WG	NORM	03/28/18	Stage 2A		X	X	X				X
440-207497-1	SWFTS-MW06B-EM09	440-207497-2	WG	NORM	03/28/18	Stage 2A		X	X	X				X
440-207497-1	SWFTS-MW07A-EM09	440-207497-4	WG	NORM	03/28/18	Stage 2A		X	X	X				X
440-207497-1	SWFTS-MW07B-EM09	440-207497-10	WG	NORM	03/28/18	Stage 2A		X	X	X				X
440-207497-1	SWFTS-MW11-EM09	440-207497-7	WG	NORM	03/28/18	Stage 2A		X	X	X				X
440-207497-1	SWFTS-MW11-EM09-FD	440-207497-8	WG	FD	03/28/18	Stage 2A		X	X	X				X
440-207497-1	SWFTS-MW12-EM09	440-207497-5	WG	NORM	03/28/18	Stage 2A		X	X	X				X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-207497-1	SWFTS-MW17-EM09	440-207497-11	WG	NORM	03/28/18	Stage 2A		X	X	X				X
440-207497-1	SWFTS-MW22-EM09	440-207497-1	WG	NORM	03/28/18	Stage 2A		X	X	X				X
440-207497-1	SWFTS-MW23-EM09	440-207497-9	WG	NORM	03/28/18	Stage 2A		X	X	X				X
440-207497-1/2	SWFTS-MW24-EM09	440-207497-12	WG	NORM	03/28/18	Stage 2A		X	X	X				X
440-207497-1/2	SWFTS-MW25-EM09	440-207497-13	WG	NORM	03/28/18	Stage 2A	X	X	X	X	X	X		X
440-207586-1	COH-2B1-EM09	440-207586-2	WG	NORM	03/29/18	Stage 2A		X	X	X				X
440-207586-1	PC-88-EM09	440-207586-3	WG	NORM	03/29/18	Stage 2A		X	X	X				X
440-207586-1	SWFTS-MW08A-EM09	440-207586-1	WG	NORM	03/29/18	Stage 2A		X	X	X				X
440-210173-1/2	SWFTS-MW01-EM10	440-210173-1	WG	NORM	04/30/18	Stage 2A		X	X	X				X
440-210173-1/2	SWFTS-MW02-EM10	440-210173-3	WG	NORM	04/30/18	Stage 2A		X	X	X				X
440-210173-1/2	SWFTS-MW05A-EM10	440-210173-8	WG	NORM	04/30/18	Stage 2A		X	X	X				X
440-210173-1/2	SWFTS-MW05B-EM10	440-210173-2	WG	NORM	04/30/18	Stage 2A		X	X	X				X
440-210173-1/2	SWFTS-MW09B-EM10	440-210173-11	WG	NORM	04/30/18	Stage 2A		X	X	X				X
440-210173-1/2	SWFTS-MW14-EM10	440-210173-9	WG	NORM	04/30/18	Stage 2A	X	X	X	X	X	X	X	X
440-210173-1/2	SWFTS-MW19-EM10	440-210173-4	WG	NORM	04/30/18	Stage 2A		X	X	X				X
440-210173-1/2	SWFTS-MW19-EM10-FD	440-210173-5	WG	FD	04/30/18	Stage 2A		X	X	X				X
440-210173-1/2	SWFTS-MW20-EM10	440-210173-10	WG	NORM	04/30/18	Stage 2A		X	X	X				X
440-210173-1/2	SWFTS-MW21-EM10	440-210173-7	WG	NORM	04/30/18	Stage 2A		X	X	X				X
440-210173-2	SWFTS-MW22-EM10	440-210173-6	WG	NORM	04/30/18	Stage 2A		X	X	X				X
440-210284-1	SWFTS-EM10-20180501-EB	440-210284-15	BW	EB	05/01/18	Stage 2A	X	X	X	X	X	X		X
440-210284-1	SWFTS-EM10-20180501-FB	440-210284-2	BW	FB	05/01/18	Stage 2A	X	X	X	X	X	X		X
440-210284-1	SWFTS-MW04-EM10	440-210284-5	WG	NORM	05/01/18	Stage 2A		X	X	X				X
440-210284-1	SWFTS-MW06A-EM10	440-210284-9	WG	NORM	05/01/18	Stage 2A		X	X	X				X
440-210284-1	SWFTS-MW06A-EM10-FD	440-210284-10	WG	FD	05/01/18	Stage 2A		X	X	X				X
440-210284-1	SWFTS-MW06B-EM10	440-210284-8	WG	NORM	05/01/18	Stage 2A		X	X	X				X
440-210284-1	SWFTS-MW11-EM10	440-210284-11	WG	NORM	05/01/18	Stage 2A		X	X	X				X
440-210284-1/2	PC-91-EM10	440-210284-3	WG	NORM	05/01/18	Stage 2A		X	X	X				X
440-210284-1/2	PC-92-EM10	440-210284-4	WG	NORM	05/01/18	Stage 2A		X	X	X				X
440-210284-1/2	PC-94-EM10	440-210284-14	WG	NORM	05/01/18	Stage 2A	X	X	X	X	X	X		X
440-210284-1/2	PC-97-EM10	440-210284-7	WG	NORM	05/01/18	Stage 2A		X	X	X				X
440-210284-1/2	SWFTS-MW09A-EM10	440-210284-13	WG	NORM	05/01/18	Stage 2A		X	X	X				X
440-210284-1/2	SWFTS-MW10A-EM10	440-210284-1	WG	NORM	05/01/18	Stage 2A	X	X	X	X	X	X	X	X
440-210284-1/2	SWFTS-MW18-EM10	440-210284-6	WG	NORM	05/01/18	Stage 2A		X	X	X				X
440-210367-1	SWFTS-MW11-EM10-FD	440-210367-1	WG	FD	05/01/18	Stage 2A		X	X	X				X
440-210430-1	COH-2B1-EM10	440-210430-11	WG	NORM	05/02/18	Stage 2A		X	X	X				X
440-210430-1	PC58-EM10	440-210430-10	WG	NORM	05/02/18	Stage 2A		X	X	X				X
440-210430-1	PC88-EM10	440-210430-8	WG	NORM	05/02/18	Stage 2A		X	X	X				X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-210430-1	PC88-EM10-FD	440-210430-9	WG	FD	05/02/18	Stage 2A		X	X	X				X
440-210430-1	SWFTS-EM10-20180502-EB	440-210430-12	BW	EB	05/02/18	Stage 2A		X	X	X				X
440-210430-1	SWFTS-EM10-20180502-FB	440-210430-4	BW	FB	05/02/18	Stage 2A		X	X	X				X
440-210430-1	SWFTS-MW07A-EM10	440-210430-2	WG	NORM	05/02/18	Stage 2A		X	X	X				X
440-210430-1	SWFTS-MW07B-EM10	440-210430-1	WG	NORM	05/02/18	Stage 2A		X	X	X				X
440-210430-1	SWFTS-MW23-EM10	440-210430-5	WG	NORM	05/02/18	Stage 2A		X	X	X				X
440-210430-1/2	SWFTS-MW03-EM10	440-210430-6	WG	NORM	05/02/18	Stage 2A	X	X	X	X	X	X		X
440-210430-1/2	SWFTS-MW15-EM10	440-210430-3	WG	NORM	05/02/18	Stage 2A		X	X	X				X
440-210430-1/2	SWFTS-MW16-EM10	440-210430-13	WG	NORM	05/02/18	Stage 2A	X	X	X	X	X	X	X	X
440-210430-1/2	SWFTS-MW24-EM10	440-210430-7	WG	NORM	05/02/18	Stage 2A		X	X	X				X
440-210534-1	SWFTS-MW08A-EM10	440-210534-5	WG	NORM	05/03/18	Stage 2A		X	X	X				X
440-210534-1	SWFTS-MW12-EM10	440-210534-4	WG	NORM	05/03/18	Stage 2A		X	X	X				X
440-210534-1	SWFTS-MW13-EM10	440-210534-1	WG	NORM	05/03/18	Stage 2A		X	X	X				X
440-210534-1	SWFTS-MW17-EM10	440-210534-3	WG	NORM	05/03/18	Stage 2A		X	X	X				X
440-210534-1	SWFTS-MW25-EM10	440-210534-2	WG	NORM	05/03/18	Stage 2A	X	X	X	X	X	X		X
440-215437-1	COH-2B1-EM11	440-215437-6	WG	NORM	07/10/18	Stage 2A		X	X	X		X		X
440-215437-1	PC-94-EM11	440-215437-1	WG	NORM	07/10/18	Stage 2A	X	X	X	X	X	X		X
440-215437-1	PC-97-EM11	440-215437-3	WG	NORM	07/10/18	Stage 2A		X	X	X		X		X
440-215437-1	SWFTS-MW04-EM11	440-215437-4	WG	NORM	07/10/18	Stage 2A		X	X	X		X		X
440-215437-1	SWFTS-MW19-EM11-FD	440-215437-11	WG	FD	07/10/18	Stage 2A		X	X	X		X		X
440-215437-1	SWFTS-MW22-EM11	440-215437-9	WG	NORM	07/10/18	Stage 2A		X	X	X		X	X	X
440-215437-1	SWFTS-MW23-EM11	440-215437-7	WG	NORM	07/10/18	Stage 2A		X	X	X		X		X
440-215437-1	SWFTS-MW25-EM11	440-215437-12	WG	NORM	07/10/18	Stage 2A	X	X	X	X	X	X	X	X
440-215437-1/2	SWFTS-MW01-EM11	440-215437-2	WG	NORM	07/10/18	Stage 2A		X	X	X		X		X
440-215437-1/2	SWFTS-MW03-EM11	440-215437-5	WG	NORM	07/10/18	Stage 2A	X	X	X	X	X	X		X
440-215437-1/2	SWFTS-MW14-EM11	440-215437-8	WG	NORM	07/10/18	Stage 2A	X	X	X	X	X	X	X	X
440-215437-1/2	SWFTS-MW19-EM11	440-215437-10	WG	NORM	07/10/18	Stage 2A		X	X	X		X		X
440-215585-1	SWFTS-20180710-EB	440-215585-1	BW	EB	07/10/18	Stage 2A	X	X	X	X	X	X	X	X
440-215585-1	SWFTS-20180711-FB	440-215585-11	BW	FB	07/11/18	Stage 2A	X	X	X	X	X	X	X	X
440-215585-1	SWFTS-MW06A-EM11	440-215585-2	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X
440-215585-1	SWFTS-MW06A-EM11-FD	440-215585-3	WG	FD	07/11/18	Stage 2A		X	X	X		X		X
440-215585-1	SWFTS-MW06B-EM11	440-215585-4	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X
440-215585-1	SWFTS-MW07A-EM11	440-215585-7	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X
440-215585-1	SWFTS-MW07B-EM11	440-215585-8	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X
440-215585-1	SWFTS-MW17-EM11	440-215585-13	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X
440-215585-1/2	PC-91-EM11	440-215585-6	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X
440-215585-1/2	PC-92-EM11	440-215585-5	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-215585-1/2	SWFTS-MW05A-EM11	440-215585-14	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X
440-215585-1/2	SWFTS-MW05B-EM11	440-215585-10	WG	NORM	07/10/18	Stage 2A		X	X	X		X		X
440-215585-1/2	SWFTS-MW10A-EM11	440-215585-9	WG	NORM	07/11/18	Stage 2A	X	X	X	X	X	X	X	X
440-215585-1/2	SWFTS-MW16-EM11	440-215585-12	WG	NORM	07/11/18	Stage 2A	X	X	X	X	X	X	X	X
440-215717-1	PC-58-EM11	440-215717-7	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X
440-215717-1	PC-88-EM11	440-215717-11	WG	NORM	07/12/18	Stage 2A		X	X	X		X		X
440-215717-1	PC-88-EM11-FD	440-215717-12	WG	FD	07/12/18	Stage 2A		X	X	X		X		X
440-215717-1	SWFTS-20180712-EB	440-215717-6	BW	EB	07/12/18	Stage 2A		X	X	X		X		X
440-215717-1	SWFTS-20180712-FB	440-215717-4	BW	FB	07/12/18	Stage 2A		X	X	X		X		X
440-215717-1	SWFTS-MW08A-EM11	440-215717-14	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X
440-215717-1	SWFTS-MW11-EM11	440-215717-17	WG	NORM	07/12/18	Stage 2A	X	X	X	X	X	X	X	X
440-215717-1	SWFTS-MW11-EM11-FD	440-215717-18	WG	FD	07/12/18	Stage 2A	X	X	X	X	X	X	X	X
440-215717-1	SWFTS-MW12-EM11	440-215717-16	WG	NORM	07/12/18	Stage 2A		X	X	X		X		X
440-215717-1	SWFTS-MW13-EM11	440-215717-15	WG	NORM	07/12/18	Stage 2A		X	X	X		X		X
440-215717-1/2	SWFTS-MW02-EM11	440-215717-13	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X
440-215717-1/2	SWFTS-MW09A-EM11	440-215717-10	WG	NORM	07/12/18	Stage 2A		X	X	X		X		X
440-215717-1/2	SWFTS-MW09B-EM11	440-215717-9	WG	NORM	07/12/18	Stage 2A		X	X	X		X		X
440-215717-1/2	SWFTS-MW15-EM11	440-215717-1	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X
440-215717-1/2	SWFTS-MW18-EM11	440-215717-2	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X
440-215717-1/2	SWFTS-MW20-EM11	440-215717-8	WG	NORM	07/11/18	Stage 2A		X	X	X		X		X
440-215717-1/2	SWFTS-MW21-EM11	440-215717-3	WG	NORM	07/12/18	Stage 2A		X	X	X		X		X
440-215717-1/2	SWFTS-MW24-EM11	440-215717-5	WG	NORM	07/12/18	Stage 2A		X	X	X		X		X
440-215795-1/2	LVWPS-MW101A-EM11	440-215795-1	WG	NORM	07/12/18	Stage 2A		X	X	X				
440-215795-1/2	LVWPS-MW104-EM11	440-215795-2	WG	NORM	07/12/18	Stage 2A		X	X	X				
440-215795-1/2	LVWPS-MW107A-EM11	440-215795-7	WG	NORM	07/12/18	Stage 2A		X	X	X				
440-215795-1/2	LVWPS-MW108A-EM11	440-215795-5	WG	NORM	07/12/18	Stage 2A		X	X	X				
440-215795-1/2	LVWPS-MW108A-EM11-FD	440-215795-6	WG	FD	07/12/18	Stage 2A		X	X	X				
440-215795-1/2	LVWPS-MW109-EM11	440-215795-3	WG	NORM	07/12/18	Stage 2A		X	X	X				
440-215795-1/2	LVWPS-MW111A-EM11	440-215795-8	WG	NORM	07/12/18	Stage 2A		X	X	X				
440-215795-1/2	LVWPS-MW112A-EM11	440-215795-4	WG	NORM	07/12/18	Stage 2A		X	X	X				
440-216784-1/2	SWFTS-MW09B-EM12	440-216784-1	WG	NORM	07/26/18	Stage 2A			X	X				
440-216784-1/2	SWFTS-MW10A-EM12	440-216784-2	WG	NORM	07/26/18	Stage 2A			X	X				
440-216784-1/2	SWFTS-MW14-EM12	440-216784-3	WG	NORM	07/26/18	Stage 2A			X	X				
440-216784-1/2	SWFTS-MW15-EM12	440-216784-4	WG	NORM	07/26/18	Stage 2A			X	X				
440-216784-1/2	SWFTS-MW16-EM12	440-216784-5	WG	NORM	07/26/18	Stage 2A			X	X				
440-216784-1/2	SWFTS-MW18-EM12	440-216784-6	WG	NORM	07/26/18	Stage 2A			X	X				
440-216784-1/2	SWFTS-MW19-EM12	440-216784-7	WG	NORM	07/26/18	Stage 2A			X	X				

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-216784-1/2	SWFTS-MW19-EM12-FD	440-216784-8	WG	FD	07/26/18	Stage 2A			X	X				
440-216784-1/2	SWFTS-MW20-EM12	440-216784-9	WG	NORM	07/26/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-20180727-EB	440-216872-1	BW	EB	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-20180727-FB	440-216872-2	BW	FB	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-MW01-EM12	440-216872-13	WG	NORM	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-MW01-EM12-FD	440-216872-14	WG	FD	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-MW02-EM12	440-216872-11	WG	NORM	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-MW03-EM12	440-216872-10	WG	NORM	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-MW05A-EM12	440-216872-8	WG	NORM	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-MW05B-EM12	440-216872-7	WG	NORM	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-MW09A-EM12	440-216872-9	WG	NORM	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-MW21-EM12	440-216872-3	WG	NORM	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-MW22-EM12	440-216872-4	WG	NORM	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-MW24-EM12	440-216872-5	WG	NORM	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-MW25-EM12	440-216872-6	WG	NORM	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-PC-91-EM12	440-216872-16	WG	NORM	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-PC-92-EM12	440-216872-15	WG	NORM	07/27/18	Stage 2A			X	X				
440-216872-1/2	SWFTS-PC-94-EM12	440-216872-12	WG	NORM	07/27/18	Stage 2A			X	X				
440-218109-1	SWFTS-20180814-FB	440-218109-7	BW	FB	08/14/18	Stage 2A	X	X	X	X	X	X	X	X
440-218109-1	SWFTS-MW06A-EM13	440-218109-4	WG	NORM	08/14/18	Stage 2A		X	X	X				
440-218109-1	SWFTS-MW06A-EM13-FD	440-218109-5	WG	FD	08/14/18	Stage 2A		X	X	X				
440-218109-1	SWFTS-MW06B-EM13	440-218109-6	WG	NORM	08/14/18	Stage 2A		X	X	X				
440-218109-1/2	PC-91-EM-13	440-218109-1	WG	NORM	08/14/18	Stage 2A		X	X	X				
440-218109-1/2	SWFTS-MW05A-EM13	440-218109-2	WG	NORM	08/14/18	Stage 2A		X	X	X				
440-218109-1/2	SWFTS-MW05B-EM13	440-218109-3	WG	NORM	08/14/18	Stage 2A		X	X	X				
440-218109-1/2	SWFTS-MW09A-EM13	440-218109-9	WG	NORM	08/14/18	Stage 2A		X	X	X				
440-218109-1/2	SWFTS-MW09B-EM13	440-218109-8	WG	NORM	08/14/18	Stage 2A		X	X	X				
440-218109-1/2	SWFTS-MW10A-EM13	440-218109-10	WG	NORM	08/14/18	Stage 2A	X	X	X	X	X	X	X	X
440-218109-1/2	SWFTS-MW14-EM13	440-218109-11	WG	NORM	08/14/18	Stage 2A	X	X	X	X	X	X	X	X
440-218208-1	PC-58-EM13	440-218208-5	WG	NORM	08/15/18	Stage 2A		X	X	X				
440-218208-1/2	LVWPS-MW104-EM13	440-218208-8	WG	NORM	08/15/18	Stage 2A		X	X	X				
440-218208-1/2	LVWPS-MW108A-EM13	440-218208-6	WG	NORM	08/15/18	Stage 2A		X	X	X				
440-218208-1/2	LVWPS-MW109-EM13	440-218208-7	WG	NORM	08/15/18	Stage 2A		X	X	X				
440-218208-1/2	LVWPS-MW111A-EM13	440-218208-9	WG	NORM	08/15/18	Stage 2A		X	X	X				
440-218208-1/2	PC-92-EM13	440-218208-1	WG	NORM	08/15/18	Stage 2A		X	X	X				
440-218208-1/2	PC-94-EM13	440-218208-2	WG	NORM	08/15/18	Stage 2A	X	X	X	X	X	X		X
440-218208-1/2	SWFTS-MW02-EM13	440-218208-3	WG	NORM	08/15/18	Stage 2A		X	X	X				

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-218208-1/2	SWFTS-MW03-EM13	440-218208-4	WG	NORM	08/15/18	Stage 2A	X	X	X	X	X	X		X
440-218208-1/2	SWFTS-MW15-EM13	440-218208-12	WG	NORM	08/15/18	Stage 2A		X	X	X				
440-218208-1/2	SWFTS-MW16-EM13	440-218208-13	WG	NORM	08/15/18	Stage 2A	X	X	X	X	X	X	X	X
440-218208-1/2	SWFTS-MW18-EM13	440-218208-14	WG	NORM	08/15/18	Stage 2A		X	X	X				
440-218208-1/2	SWFTS-MW19-EM13	440-218208-15	WG	NORM	08/15/18	Stage 2A		X	X	X				
440-218208-1/2	SWFTS-MW20-EM13	440-218208-16	WG	NORM	08/15/18	Stage 2A		X	X	X				
440-218208-1/2	SWFTS-MW20-EM13-FD	440-218208-17	WG	FD	08/15/18	Stage 2A		X	X	X				
440-218208-1/2	SWFTS-MW21-EM13	440-218208-18	WG	NORM	08/15/18	Stage 2A		X	X	X				
440-218208-1/2	SWFTS-MW24-EM13	440-218208-11	WG	NORM	08/15/18	Stage 2A		X	X	X				
440-218208-1/2	SWFTS-MW25-EM13	440-218208-10	WG	NORM	08/15/18	Stage 2A	X	X	X	X	X	X		X
440-218296-1	COH-2B1-EM13	440-218296-11	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-218296-1	PC-88-EM13	440-218296-9	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-218296-1	PC-88-EM13-FD	440-218296-10	WG	FD	08/16/18	Stage 2A		X	X	X				
440-218296-1	PC-97-EM13	440-218296-8	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-218296-1	SWFTS-20180816-EB	440-218296-7	BW	EB	08/16/18	Stage 2A	X	X	X	X	X		X	X
440-218296-1	SWFTS-20180816-EB(2)	440-218296-18	BW	EB	08/16/18	Stage 2A	X	X	X	X	X		X	X
440-218296-1	SWFTS-20180816-FB	440-218296-5	BW	FB	08/16/18	Stage 2A	X	X	X	X	X	X	X	X
440-218296-1	SWFTS-MW01-EM13	440-218296-6	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-218296-1	SWFTS-MW04-EM13	440-218296-1	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-218296-1	SWFTS-MW07A-EM13	440-218296-2	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-218296-1	SWFTS-MW07B-EM13	440-218296-3	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-218296-1	SWFTS-MW08A-EM13	440-218296-4	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-218296-1	SWFTS-MW11-EM13	440-218296-12	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-218296-1	SWFTS-MW11-EM13-FD	440-218296-13	WG	FD	08/16/18	Stage 2A		X	X	X				
440-218296-1	SWFTS-MW12-EM13	440-218296-14	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-218296-1	SWFTS-MW13-EM13	440-218296-15	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-218296-1	SWFTS-MW17-EM13	440-218296-19	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-218296-1	SWFTS-MW22-EM13	440-218296-16	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-218296-1	SWFTS-MW23-EM13	440-218296-17	WG	NORM	08/16/18	Stage 2A		X	X	X				
440-219797-1	SWFTS-20180910-EB	440-219797-5	BW	EB	09/10/18	Stage 2A	X	X	X	X	X	X	X	X
440-219797-1	SWFTS-20180910-FB	440-219797-3	BW	FB	09/10/18	Stage 2A	X	X	X	X	X	X	X	X
440-219797-1/2	SWFTS-MW01-EM14	440-219797-1	WG	NORM	09/10/18	Stage 2A	X	X	X	X	X			
440-219797-1/2	SWFTS-MW02-EM14	440-219797-2	WG	NORM	09/10/18	Stage 2A	X	X	X	X	X			
440-219797-1/2	SWFTS-MW10A-EM14	440-219797-4	WG	NORM	09/10/18	Stage 2A	X	X	X	X	X	X	X	X
440-219797-1/2	SWFTS-MW16-EM14	440-219797-6	WG	NORM	09/10/18	Stage 2A	X	X	X	X	X	X	X	X
440-219886-1	COH-2B1-EM14	440-219886-10	WG	NORM	09/11/18	Stage 2A		X	X	X				
440-219886-1	SWFTS-MW06A-EM14	440-219886-15	WG	NORM	09/11/18	Stage 2A		X	X	X				

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-219886-1	SWFTS-MW06A-EM14-FD	440-219886-16	WG	FD	09/11/18	Stage 2A		X	X	X				
440-219886-1	SWFTS-MW06B-EM14	440-219886-14	WG	NORM	09/11/18	Stage 2A		X	X	X				
440-219886-1/2	PC-94-EM14	440-219886-9	WG	NORM	09/11/18	Stage 2A	X	X	X	X	X	X		X
440-219886-1/2	SWFTS-MW03-EM14	440-219886-11	WG	NORM	09/11/18	Stage 2A	X	X	X	X	X	X		X
440-219886-1/2	SWFTS-MW05A-EM14	440-219886-7	WG	NORM	09/11/18	Stage 2A		X	X	X				
440-219886-1/2	SWFTS-MW05B-EM14	440-219886-8	WG	NORM	09/11/18	Stage 2A		X	X	X				
440-219886-1/2	SWFTS-MW09A-EM14	440-219886-12	WG	NORM	09/11/18	Stage 2A		X	X	X				
440-219886-1/2	SWFTS-MW09B-EM14	440-219886-13	WG	NORM	09/11/18	Stage 2A		X	X	X				
440-219886-1/2	SWFTS-MW14-EM14	440-219886-17	WG	NORM	09/11/18	Stage 2A	X	X	X	X	X	X	X	X
440-219886-1/2	SWFTS-MW15-EM14	440-219886-2	WG	NORM	09/11/18	Stage 2A		X	X	X				
440-219886-1/2	SWFTS-MW18-EM14	440-219886-1	WG	NORM	09/11/18	Stage 2A		X	X	X				
440-219886-1/2	SWFTS-MW19-EM14	440-219886-6	WG	NORM	09/11/18	Stage 2A		X	X	X				
440-219886-1/2	SWFTS-MW20-EM14	440-219886-3	WG	NORM	09/11/18	Stage 2A		X	X	X				
440-219886-1/2	SWFTS-MW20-EM14-FD	440-219886-4	WG	FD	09/11/18	Stage 2A		X	X	X				
440-219886-1/2	SWFTS-MW22-EM14	440-219886-5	WG	NORM	09/11/18	Stage 2A		X	X	X				
440-220031-1	PC-88-EM14	440-220031-15	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1	PC-88-EM14-FD	440-220031-16	WG	FD	09/12/18	Stage 2A		X	X	X				
440-220031-1	PC-91-EM14	440-220031-12	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1	PC-92-EM14	440-220031-13	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1	PC-97-EM14	440-220031-17	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1	SWFTS-MW04-EM14	440-220031-14	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1	SWFTS-MW07A-EM14	440-220031-6	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1	SWFTS-MW07B-EM14	440-220031-7	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1	SWFTS-MW08A-EM14	440-220031-10	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1	SWFTS-MW11-EM14	440-220031-8	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1	SWFTS-MW11-EM14-FD	440-220031-9	WG	FD	09/12/18	Stage 2A		X	X	X				
440-220031-1	SWFTS-MW12-EM14	440-220031-11	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1	SWFTS-MW17-EM14	440-220031-5	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1	SWFTS-MW23-EM14	440-220031-1	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1/2	SWFTS-MW21-EM14	440-220031-4	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1/2	SWFTS-MW24-EM14	440-220031-3	WG	NORM	09/12/18	Stage 2A		X	X	X				
440-220031-1/2	SWFTS-MW25-EM14	440-220031-2	WG	NORM	09/12/18	Stage 2A	X	X	X	X	X	X		X
440-220125-1	LVWPS-MW104-EM14	440-220125-8	WG	NORM	09/13/18	Stage 2A		X	X	X				
440-220125-1	LVWPS-MW108A-EM14	440-220125-4	WG	NORM	09/13/18	Stage 2A		X	X	X				
440-220125-1	LVWPS-MW109-EM14	440-220125-1	WG	NORM	09/13/18	Stage 2A		X	X	X				
440-220125-1	LVWPS-MW111A-EM14	440-220125-2	WG	NORM	09/13/18	Stage 2A		X	X	X				
440-220125-1	PC-58-EM14	440-220125-5	WG	NORM	09/13/18	Stage 2A		X	X	X				

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-220125-1	SWFTS-20180913-EB	440-220125-7	BW	EB	09/13/18	Stage 2A	X	X	X	X	X	X	X	X
440-220125-1	SWFTS-20180913-FB	440-220125-3	BW	FB	09/13/18	Stage 2A	X	X	X	X	X	X	X	X
440-220125-1	SWFTS-MW13-EM14	440-220125-6	WG	NORM	09/13/18	Stage 2A		X	X	X				
440-221855-1	SWFTS-20181009-EB	440-221855-6	BW	EB	10/09/18	Stage 2A	X	X	X	X	X	X	X	X
440-221855-1	SWFTS-MW19-EM15-FD	440-221855-5	WG	FD	10/09/18	Stage 2A		X	X	X		X	X	X
440-221855-1	SWFTS-MW22-EM15	440-221855-2	WG	NORM	10/09/18	Stage 2A		X	X	X		X	X	X
440-221855-1/2	SWFTS-MW01-EM15	440-221855-12	WG	NORM	10/09/18	Stage 2A		X	X	X		X		X
440-221855-1/2	SWFTS-MW03-EM15	440-221855-13	WG	NORM	10/09/18	Stage 2A		X	X	X		X		X
440-221855-1/2	SWFTS-MW05B-EM15	440-221855-14	WG	NORM	10/09/18	Stage 2A		X	X	X		X		X
440-221855-1/2	SWFTS-MW09A-EM15	440-221855-7	WG	NORM	10/09/18	Stage 2A		X	X	X		X		X
440-221855-1/2	SWFTS-MW09B-EM15	440-221855-8	WG	NORM	10/09/18	Stage 2A		X	X	X		X		X
440-221855-1/2	SWFTS-MW10A-EM15	440-221855-9	WG	NORM	10/09/18	Stage 2A	X	X	X	X	X	X	X	X
440-221855-1/2	SWFTS-MW14-EM15	440-221855-10	WG	NORM	10/09/18	Stage 2A	X	X	X	X	X	X	X	X
440-221855-1/2	SWFTS-MW15-EM15	440-221855-11	WG	NORM	10/09/18	Stage 2A		X	X	X		X		X
440-221855-1/2	SWFTS-MW19-EM15	440-221855-4	WG	NORM	10/09/18	Stage 2A		X	X	X		X		X
440-221855-1/2	SWFTS-MW20-EM15	440-221855-1	WG	NORM	10/09/18	Stage 2A		X	X	X		X		X
440-221855-1/2	SWFTS-MW21-EM15	440-221855-3	WG	NORM	10/09/18	Stage 2A		X	X	X		X		X
440-221975-1	SWFTS-20181010-FB	440-221975-3	BW	FB	10/10/18	Stage 2A	X	X	X	X	X	X	X	X
440-221975-1	SWFTS-MW06A-EM15	440-221975-8	WG	NORM	10/10/18	Stage 2A		X	X	X		X		X
440-221975-1	SWFTS-MW06A-EM15-FD	440-221975-10	WG	FD	10/10/18	Stage 2A		X	X	X		X		X
440-221975-1	SWFTS-MW06B-EM15	440-221975-9	WG	NORM	10/10/18	Stage 2A		X	X	X		X		X
440-221975-1	SWFTS-MW07A-EM15	440-221975-11	WG	NORM	10/10/18	Stage 2A		X	X	X		X		X
440-221975-1	SWFTS-MW07B-EM15	440-221975-12	WG	NORM	10/10/18	Stage 2A		X	X	X		X		X
440-221975-1	SWFTS-MW08A-EM15	440-221975-13	WG	NORM	10/10/18	Stage 2A		X	X	X		X		X
440-221975-1/2	LVWPS-MW104-EM15	440-221975-5	WG	NORM	10/10/18	Stage 2A		X	X	X				
440-221975-1/2	LVWPS-MW108A-EM15	440-221975-1	WG	NORM	10/10/18	Stage 2A		X	X	X				
440-221975-1/2	LVWPS-MW109-EM15	440-221975-6	WG	NORM	10/10/18	Stage 2A		X	X	X				
440-221975-1/2	LVWPS-MW111A-EM15	440-221975-2	WG	NORM	10/10/18	Stage 2A		X	X	X				
440-221975-1/2	LVWPS-MW112A-EM15	440-221975-4	WG	NORM	10/10/18	Stage 2A		X	X	X				
440-221975-1/2	PC-91-EM15	440-221975-16	WG	NORM	10/10/18	Stage 2A		X	X	X		X		X
440-221975-1/2	SWFTS-MW02-EM15	440-221975-15	WG	NORM	10/10/18	Stage 2A		X	X	X		X		X
440-221975-1/2	SWFTS-MW05A-EM15	440-221975-14	WG	NORM	10/10/18	Stage 2A		X	X	X		X		X
440-221975-1/2	SWFTS-MW24-EM15	440-221975-7	WG	NORM	10/10/18	Stage 2A		X	X	X		X		X
440-222092-1	COH-2B1-EM15	440-222092-1	WG	NORM	10/11/18	Stage 2A		X	X	X		X		X
440-222092-1	PC-58-EM15	440-222092-19	WG	NORM	10/11/18	Stage 2A		X	X	X		X		X
440-222092-1	PC-88-EM15	440-222092-15	WG	NORM	10/11/18	Stage 2A		X	X	X		X		X
440-222092-1	PC-88-EM15-FD	440-222092-16	WG	FD	10/11/18	Stage 2A		X	X	X		X		X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	Calculated	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B
440-222092-1	PC-92-EM15	440-222092-17	WG	NORM	10/11/18	Stage 2A		X	X	X		X		X
440-222092-1	PC-94-EM15	440-222092-18	WG	NORM	10/11/18	Stage 2A	X	X	X	X	X	X		X
440-222092-1	PC-97-EM15	440-222092-13	WG	NORM	10/11/18	Stage 2A		X	X	X		X		X
440-222092-1	SWFTS-20181011-EB	440-222092-2	BW	EB	10/11/18	Stage 2A		X	X	X		X		X
440-222092-1	SWFTS-20181011-FB	440-222092-8	BW	FB	10/11/18	Stage 2A		X	X	X		X		X
440-222092-1	SWFTS-MW04-EM15	440-222092-9	WG	NORM	10/11/18	Stage 2A		X	X	X		X		X
440-222092-1	SWFTS-MW11-EM15	440-222092-10	WG	NORM	10/11/18	Stage 2A	X	X	X	X	X	X	X	X
440-222092-1	SWFTS-MW11-EM15-FD	440-222092-11	WG	FD	10/11/18	Stage 2A	X	X	X	X	X	X	X	X
440-222092-1	SWFTS-MW12-EM15	440-222092-12	WG	NORM	10/11/18	Stage 2A		X	X	X		X		X
440-222092-1	SWFTS-MW13-EM15	440-222092-14	WG	NORM	10/11/18	Stage 2A		X	X	X		X		X
440-222092-1	SWFTS-MW17-EM15	440-222092-4	WG	NORM	10/11/18	Stage 2A		X	X	X		X		X
440-222092-1	SWFTS-MW23-EM15	440-222092-7	WG	NORM	10/11/18	Stage 2A		X	X	X		X		X
440-222092-1/2	SWFTS-MW16-EM15	440-222092-3	WG	NORM	10/11/18	Stage 2A	X	X	X	X	X	X	X	X
440-222092-1/2	SWFTS-MW18-EM15	440-222092-5	WG	NORM	10/11/18	Stage 2A		X	X	X		X		X
440-222092-1/2	SWFTS-MW25-EM15	440-222092-6	WG	NORM	10/11/18	Stage 2A	X	X	X	X	X	X	X	X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-177629-1/2	SWFTS-BH02-WG-26	440-177629-1	WG	NORM	02/21/17	Stage 2A	X						
440-177629-1/2	SWFTS-BH02-WG-35	440-177629-2	WG	NORM	02/21/17	Stage 2A	X						
440-177629-1/2	SWFTS-BH02-WG-35-FD	440-177629-3	WG	FD	02/21/17	Stage 2A	X						
440-177682-1	SWFTS-BH02-SO-34	440-177682-1	SO	NORM	02/21/17	Stage 2B							
440-177819-1	SWFTS-BH07-WG-25	440-177819-1	WG	NORM	02/22/17	Stage 2A							
440-177822-1	SWFTS-BH07-SO-14.5	440-177822-1	SO	NORM	02/22/17	Stage 2B							
440-177995-1/2	SWFTS-BH08-WG-22	440-177995-2	WG	NORM	02/23/17	Stage 2A	X						
440-177995-2	SWFTS-BH07-WG-35	440-177995-1	WG	NORM	02/22/17	Stage 2A							
440-177998-1	SWFTS-BH08-SO-14.5	440-177998-1	SO	NORM	02/23/17	Stage 2B		X					
440-178093-1/2	SWFTS-BH08-WG-36	440-178093-1	WG	NORM	02/23/17	Stage 2A	X						
440-178093-2	SWFTS-BH08-WG-46	440-178093-2	WG	NORM	02/24/17	Stage 2A							
440-178093-2	SWFTS-BH10-WG-21	440-178093-4	WG	NORM	02/24/17	Stage 2A							
440-178093-2	SWFTS-BH10-WG-36	440-178093-3	WG	NORM	02/24/17	Stage 2A							
440-178098-1	SWFTS-BH08-SO-52.5	440-178098-1	SO	NORM	02/24/17	Stage 2B							
440-178098-1	SWFTS-BH10-SO-12	440-178098-2	SO	NORM	02/24/17	Stage 2B							
440-178282-1	SWFTS-BH01-WG-22	440-178282-3	WG	NORM	02/26/17	Stage 2A							
440-178282-1	SWFTS-BH01-WG-36	440-178282-4	WG	NORM	02/26/17	Stage 2A							
440-178282-1	SWFTS-BH03-WG-26	440-178282-1	WG	NORM	02/25/17	Stage 2A							
440-178282-1	SWFTS-BH03-WG-41	440-178282-2	WG	NORM	02/25/17	Stage 2A							
440-178282-1	SWFTS-BH04-WG-21	440-178282-5	WG	NORM	02/26/17	Stage 2A							
440-178282-1	SWFTS-BH04-WG-36	440-178282-6	WG	NORM	02/26/17	Stage 2A							
440-178282-1	SWFTS-BH09-WG-13.5	440-178282-7	WG	NORM	02/27/17	Stage 2A							
440-178303-1	SWFTS-BH01-SO-16	440-178303-4	SO	NORM	02/26/17	Stage 2B							
440-178303-1	SWFTS-BH03-SO-24	440-178303-3	SO	NORM	02/25/17	Stage 2B							
440-178303-1	SWFTS-BH04-SO-14	440-178303-5	SO	NORM	02/26/17	Stage 2B							
440-178303-1	SWFTS-BH09-SO-16	440-178303-6	SO	NORM	02/27/17	Stage 2B							
440-178303-1	SWFTS-BH09-SO-33	440-178303-7	SO	NORM	02/27/17	Stage 2B							
440-178303-1	SWFTS-BH10-SO-51	440-178303-1	SO	NORM	02/24/17	Stage 2B							
440-178303-1	SWFTS-BH10-SO-51-FD	440-178303-2	SO	FD	02/24/17	Stage 2B							
440-178410-1	SWFTS-MW02-SO-6	440-178410-5	SO	NORM	02/28/17	Stage 2B							
440-178410-1	SWFTS-MW02-SO-6-FD	440-178410-6	SO	FD	02/28/17	Stage 2B							
440-178410-1	SWFTS-MW02-SO-7	440-178410-7	SO	NORM	02/28/17	Stage 2B							
440-178410-1	SWFTS-MW04-SO-1	440-178410-3	SO	NORM	02/28/17	Stage 2B							
440-178410-1	SWFTS-MW04-SO-15	440-178410-2	SO	NORM	02/28/17	Stage 2B							
440-178410-1	SWFTS-MW04-SO-25	440-178410-1	SO	NORM	02/28/17	Stage 2B							
440-178410-1	SWFTS-MW04-SO-5	440-178410-4	SO	NORM	02/28/17	Stage 2B							
440-178495-1	SWFTS-MW03-WG-21	440-178495-1	WG	NORM	03/01/17	Stage 2A							

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-178495-1	SWFTS-MW03-WG-32	440-178495-2	WG	NORM	03/01/17	Stage 2A							
440-178495-1	SWFTS-MW03-WG-32-FD	440-178495-3	WG	FD	03/01/17	Stage 2A							
440-178497-1	SWFTS-MW02-SO-14	440-178497-1	SO	NORM	02/28/17	Stage 2B							
440-178497-1	SWFTS-MW02-SO-25	440-178497-2	SO	NORM	02/28/17	Stage 2B							
440-178497-1	SWFTS-MW03-SO-14	440-178497-3	SO	NORM	03/01/17	Stage 2B							
440-178497-1	SWFTS-MW03-SO-14-FD	440-178497-4	SO	FD	03/01/17	Stage 2B							
440-178497-1	SWFTS-MW03-SO-46	440-178497-5	SO	NORM	03/01/17	Stage 2B							
440-178689-1	SWFTS-MW03-SO-57	440-178689-1	SO	NORM	03/01/17	Stage 2B							
440-178689-1	SWFTS-MW03-SO-58	440-178689-2	SO	NORM	03/01/17	Stage 2B							
440-179122-1	SWFTS-MW01-SO-17	440-179122-1	SO	NORM	03/07/17	Stage 2B							
440-179122-1	SWFTS-MW01-SO-21	440-179122-2	SO	NORM	03/07/17	Stage 2B							
440-179122-1	SWFTS-MW01-SO-30	440-179122-3	SO	NORM	03/07/17	Stage 2B							
440-179122-1	SWFTS-MW01-SO-40.5	440-179122-4	SO	NORM	03/07/17	Stage 2B							
440-179273-1	SWFTS-MW06B-SO-12	440-179273-1	SO	NORM	03/07/17	Stage 2B							
440-179273-1	SWFTS-MW06B-SO-29.5	440-179273-2	SO	NORM	03/07/17	Stage 2B							
440-179273-1	SWFTS-MW06B-SO-36.5	440-179273-3	SO	NORM	03/07/17	Stage 2B							
440-179384-1	SWFTS-MW08C-WG-50	440-179384-1	WG	NORM	03/09/17	Stage 2A							
440-179386-1	SWFTS-MW08C-SO-28	440-179386-1	SO	NORM	03/08/17	Stage 4		X					
440-179386-1	SWFTS-MW08C-SO-28-FD	440-179386-2	SO	FD	03/08/17	Stage 4		X					
440-179386-1	SWFTS-MW08C-SO-43	440-179386-6	SO	NORM	03/08/17	Stage 4							
440-179386-1	SWFTS-MW08C-SO-49	440-179386-3	SO	NORM	03/09/17	Stage 4							
440-179386-1	SWFTS-MW08C-SO-51	440-179386-4	SO	NORM	03/09/17	Stage 4							
440-179386-1	SWFTS-MW08C-SO-55	440-179386-5	SO	NORM	03/09/17	Stage 4							
440-179386-1	SWFTS-MW08C-SO-60	440-179386-7	SO	NORM	03/09/17	Stage 4							
440-179386-1	SWFTS-MW08C-SO-65	440-179386-8	SO	NORM	03/09/17	Stage 4							
440-179386-1	SWFTS-MW08C-SO-69	440-179386-9	SO	NORM	03/09/17	Stage 4							
440-179551-1	SWFTS-MW05B-SO-26.5	440-179551-1	SO	NORM	03/10/17	Stage 2B							
440-179551-1	SWFTS-MW05B-SO-36.5	440-179551-2	SO	NORM	03/10/17	Stage 2B							
440-179551-1	SWFTS-MW07B-SO-15	440-179551-5	SO	NORM	03/11/17	Stage 2B		X					
440-179551-1	SWFTS-MW07B-SO-28	440-179551-6	SO	NORM	03/11/17	Stage 2B							
440-179551-1	SWFTS-MW07B-SO-28-FD	440-179551-7	SO	FD	03/11/17	Stage 2B							
440-179551-1	SWFTS-MW07B-SO-45	440-179551-8	SO	NORM	03/11/17	Stage 2B		X					
440-179551-1	SWFTS-MW07B-SO-45-FD	440-179551-9	SO	FD	03/11/17	Stage 2B							
440-179551-1	SWFTS-MW07B-SO-5	440-179551-3	SO	NORM	03/11/17	Stage 2B							
440-179551-1	SWFTS-MW07B-SO-53	440-179551-10	SO	NORM	03/11/17	Stage 2B							
440-179551-1	SWFTS-MW07B-SO-8	440-179551-4	SO	NORM	03/11/17	Stage 2B							
440-179551-1	SWFTS-MW10C-SO-14	440-179551-11	SO	NORM	03/12/17	Stage 2B							

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-179551-1	SWFTS-MW10C-SO-31.5	440-179551-12	SO	NORM	03/12/17	Stage 2B							
440-179551-1	SWFTS-MW10C-SO-51.5	440-179551-13	SO	NORM	03/13/17	Stage 2B		X					
440-179672-1	SWFTS-WG1-EB	440-179672-2	BW	EB	03/14/17	Stage 2A	X						
440-179672-1	SWFTS-WG1-FB	440-179672-1	BW	FB	03/14/17	Stage 2A	X						
440-179673-1	SWFTS-MW09B-SO-19	440-179673-1	SO	NORM	03/14/17	Stage 2B		X					
440-179673-1	SWFTS-MW09B-SO-39	440-179673-2	SO	NORM	03/14/17	Stage 2B							
440-179673-1	SWFTS-MW09B-SO-39-FD	440-179673-3	SO	FD	03/14/17	Stage 2B							
440-179673-1	SWFTS-SO1-EB	440-179673-4	BW	EB	03/14/17	Stage 2A	X		X				
440-179673-1	SWFTS-SO1-FB	440-179673-5	BW	FB	03/14/17	Stage 2A	X		X				
440-179802-1	SWFTS-BH05-SO-20.5	440-179802-1	SO	NORM	03/15/17	Stage 2B							
440-179802-1	SWFTS-BH05-SO-31	440-179802-2	SO	NORM	03/15/17	Stage 2B							
440-179802-1	SWFTS-BH05-SO-31-FD	440-179802-3	SO	FD	03/15/17	Stage 2B							
440-179802-1	SWFTS-BH05-SO-36	440-179802-4	SO	NORM	03/15/17	Stage 2B							
440-179802-1	SWFTS-BH06-SO-14	440-179802-7	SO	NORM	03/15/17	Stage 2B							
440-179802-1	SWFTS-SO2-EB	440-179802-5	BW	EB	03/15/17	Stage 2A	X		X				
440-179802-1	SWFTS-SO2-FB	440-179802-6	BW	FB	03/15/17	Stage 2A	X		X				
440-180820-1	SWFTS-FIELDQC-BL01-EB	440-180820-6	BW	EB	03/28/17	Stage 2A	X				X	X	X
440-180820-1	SWFTS-FIELDQC-BL01-FB	440-180820-5	BW	FB	03/28/17	Stage 2A	X				X	X	X
440-180820-1/2	SWFTS-MW08C-BL01	440-180820-3	WG	NORM	03/28/17	Stage 2A	X				X	X	X
440-180820-1/2	SWFTS-MW10C-BL01	440-180820-4	WG	NORM	03/28/17	Stage 2A	X				X	X	X
440-180820-1/3	PC-58-BL01	440-180820-1	WG	NORM	03/28/17	Stage 2A					X	X	X
440-180820-1/3	PC-94-BL01	440-180820-2	WG	NORM	03/28/17	Stage 2A	X				X	X	X
440-180937-1	PC-91-BL01	440-180937-1	WG	NORM	03/29/17	Stage 2A	X				X	X	X
440-180937-1	PC-92-BL01	440-180937-2	WG	NORM	03/29/17	Stage 2A	X				X	X	X
440-180937-1	SWFTS-MW01-BL01	440-180937-6	WG	NORM	03/29/17	Stage 2A	X				X	X	X
440-180937-1	SWFTS-MW02-BL01	440-180937-7	WG	NORM	03/29/17	Stage 2A					X		X
440-180937-1	SWFTS-MW09A-BL01	440-180937-3	WG	NORM	03/29/17	Stage 2A	X				X	X	X
440-180937-1	SWFTS-MW09B-BL01	440-180937-4	WG	NORM	03/29/17	Stage 2A	X				X	X	X
440-180937-1	SWFTS-MW09B-BL01-FD	440-180937-5	WG	FD	03/29/17	Stage 2A	X				X	X	X
440-181045-1	SWFTS-MW03-BL01	440-181045-5	WG	NORM	03/30/17	Stage 2A					X		X
440-181045-1	SWFTS-MW03-BL01-FD	440-181045-6	WG	FD	03/30/17	Stage 2A					X		X
440-181045-1	SWFTS-MW05A-BL01	440-181045-7	WG	NORM	03/30/17	Stage 2A					X		X
440-181045-1	SWFTS-MW05B-BL01	440-181045-8	WG	NORM	03/30/17	Stage 2A					X		X
440-181045-1	SWFTS-MW06A-BL01	440-181045-1	WG	NORM	03/30/17	Stage 2A					X		X
440-181045-1	SWFTS-MW06B-BL01	440-181045-2	WG	NORM	03/30/17	Stage 2A					X		X
440-181045-1	SWFTS-MW07A-BL01	440-181045-3	WG	NORM	03/30/17	Stage 2A					X		X
440-181045-1	SWFTS-MW07B-BL01	440-181045-4	WG	NORM	03/30/17	Stage 2A					X		X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-181045-1	SWFTS-MW08A-BL01	440-181045-9	WG	NORM	03/30/17	Stage 2A	X				X	X	X
440-181122-1	SWFTS-MW04-BL01	440-181122-1	WG	NORM	03/31/17	Stage 2A					X		X
440-181122-1	SWFTS-MW10A-BL01	440-181122-2	WG	NORM	03/31/17	Stage 2A	X				X	X	X
440-186188-1	SWFTS-FIELDQC-IW-EB	440-186188-7	BW	EB	06/09/17	Stage 2A						X	
440-186188-1	SWFTS-FIELDQC-IW-FB	440-186188-6	BW	FB	06/09/17	Stage 2A						X	
440-186188-1	SWFTS-IW05-SO-28	440-186188-1	SO	NORM	06/09/17	Stage 4						X	
440-186188-1	SWFTS-IW10-SO-39	440-186188-2	SO	NORM	05/26/17	Stage 4						X	
440-186188-1	SWFTS-IW10-SO-39-FD	440-186188-3	SO	FD	05/26/17	Stage 4						X	
440-186188-1	SWFTS-IW12-SO-31	440-186188-4	SO	NORM	06/08/17	Stage 4						X	
440-186188-1	SWFTS-IW17-SO-33.5	440-186188-5	SO	NORM	05/31/17	Stage 4						X	
440-188133-1	SWFTS-IW01A-BL02	440-188133-3	WG	NORM	07/11/17	Stage 2A							
440-188133-1	SWFTS-IW01B-BL02	440-188133-13	WG	NORM	07/11/17	Stage 2A							
440-188133-1	SWFTS-IW02A-BL02	440-188133-14	WG	NORM	07/11/17	Stage 2A	X						
440-188133-1	SWFTS-IW02B-BL02	440-188133-2	WG	NORM	07/11/17	Stage 2A	X						
440-188133-1	SWFTS-IW03-BL02	440-188133-4	WG	NORM	07/11/17	Stage 2A							
440-188133-1	SWFTS-IW03-BL02-FD	440-188133-5	WG	FD	07/11/17	Stage 2A							
440-188133-1	SWFTS-IW04-BL02	440-188133-11	WG	NORM	07/11/17	Stage 2A							
440-188133-1	SWFTS-IW04-BL02-FD	440-188133-12	WG	FD	07/11/17	Stage 2A							
440-188133-1	SWFTS-IW05-BL02	440-188133-16	WG	NORM	07/11/17	Stage 2A	X						
440-188133-1	SWFTS-IW06A-BL02	440-188133-10	WG	NORM	07/11/17	Stage 2A							
440-188133-1	SWFTS-IW06B-BL02	440-188133-6	WG	NORM	07/11/17	Stage 2A							
440-188133-1	SWFTS-IW07-BL02	440-188133-7	WG	NORM	07/11/17	Stage 2A							
440-188133-1	SWFTS-IW13A-BL02	440-188133-1	WG	NORM	07/11/17	Stage 2A							
440-188133-1	SWFTS-IW13B-BL02	440-188133-15	WG	NORM	07/11/17	Stage 2A							
440-188133-1	SWFTS-IW16A-BL02	440-188133-9	WG	NORM	07/11/17	Stage 2A							
440-188133-1	SWFTS-IW16B-BL02	440-188133-8	WG	NORM	07/11/17	Stage 2A							
440-188133-1	SWFTS-MW18-BL02	440-188133-17	WG	NORM	07/11/17	Stage 2A	X				X	X	X
440-188244-1	PC-91-BL02-FD	440-188244-4	WG	FD	07/12/17	Stage 2A					X	X	X
440-188244-1	SWFTS-IW09-BL02-FD	440-188244-3	WG	FD	07/12/17	Stage 2A	X						
440-188244-1	SWFTS-MW11-BL02	440-188244-7	WG	NORM	07/12/17	Stage 2A	X				X	X	X
440-188244-1	SWFTS-MW13-BL02	440-188244-6	WG	NORM	07/12/17	Stage 2A	X				X	X	X
440-188244-1	SWFTS-MW14-BL02	440-188244-8	WG	NORM	07/12/17	Stage 2A	X				X	X	X
440-188244-1	SWFTS-MW14-BL02-FD	440-188244-9	WG	FD	07/12/17	Stage 2A	X				X	X	X
440-188244-1	SWFTS-MW17-BL02	440-188244-1	WG	NORM	07/12/17	Stage 2A					X	X	X
440-188244-1	SWFTS-MW19-BL02	440-188244-2	WG	NORM	07/12/17	Stage 2A	X				X	X	X
440-188244-1	SWFTS-MW20-BL02	440-188244-5	WG	NORM	07/12/17	Stage 2A					X	X	X
440-188247-1	PC-91-BL02	440-188247-5	WG	NORM	07/12/17	Stage 2A					X	X	X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-188247-1	PC-92-BL02	440-188247-6	WG	NORM	07/12/17	Stage 2A					X	X	X
440-188247-1	SWFTS-IW08-BL02	440-188247-7	WG	NORM	07/12/17	Stage 2A							
440-188247-1	SWFTS-IW09-BL02	440-188247-8	WG	NORM	07/12/17	Stage 2A	X						
440-188247-1	SWFTS-IW10-BL02	440-188247-9	WG	NORM	07/12/17	Stage 2A							
440-188247-1	SWFTS-IW11-BL02	440-188247-3	WG	NORM	07/12/17	Stage 2A	X						
440-188247-1	SWFTS-IW12-BL02	440-188247-4	WG	NORM	07/12/17	Stage 2A							
440-188247-1	SWFTS-IW14-BL02	440-188247-1	WG	NORM	07/12/17	Stage 2A	X						
440-188247-1	SWFTS-IW15-BL02	440-188247-2	WG	NORM	07/12/17	Stage 2A							
440-188247-1	SWFTS-IW20-BL02	440-188247-10	WG	NORM	07/12/17	Stage 2A	X						
440-188324-1	PC-58-BL02	440-188324-3	WG	NORM	07/13/17	Stage 2A					X	X	X
440-188324-1	SWFTS-MW12-BL02	440-188324-6	WG	NORM	07/13/17	Stage 2A					X	X	X
440-188324-1	SWFTS-MW21-BL02	440-188324-5	WG	NORM	07/13/17	Stage 2A	X				X	X	X
440-188324-1	SWFTS-MW22-BL02	440-188324-1	WG	NORM	07/13/17	Stage 2A	X				X	X	X
440-188324-1	SWFTS-MW24-BL02	440-188324-2	WG	NORM	07/13/17	Stage 2A	X				X	X	X
440-188324-1	SWFTS-MW25-BL02	440-188324-4	WG	NORM	07/13/17	Stage 2A	X				X	X	X
440-188325-1	PC-94-BL02	440-188325-1	WG	NORM	07/13/17	Stage 2A					X	X	X
440-188325-1	PC-97-BL02	440-188325-8	WG	NORM	07/13/17	Stage 2A					X	X	X
440-188325-1	SWFTS-FIELDQC-BL02-EB	440-188325-9	BW	EB	07/13/17	Stage 2A	X				X	X	X
440-188325-1	SWFTS-FIELDQC-BL02-FB	440-188325-10	BW	FB	07/13/17	Stage 2A	X				X	X	X
440-188325-1	SWFTS-IW17-BL02	440-188325-6	WG	NORM	07/13/17	Stage 2A	X						
440-188325-1	SWFTS-IW18-BL02	440-188325-4	WG	NORM	07/13/17	Stage 2A							
440-188325-1	SWFTS-IW19-BL02	440-188325-5	WG	NORM	07/13/17	Stage 2A							
440-188325-1	SWFTS-MW15-BL02	440-188325-3	WG	NORM	07/13/17	Stage 2A	X				X	X	X
440-188325-1	SWFTS-MW16-BL02	440-188325-2	WG	NORM	07/13/17	Stage 2A					X	X	X
440-188325-1	SWFTS-MW23-BL02	440-188325-7	WG	NORM	07/13/17	Stage 2A					X	X	X
440-189933-1	COH-2B1-BL02	440-189933-1	WG	NORM	08/09/17	Stage 2A				X	X	X	X
440-192627-1	SWFTS-EM01-20170920-EB	440-192627-13	BW	EB	09/20/17	Stage 2A				X			
440-192627-1	SWFTS-EM01-20170920-FB	440-192627-14	BW	FB	09/20/17	Stage 2A				X			
440-192627-1	SWFTS-MW07A-EM01	440-192627-7	WG	NORM	09/20/17	Stage 2A				X			
440-192627-1	SWFTS-MW07B-EM01	440-192627-8	WG	NORM	09/20/17	Stage 2A				X			
440-192627-1	SWFTS-MW08A-EM01	440-192627-9	WG	NORM	09/20/17	Stage 2A				X			
440-192627-1	SWFTS-MW08A-EM01-FD	440-192627-10	WG	FD	09/20/17	Stage 2A				X			
440-192627-1	SWFTS-MW11-EM01	440-192627-11	WG	NORM	09/20/17	Stage 2A				X			
440-192627-1	SWFTS-MW12-EM01	440-192627-2	WG	NORM	09/19/17	Stage 2A				X			
440-192627-1	SWFTS-MW13-EM01	440-192627-12	WG	NORM	09/20/17	Stage 2A				X			
440-192627-1	SWFTS-MW17-EM01	440-192627-3	WG	NORM	09/19/17	Stage 2A				X			
440-192627-1	SWFTS-MW17-EM01-FD	440-192627-4	WG	FD	09/19/17	Stage 2A				X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-192627-1/2	SWFTS-MW01-EM01	440-192627-1	WG	NORM	09/19/17	Stage 2A				X			
440-192627-1/2	SWFTS-MW04-EM01	440-192627-5	WG	NORM	09/20/17	Stage 2A				X			
440-192627-1/2	SWFTS-MW04-EM01-FD	440-192627-6	WG	FD	09/20/17	Stage 2A				X			
440-192728-1	SWFTS-MW03-EM01	440-192728-12	WG	NORM	09/21/17	Stage 2A				X			
440-192728-1	SWFTS-MW06B-EM01	440-192728-9	WG	NORM	09/21/17	Stage 2A				X			
440-192728-1	SWFTS-MW09B-EM01	440-192728-13	WG	NORM	09/21/17	Stage 2A				X			
440-192728-1	SWFTS-MW22-EM01	440-192728-4	WG	NORM	09/20/17	Stage 2A				X			
440-192728-1	SWFTS-PC-94-EM01	440-192728-5	WG	NORM	09/20/17	Stage 2A				X			
440-192728-1/2	SWFTS-MW05A-EM01	440-192728-3	WG	NORM	09/20/17	Stage 2A				X			
440-192728-1/2	SWFTS-MW14-EM01	440-192728-1	WG	NORM	09/20/17	Stage 2A				X			
440-192728-1/2	SWFTS-MW15-EM01	440-192728-2	WG	NORM	09/20/17	Stage 2A				X			
440-192728-1/2	SWFTS-MW18-EM01	440-192728-8	WG	NORM	09/21/17	Stage 2A				X			
440-192728-1/2	SWFTS-MW19-EM01	440-192728-10	WG	NORM	09/21/17	Stage 2A				X			
440-192728-1/2	SWFTS-MW21-EM01	440-192728-11	WG	NORM	09/21/17	Stage 2A				X			
440-192728-1/2	SWFTS-PC-91-EM01	440-192728-6	WG	NORM	09/21/17	Stage 2A				X			
440-192728-1/2	SWFTS-PC-92-EM01	440-192728-7	WG	NORM	09/21/17	Stage 2A				X			
440-192818-1	SWFTS-COH-2B1-EM01	440-192818-16	WG	NORM	09/22/17	Stage 2A				X			
440-192818-1	SWFTS-EM01-20170922-EB	440-192818-6	BW	EB	09/22/17	Stage 2A				X			
440-192818-1	SWFTS-EM01-20170922-FB	440-192818-11	BW	FB	09/22/17	Stage 2A				X			
440-192818-1	SWFTS-MW06A-EM01	440-192818-2	WG	NORM	09/21/17	Stage 2A				X			
440-192818-1	SWFTS-MW09A-EM01	440-192818-1	WG	NORM	09/21/17	Stage 2A				X			
440-192818-1	SWFTS-MW23-EM01	440-192818-15	WG	NORM	09/22/17	Stage 2A				X			
440-192818-1	SWFTS-MW24-EM01	440-192818-9	WG	NORM	09/22/17	Stage 2A				X			
440-192818-1	SWFTS-MW25-EM01	440-192818-14	WG	NORM	09/22/17	Stage 2A				X			
440-192818-1	SWFTS-PC-88-EM01	440-192818-10	WG	NORM	09/22/17	Stage 2A				X			
440-192818-1	SWFTS-PC-97-EM01	440-192818-13	WG	NORM	09/22/17	Stage 2A				X			
440-192818-1	SWFTS-PC-97-EM01-FD	440-192818-12	WG	FD	09/22/17	Stage 2A				X			
440-192818-1/2	SWFTS-MW02-EM01	440-192818-4	WG	NORM	09/21/17	Stage 2A				X			
440-192818-1/2	SWFTS-MW05B-EM01	440-192818-8	WG	NORM	09/22/17	Stage 2A				X			
440-192818-1/2	SWFTS-MW10A-EM01	440-192818-5	WG	NORM	09/21/17	Stage 2A				X			
440-192818-1/2	SWFTS-MW16-EM01	440-192818-7	WG	NORM	09/22/17	Stage 2A				X			
440-192818-1/2	SWFTS-MW20-EM01	440-192818-3	WG	NORM	09/21/17	Stage 2A				X			
440-192973-1	SWFTS-MW07A-EM02	440-192973-1	WG	NORM	09/26/17	Stage 2A				X			
440-192973-1	SWFTS-MW07B-EM02	440-192973-2	WG	NORM	09/26/17	Stage 2A				X			
440-192973-1	SWFTS-MW08A-EM02	440-192973-4	WG	NORM	09/26/17	Stage 2A				X			
440-192973-1	SWFTS-MW08A-EM02-FD	440-192973-5	WG	FD	09/26/17	Stage 2A				X			
440-192973-1	SWFTS-MW11-EM02	440-192973-3	WG	NORM	09/26/17	Stage 2A				X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-192973-1	SWFTS-MW12-EM02	440-192973-10	WG	NORM	09/26/17	Stage 2A				X			
440-192973-1	SWFTS-MW13-EM02	440-192973-9	WG	NORM	09/26/17	Stage 2A				X			
440-192973-1	SWFTS-MW17-EM02	440-192973-7	WG	NORM	09/26/17	Stage 2A				X			
440-192973-1	SWFTS-MW17-EM02-FD	440-192973-8	WG	FD	09/26/17	Stage 2A				X			
440-192973-1/2	SWFTS-MW16-EM02	440-192973-6	WG	NORM	09/26/17	Stage 2A				X			
440-193062-1	SWFTS-EM02-20170927-EB	440-193062-7	BW	EB	09/27/17	Stage 2A				X			
440-193062-1	SWFTS-EM02-20170927-FB	440-193062-6	BW	FB	09/27/17	Stage 2A				X			
440-193062-1	SWFTS-PC-94-EM02	440-193062-14	WG	NORM	09/26/17	Stage 2A				X			
440-193062-1/2	SWFTS-MW01-EM02	440-193062-2	WG	NORM	09/26/17	Stage 2A				X			
440-193062-1/2	SWFTS-MW02-EM02	440-193062-11	WG	NORM	09/27/17	Stage 2A				X			
440-193062-1/2	SWFTS-MW04-EM02	440-193062-3	WG	NORM	09/27/17	Stage 2A				X			
440-193062-1/2	SWFTS-MW04-EM02-FD	440-193062-4	WG	FD	09/27/17	Stage 2A				X			
440-193062-1/2	SWFTS-MW05A-EM02	440-193062-9	WG	NORM	09/27/17	Stage 2A				X			
440-193062-1/2	SWFTS-MW05B-EM02	440-193062-10	WG	NORM	09/27/17	Stage 2A				X			
440-193062-1/2	SWFTS-MW10A-EM02	440-193062-5	WG	NORM	09/27/17	Stage 2A				X			
440-193062-1/2	SWFTS-MW14-EM02	440-193062-15	WG	NORM	09/26/17	Stage 2A				X			
440-193062-1/2	SWFTS-MW15-EM02	440-193062-13	WG	NORM	09/26/17	Stage 2A				X			
440-193062-1/2	SWFTS-MW20-EM02	440-193062-1	WG	NORM	09/26/17	Stage 2A				X			
440-193062-1/2	SWFTS-MW21-EM02	440-193062-12	WG	NORM	09/27/17	Stage 2A				X			
440-193062-1/2	SWFTS-PC-91-EM02	440-193062-16	WG	NORM	09/27/17	Stage 2A				X			
440-193062-1/2	SWFTS-PC-92-EM02	440-193062-8	WG	NORM	09/27/17	Stage 2A				X			
440-193167-1	SWFTS-EM02-20170928-EB	440-193167-8	BW	EB	09/28/17	Stage 2A				X			
440-193167-1	SWFTS-MW03-EM02	440-193167-1	WG	NORM	09/27/17	Stage 2A				X			
440-193167-1	SWFTS-MW06A-EM02	440-193167-3	WG	NORM	09/27/17	Stage 2A				X			
440-193167-1	SWFTS-MW06B-EM02	440-193167-4	WG	NORM	09/27/17	Stage 2A				X			
440-193167-1	SWFTS-MW09A-EM02	440-193167-14	WG	NORM	09/28/17	Stage 2A				X			
440-193167-1	SWFTS-MW09B-EM02	440-193167-15	WG	NORM	09/28/17	Stage 2A				X			
440-193167-1	SWFTS-MW22-EM02	440-193167-2	WG	NORM	09/27/17	Stage 2A				X			
440-193167-1	SWFTS-MW23-EM02	440-193167-13	WG	NORM	09/28/17	Stage 2A				X			
440-193167-1	SWFTS-MW24-EM02	440-193167-12	WG	NORM	09/28/17	Stage 2A				X			
440-193167-1	SWFTS-MW25-EM02	440-193167-11	WG	NORM	09/28/17	Stage 2A				X			
440-193167-1	SWFTS-PC-88-EM02	440-193167-7	WG	NORM	09/28/17	Stage 2A				X			
440-193167-1	SWFTS-PC-97-EM02	440-193167-9	WG	NORM	09/28/17	Stage 2A				X			
440-193167-1	SWFTS-PC-97-EM02-FD	440-193167-10	WG	FD	09/28/17	Stage 2A				X			
440-193167-1/2	SWFTS-MW18-EM02	440-193167-5	WG	NORM	09/27/17	Stage 2A				X			
440-193167-1/2	SWFTS-MW19-EM02	440-193167-6	WG	NORM	09/28/17	Stage 2A				X			
440-193472-1	SWFTS-MW07A-EM03	440-193472-6	WG	NORM	10/03/17	Stage 2A				X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-193472-1	SWFTS-MW07B-EM03	440-193472-7	WG	NORM	10/03/17	Stage 2A				X			
440-193472-1	SWFTS-MW11-EM03	440-193472-1	WG	NORM	10/03/17	Stage 2A				X			
440-193472-1	SWFTS-MW17-EM03	440-193472-8	WG	NORM	10/03/17	Stage 2A				X			
440-193472-1	SWFTS-MW17-EM03-FD	440-193472-9	WG	FD	10/03/17	Stage 2A				X			
440-193472-1/2	SWFTS-MW05A-EM03	440-193472-4	WG	NORM	10/03/17	Stage 2A				X			
440-193472-1/2	SWFTS-MW05B-EM03	440-193472-5	WG	NORM	10/03/17	Stage 2A				X			
440-193472-1/2	SWFTS-MW16-EM03	440-193472-3	WG	NORM	10/03/17	Stage 2A				X			
440-193472-1/2	SWFTS-MW18-EM03	440-193472-2	WG	NORM	10/03/17	Stage 2A				X			
440-193622-1	SWFTS-EM03-20171004-EB	440-193622-7	BW	EB	10/04/17	Stage 2A				X			
440-193622-1	SWFTS-MW06A-EM03	440-193622-4	WG	NORM	10/03/17	Stage 2A				X			
440-193622-1	SWFTS-MW06B-EM03	440-193622-5	WG	NORM	10/03/17	Stage 2A				X			
440-193622-1	SWFTS-MW12-EM03	440-193622-2	WG	NORM	10/03/17	Stage 2A				X			
440-193622-1	SWFTS-MW13-EM03	440-193622-1	WG	NORM	10/03/17	Stage 2A				X			
440-193622-1	SWFTS-PC-88-EM03	440-193622-6	WG	NORM	10/04/17	Stage 2A				X			
440-193622-1	SWFTS-PC-97-EM03	440-193622-8	WG	NORM	10/04/17	Stage 2A				X			
440-193622-1/2	SWFTS-MW14-EM03	440-193622-3	WG	NORM	10/03/17	Stage 2A				X			
440-193625-1	SWFTS-EM03-20171004-FB	440-193625-7	BW	FB	10/04/17	Stage 2A				X			
440-193625-1	SWFTS-PC-97-EM03-FD	440-193625-1	WG	FD	10/04/17	Stage 2A				X			
440-193625-1/2	SWFTS-MW01-EM03	440-193625-6	WG	NORM	10/04/17	Stage 2A				X			
440-193625-1/2	SWFTS-MW10A-EM03	440-193625-5	WG	NORM	10/04/17	Stage 2A				X			
440-193625-1/2	SWFTS-MW-15-EM03	440-193625-4	WG	NORM	10/04/17	Stage 2A				X			
440-193625-1/2	SWFTS-PC-91-EM03	440-193625-2	WG	NORM	10/04/17	Stage 2A				X			
440-193625-1/2	SWFTS-PC-92-EM03	440-193625-3	WG	NORM	10/04/17	Stage 2A				X			
440-193712-1	SWFTS-COH-2B1-EM03	440-193712-10	WG	NORM	10/05/17	Stage 2A				X			
440-193712-1	SWFTS-MW03-20171005-EB	440-193712-8	BW	EB	10/05/17	Stage 2A				X			
440-193712-1	SWFTS-MW03-EM03	440-193712-7	WG	NORM	10/04/17	Stage 2A				X			
440-193712-1	SWFTS-MW08A-EM03	440-193712-16	WG	NORM	10/05/17	Stage 2A				X			
440-193712-1	SWFTS-MW08A-EM03-FD	440-193712-15	WG	FD	10/05/17	Stage 2A				X			
440-193712-1	SWFTS-MW09A-EM03	440-193712-5	WG	NORM	10/04/17	Stage 2A				X			
440-193712-1	SWFTS-MW09B-EM03	440-193712-6	WG	NORM	10/04/17	Stage 2A				X			
440-193712-1	SWFTS-MW22-EM03	440-193712-14	WG	NORM	10/05/17	Stage 2A				X			
440-193712-1	SWFTS-MW23-EM03	440-193712-11	WG	NORM	10/05/17	Stage 2A				X			
440-193712-1	SWFTS-MW24-EM03	440-193712-12	WG	NORM	10/05/17	Stage 2A				X			
440-193712-1	SWFTS-MW25-EM03	440-193712-9	WG	NORM	10/05/17	Stage 2A				X			
440-193712-1	SWFTS-PC-94-EM03	440-193712-18	WG	NORM	10/05/17	Stage 2A				X			
440-193712-1/2	SWFTS-MW02-EM03	440-193712-3	WG	NORM	10/04/17	Stage 2A				X			
440-193712-1/2	SWFTS-MW04-EM03	440-193712-1	WG	NORM	10/04/17	Stage 2A				X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-193712-1/2	SWFTS-MW04-EM03-FD	440-193712-2	WG	FD	10/04/17	Stage 2A				X			
440-193712-1/2	SWFTS-MW19-EM03	440-193712-13	WG	NORM	10/05/17	Stage 2A				X			
440-193712-1/2	SWFTS-MW20-EM03	440-193712-4	WG	NORM	10/04/17	Stage 2A				X			
440-193712-1/2	SWFTS-MW21-EM03	440-193712-17	WG	NORM	10/05/17	Stage 2A				X			
440-193989-1	SWFTS-EM04-20171010-EB	440-193989-6	BW	EB	10/10/17	Stage 2A	X			X	X	X	X
440-193989-1	SWFTS-EM04-20171010-FB	440-193989-5	BW	FB	10/10/17	Stage 2A	X			X	X	X	X
440-193989-1	SWFTS-MW13-EM04	440-193989-4	WG	NORM	10/10/17	Stage 2A	X			X	X	X	X
440-193989-1	SWFTS-MW17-EM04	440-193989-3	WG	NORM	10/10/17	Stage 2A	X			X	X	X	X
440-193989-1/2	SWFTS-MW05A-EM04	440-193989-2	WG	NORM	10/10/17	Stage 2A	X			X	X	X	X
440-193989-1/2	SWFTS-MW05B-EM04	440-193989-1	WG	NORM	10/10/17	Stage 2A	X			X	X	X	X
440-194090-1	SWFTS-MW12-EM04	440-194090-1	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194090-1	SWFTS-MW23-EM04	440-194090-7	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194090-1	SWFTS-MW6A-EM04	440-194090-4	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194090-1	SWFTS-MW6B-EM04	440-194090-5	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194090-1	SWFTS-PC-88-EM04	440-194090-2	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194090-1	SWFTS-PC-88-EM04-FD	440-194090-3	WG	FD	10/11/17	Stage 2A	X			X	X	X	X
440-194090-1/2	SWFTS-MW21-EM04	440-194090-8	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194090-1/2	SWFTS-PC-94-EM04	440-194090-6	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194094-1	SWFTS-MW08A-EM04	440-194094-4	WG	NORM	10/10/17	Stage 2A	X			X	X	X	X
440-194094-1	SWFTS-MW09A-EM04	440-194094-7	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194094-1	SWFTS-MW09B-EM04	440-194094-5	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194094-1	SWFTS-MW11-EM04	440-194094-8	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194094-1	SWFTS-PC-58-EM04	440-194094-6	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194094-1/2	SWFTS-MW01-EM04	440-194094-2	WG	NORM	10/10/17	Stage 2A	X			X	X	X	X
440-194094-1/2	SWFTS-MW15-EM04	440-194094-1	WG	NORM	10/10/17	Stage 2A	X			X	X	X	X
440-194094-1/2	SWFTS-MW18-EM04	440-194094-3	WG	NORM	10/10/17	Stage 2A	X			X	X	X	X
440-194202-1	SWFTS-EM04-20171012-EB	440-194202-4	BW	EB	10/12/17	Stage 2A	X			X	X	X	X
440-194202-1	SWFTS-EM04-20171012-FB	440-194202-3	BW	FB	10/12/17	Stage 2A	X			X	X	X	X
440-194202-1/2	SWFTS-MW20-EM04	440-194202-1	WG	NORM	10/12/17	Stage 2A	X			X	X	X	X
440-194202-1/2	SWFTS-MW20-EM04-FD	440-194202-2	WG	FD	10/12/17	Stage 2A	X			X	X	X	X
440-194204-1	SWFTS-COH-2B1-EM04	440-194204-2	WG	NORM	10/12/17	Stage 2A	X			X	X	X	X
440-194204-1	SWFTS-MW03-EM04	440-194204-8	WG	NORM	10/12/17	Stage 2A	X			X	X	X	X
440-194204-1/2	SWFTS-MW02-EM04	440-194204-6	WG	NORM	10/12/17	Stage 2A	X			X	X	X	X
440-194204-1/2	SWFTS-MW16-EM04	440-194204-7	WG	NORM	10/12/17	Stage 2A	X			X	X	X	X
440-194204-1/2	SWFTS-MW19-EM04	440-194204-1	WG	NORM	10/12/17	Stage 2A	X			X	X	X	X
440-194204-1/2	SWFTS-PC-91-EM04	440-194204-3	WG	NORM	10/12/17	Stage 2A	X			X	X	X	X
440-194204-1/2	SWFTS-PC-92-EM04	440-194204-4	WG	NORM	10/12/17	Stage 2A	X			X	X	X	X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-194204-1/2	SWFTS-PC-92-EM04-FD	440-194204-5	WG	FD	10/12/17	Stage 2A	X			X	X	X	X
440-194242-1	SWFTS-MW07A-EM04	440-194242-3	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194242-1	SWFTS-MW07B-EM04	440-194242-4	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194242-1	SWFTS-MW22-EM04	440-194242-9	WG	NORM	10/12/17	Stage 2A	X			X	X	X	X
440-194242-1	SWFTS-MW24-EM04	440-194242-2	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194242-1	SWFTS-MW25-EM04	440-194242-1	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194242-1	SWFTS-PC-97-EM04	440-194242-5	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194242-1	SWFTS-PC-97-EM04-FD	440-194242-6	WG	FD	10/11/17	Stage 2A	X			X	X	X	X
440-194242-1/2	SWFTS-MW04-EM04	440-194242-7	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194242-1/2	SWFTS-MW10A-EM04	440-194242-10	WG	NORM	10/12/17	Stage 2A	X			X	X	X	X
440-194242-1/2	SWFTS-MW14-EM04	440-194242-8	WG	NORM	10/11/17	Stage 2A	X			X	X	X	X
440-194846-1	SWFTS-MW05A-EM05	440-194846-4	WG	NORM	10/23/17	Stage 2A				X			
440-194846-1	SWFTS-MW05B-EM05	440-194846-5	WG	NORM	10/23/17	Stage 2A				X			
440-194846-1	SWFTS-MW06A-EM05	440-194846-7	WG	NORM	10/23/17	Stage 2A				X			
440-194846-1	SWFTS-MW06B-EM05	440-194846-6	WG	NORM	10/23/17	Stage 2A				X			
440-194846-1	SWFTS-MW08A-EM05	440-194846-1	WG	NORM	10/23/17	Stage 2A				X			
440-194846-1	SWFTS-MW08A-EM05-FD	440-194846-2	WG	FD	10/23/17	Stage 2A				X			
440-194846-1	SWFTS-MW18-EM05	440-194846-3	WG	NORM	10/23/17	Stage 2A				X			
440-194947-1	SWFTS-MW04-EM05	440-194947-6	WG	NORM	10/24/17	Stage 2A				X			
440-194947-1	SWFTS-MW04-EM05-FD	440-194947-7	WG	FD	10/24/17	Stage 2A				X			
440-194947-1	SWFTS-MW07A-EM05	440-194947-4	WG	NORM	10/24/17	Stage 2A				X			
440-194947-1	SWFTS-MW07B-EM05	440-194947-3	WG	NORM	10/24/17	Stage 2A				X			
440-194947-1	SWFTS-MW10A-EM05	440-194947-8	WG	NORM	10/24/17	Stage 2A				X			
440-194947-1	SWFTS-MW11-EM05	440-194947-9	WG	NORM	10/24/17	Stage 2A				X			
440-194947-1	SWFTS-MW12-EM05	440-194947-10	WG	NORM	10/24/17	Stage 2A				X			
440-194947-1	SWFTS-MW13-EM05	440-194947-11	WG	NORM	10/24/17	Stage 2A				X			
440-194947-1	SWFTS-MW16-EM05	440-194947-2	WG	NORM	10/24/17	Stage 2A				X			
440-194947-1	SWFTS-MW17-EM05	440-194947-1	WG	NORM	10/24/17	Stage 2A				X			
440-194947-1	SWFTS-MW17-EM05-FD	440-194947-5	WG	FD	10/24/17	Stage 2A				X			
440-195026-1	SWFTS-MW01-EM05	440-195026-8	WG	NORM	10/25/17	Stage 2A				X			
440-195026-1	SWFTS-MW09A-EM05	440-195026-2	WG	NORM	10/25/17	Stage 2A				X			
440-195026-1	SWFTS-MW09B-EM05	440-195026-1	WG	NORM	10/25/17	Stage 2A				X			
440-195026-1	SWFTS-MW20-EM05	440-195026-5	WG	NORM	10/25/17	Stage 2A				X			
440-195026-1	SWFTS-PC-88-EM05	440-195026-9	WG	NORM	10/25/17	Stage 2A				X			
440-195026-1	SWFTS-PC-91-EM05	440-195026-4	WG	NORM	10/25/17	Stage 2A				X			
440-195026-1	SWFTS-PC-92-EM05	440-195026-3	WG	NORM	10/25/17	Stage 2A				X			
440-195026-1	SWFTS-PC-97-EM05	440-195026-6	WG	NORM	10/25/17	Stage 2A				X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-195026-1	SWFTS-PC-97-EM05-FD	440-195026-7	WG	FD	10/25/17	Stage 2A				X			
440-195136-1	SWFTS-COH-2B1-EM05	440-195136-4	WG	NORM	10/26/17	Stage 2A				X			
440-195136-1	SWFTS-EM05-20171025-EB	440-195136-8	BW	EB	10/26/17	Stage 2A				X			
440-195136-1	SWFTS-EM05-20171025-FB	440-195136-6	BW	FB	10/26/17	Stage 2A				X			
440-195136-1	SWFTS-EM05-20171026-EB	440-195136-7	BW	EB	10/26/17	Stage 2A				X			
440-195136-1	SWFTS-EM05-20171026-FB	440-195136-9	BW	FB	10/26/17	Stage 2A				X			
440-195136-1	SWFTS-MW03-EM05	440-195136-5	WG	NORM	10/26/17	Stage 2A				X			
440-195136-1	SWFTS-MW22-EM05	440-195136-10	WG	NORM	10/26/17	Stage 2A				X			
440-195136-1	SWFTS-MW23-EM05	440-195136-11	WG	NORM	10/26/17	Stage 2A				X			
440-195136-1	SWFTS-MW24-EM05	440-195136-3	WG	NORM	10/26/17	Stage 2A				X			
440-195136-1	SWFTS-MW25-EM05	440-195136-2	WG	NORM	10/26/17	Stage 2A				X			
440-195136-1	SWFTS-PC-94-EM05	440-195136-1	WG	NORM	10/26/17	Stage 2A				X			
440-195218-1	SWFTS-MW02-EM05	440-195218-2	WG	NORM	10/26/17	Stage 2A				X			
440-195218-1	SWFTS-MW14-EM05	440-195218-4	WG	NORM	10/27/17	Stage 2A				X			
440-195218-1	SWFTS-MW15-EM05	440-195218-3	WG	NORM	10/27/17	Stage 2A				X			
440-195218-1	SWFTS-MW19-EM05	440-195218-5	WG	NORM	10/27/17	Stage 2A				X			
440-195218-1	SWFTS-MW21-EM05	440-195218-6	WG	NORM	10/27/17	Stage 2A				X			
440-196558-1/2	SWFTS-IW01A-EM06	440-196558-6	WG	NORM	11/14/17	Stage 2A				X			
440-196558-1/2	SWFTS-MW02-EM06	440-196558-3	WG	NORM	11/14/17	Stage 2A	X			X			
440-196558-1/2	SWFTS-MW05A-EM06	440-196558-1	WG	NORM	11/14/17	Stage 2A	X			X			
440-196558-1/2	SWFTS-MW05B-EM06	440-196558-2	WG	NORM	11/14/17	Stage 2A	X			X			
440-196558-1/2	SWFTS-MW12-EM06	440-196558-5	WG	NORM	11/14/17	Stage 2A	X			X			
440-196558-1/2	SWFTS-MW15-EM06	440-196558-4	WG	NORM	11/14/17	Stage 2A	X			X			
440-196558-2	SWFTS-IW01A-EM06B	440-196558-7	WG	NORM	11/14/17	Stage 2A				X			
440-196558-2	SWFTS-IW01B-EM06B	440-196558-8	WG	NORM	11/14/17	Stage 2A				X			
440-196558-2	SWFTS-IW02A-EM06B	440-196558-9	WG	NORM	11/14/17	Stage 2A				X			
440-196558-2	SWFTS-IW02B-EM06B	440-196558-10	WG	NORM	11/14/17	Stage 2A				X			
440-196558-2	SWFTS-IW06A-EM06B	440-196558-11	WG	NORM	11/14/17	Stage 2A				X			
440-196558-2	SWFTS-IW06B-EM06B	440-196558-12	WG	NORM	11/14/17	Stage 2A				X			
440-196558-2	SWFTS-IW13A-EM06B	440-196558-13	WG	NORM	11/14/17	Stage 2A				X			
440-196558-2	SWFTS-IW13B-EM06B	440-196558-14	WG	NORM	11/14/17	Stage 2A				X			
440-196558-2	SWFTS-IW14-EM06B	440-196558-15	WG	NORM	11/14/17	Stage 2A				X			
440-196558-2	SWFTS-IW14-EM06B-FD	440-196558-16	WG	FD	11/14/17	Stage 2A				X			
440-196558-2	SWFTS-IW17-EM06B	440-196558-17	WG	NORM	11/14/17	Stage 2A				X			
440-196558-2	SWFTS-IW18-EM06B	440-196558-18	WG	NORM	11/14/17	Stage 2A				X			
440-196558-2	SWFTS-IW20-EM06B	440-196558-19	WG	NORM	11/14/17	Stage 2A				X			
440-196659-1	SWFTS-MW07A-EM06	440-196659-7	WG	NORM	11/15/17	Stage 2A	X			X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-196659-1	SWFTS-MW07B-EM06	440-196659-8	WG	NORM	11/15/17	Stage 2A	X			X			
440-196659-1	SWFTS-MW08A-EM06	440-196659-4	WG	NORM	11/15/17	Stage 2A	X			X			
440-196659-1	SWFTS-MW13-EM06	440-196659-1	WG	NORM	11/15/17	Stage 2A	X			X			
440-196659-1	SWFTS-MW17-EM06	440-196659-5	WG	NORM	11/15/17	Stage 2A	X			X			
440-196659-1	SWFTS-MW17-EM06-FD	440-196659-6	WG	FD	11/15/17	Stage 2A	X			X			
440-196659-1/2	SWFTS-MW04-EM06	440-196659-2	WG	NORM	11/15/17	Stage 2A	X			X			
440-196659-1/2	SWFTS-MW14-EM06	440-196659-3	WG	NORM	11/15/17	Stage 2A	X			X	X	X	X
440-196665-1	SWFTS-MW23-EM06	440-196665-3	WG	NORM	11/15/17	Stage 2A	X			X			
440-196665-1	SWFTS-MW24-EM06	440-196665-1	WG	NORM	11/15/17	Stage 2A	X			X			
440-196665-1	SWFTS-MW25-EM06	440-196665-2	WG	NORM	11/15/17	Stage 2A	X			X	X	X	X
440-196665-1/2	SWFTS-MW01-EM06	440-196665-4	WG	NORM	11/15/17	Stage 2A	X			X			
440-196665-1/2	SWFTS-MW21-EM06	440-196665-5	WG	NORM	11/15/17	Stage 2A	X			X			
440-196690-1	PC-88-EM06	440-196690-9	WG	NORM	11/15/17	Stage 2A	X			X			
440-196690-1	PC-88-EM06-FD	440-196690-10	WG	FD	11/15/17	Stage 2A	X			X			
440-196690-1	SWFTS-EM06-20171114-EB	440-196690-2	BW	EB	11/14/17	Stage 2A	X			X	X	X	X
440-196690-1	SWFTS-EM06-20171114-FB	440-196690-1	BW	FB	11/14/17	Stage 2A	X			X	X	X	X
440-196690-1	SWFTS-EM06-20171115-EB	440-196690-4	BW	EB	11/15/17	Stage 2A	X			X			
440-196690-1	SWFTS-EM06-20171115-FB	440-196690-3	BW	FB	11/15/17	Stage 2A	X			X			
440-196690-1/2	SWFTS-IW01B-EM06	440-196690-5	WG	NORM	11/15/17	Stage 2A				X			
440-196690-1/2	SWFTS-IW06A-EM06	440-196690-6	WG	NORM	11/15/17	Stage 2A				X			
440-196690-1/2	SWFTS-IW06B-EM06	440-196690-7	WG	NORM	11/15/17	Stage 2A				X			
440-196690-1/2	SWFTS-IW17-EM06	440-196690-8	WG	NORM	11/15/17	Stage 2A				X			
440-196690-1/2	SWFTS-MW18-EM06	440-196690-11	WG	NORM	11/15/17	Stage 2A	X			X			
440-196786-1	SWFTS-EM06-20171116-EB	440-196786-1	BW	EB	11/16/17	Stage 2A				X			
440-196786-1	SWFTS-EM06-20171116-FB	440-196786-2	BW	FB	11/16/17	Stage 2A				X			
440-196786-1	SWFTS-MW03-EM06	440-196786-16	WG	NORM	11/16/17	Stage 2A	X			X	X	X	X
440-196786-1	SWFTS-MW06A-EM06	440-196786-19	WG	NORM	11/16/17	Stage 2A	X			X			
440-196786-1	SWFTS-MW06B-EM06	440-196786-20	WG	NORM	11/16/17	Stage 2A	X			X			
440-196786-1	SWFTS-MW09A-EM06	440-196786-14	WG	NORM	11/16/17	Stage 2A	X			X			
440-196786-1	SWFTS-MW09B-EM06	440-196786-15	WG	NORM	11/16/17	Stage 2A	X			X			
440-196786-1	SWFTS-MW11-EM06	440-196786-3	WG	NORM	11/16/17	Stage 2A	X			X			
440-196786-1	SWFTS-MW22-EM06	440-196786-18	WG	NORM	11/16/17	Stage 2A	X			X			
440-196786-1	SWFTS-PC-58-EM06	440-196786-11	WG	NORM	11/16/17	Stage 2A	X			X			
440-196786-1	SWFTS-PC-97-EM06	440-196786-13	WG	NORM	11/16/17	Stage 2A	X			X			
440-196786-1/2	PC-94-EM06	440-196786-17	WG	NORM	11/16/17	Stage 2A	X			X	X	X	X
440-196786-1/2	SWFTS-MW10A-EM06	440-196786-5	WG	NORM	11/16/17	Stage 2A	X			X	X	X	X
440-196786-1/2	SWFTS-MW10A-EM06-FD	440-196786-6	WG	FD	11/16/17	Stage 2A	X			X	X	X	X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-196786-1/2	SWFTS-MW16-EM06	440-196786-4	WG	NORM	11/16/17	Stage 2A	X			X	X	X	X
440-196786-1/2	SWFTS-MW-19-EM06	440-196786-12	WG	NORM	11/16/17	Stage 2A	X			X			
440-196786-1/2	SWFTS-MW20-EM06	440-196786-7	WG	NORM	11/16/17	Stage 2A	X			X			
440-196786-1/2	SWFTS-PC-91-EM06	440-196786-8	WG	NORM	11/16/17	Stage 2A	X			X			
440-196786-1/2	SWFTS-PC-92-EM06	440-196786-9	WG	NORM	11/16/17	Stage 2A	X			X			
440-196786-1/2	SWFTS-PC-92-EM06-FD	440-196786-10	WG	FD	11/16/17	Stage 2A	X			X			
440-198276-1	SWFTS-EM07-20171211-EB	440-198276-15	BW	EB	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-EM07-20171211-FB	440-198276-16	BW	FB	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW03-EM07	440-198276-1	WG	NORM	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW04-EM07	440-198276-2	WG	NORM	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW05-EM07	440-198276-3	WG	NORM	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW07-EM07	440-198276-4	WG	NORM	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW08-EM07	440-198276-5	WG	NORM	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW09-EM07	440-198276-6	WG	NORM	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW10-EM07	440-198276-8	WG	NORM	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW11-EM07	440-198276-7	WG	NORM	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW12-EM07	440-198276-9	WG	NORM	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW15-EM07	440-198276-10	WG	NORM	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW15-EM07-FD	440-198276-11	WG	FD	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW16A-EM07	440-198276-12	WG	NORM	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW16B-EM07	440-198276-13	WG	NORM	12/11/17	Stage 2A				X			
440-198276-1	SWFTS-IW19-EM07	440-198276-14	WG	NORM	12/11/17	Stage 2A				X			
440-198371-1	SWFTS-MW10C-EM07	440-198371-9	WG	NORM	12/12/17	Stage 2A				X			
440-198371-1	SWFTS-MW23-EM07	440-198371-2	WG	NORM	12/12/17	Stage 2A				X			
440-198371-1/2	PC-94-EM07	440-198371-14	WG	NORM	12/12/17	Stage 2A				X			
440-198371-1/2	SWFTS-MW03-EM07	440-198371-13	WG	NORM	12/12/17	Stage 2A				X			
440-198371-1/2	SWFTS-MW09A-EM07	440-198371-6	WG	NORM	12/12/17	Stage 2A				X			
440-198371-1/2	SWFTS-MW09B-EM07	440-198371-7	WG	NORM	12/12/17	Stage 2A				X			
440-198371-1/2	SWFTS-MW10A-EM07	440-198371-10	WG	NORM	12/12/17	Stage 2A				X			
440-198371-1/2	SWFTS-MW10A-EM07-FD	440-198371-11	WG	FD	12/12/17	Stage 2A				X			
440-198371-1/2	SWFTS-MW14-EM07	440-198371-12	WG	NORM	12/12/17	Stage 2A				X			
440-198371-1/2	SWFTS-MW16-EM07	440-198371-4	WG	NORM	12/12/17	Stage 2A				X			
440-198371-1/2	SWFTS-MW19-EM07	440-198371-8	WG	NORM	12/12/17	Stage 2A				X			
440-198371-1/2	SWFTS-MW20-EM07	440-198371-3	WG	NORM	12/12/17	Stage 2A				X			
440-198371-1/2	SWFTS-MW24-EM07	440-198371-5	WG	NORM	12/12/17	Stage 2A				X			
440-198371-1/2	SWFTS-MW25-EM07	440-198371-1	WG	NORM	12/12/17	Stage 2A				X	X	X	X
440-198508-1	PC-91-EM07	440-198508-9	WG	NORM	12/13/17	Stage 2A				X	X	X	X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-198508-1	PC-97-EM07-FD	440-198508-12	WG	FD	12/13/17	Stage 2A				X			
440-198508-1	SWFTS-EM07-20171213-EB	440-198508-14	BW	EB	12/13/17	Stage 2A				X	X	X	X
440-198508-1	SWFTS-EM07-20171213-FB	440-198508-15	BW	FB	12/13/17	Stage 2A				X	X	X	X
440-198508-1	SWFTS-MW06A-EM07	440-198508-1	WG	NORM	12/13/17	Stage 2A				X			
440-198508-1	SWFTS-MW06B-EM07	440-198508-2	WG	NORM	12/13/17	Stage 2A				X			
440-198508-1	SWFTS-MW17-EM07	440-198508-6	WG	NORM	12/13/17	Stage 2A				X			
440-198508-1	SWFTS-MW17-EM07-FD	440-198508-7	WG	FD	12/13/17	Stage 2A				X			
440-198508-1/2	PC-97-EM07	440-198508-11	WG	NORM	12/13/17	Stage 2A				X			
440-198508-1/2	SWFTS-MW02-EM07	440-198508-8	WG	NORM	12/13/17	Stage 2A				X			
440-198508-1/2	SWFTS-MW05A-EM07	440-198508-3	WG	NORM	12/13/17	Stage 2A				X			
440-198508-1/2	SWFTS-MW05B-EM07	440-198508-4	WG	NORM	12/13/17	Stage 2A				X			
440-198508-1/2	SWFTS-MW15-EM07	440-198508-13	WG	NORM	12/13/17	Stage 2A				X	X	X	X
440-198508-1/2	SWFTS-MW18-EM07	440-198508-5	WG	NORM	12/13/17	Stage 2A				X	X	X	X
440-198508-1/2	SWFTS-MW21-EM07	440-198508-10	WG	NORM	12/13/17	Stage 2A				X	X	X	X
440-198571-1	COH-2B1-EM07	440-198571-5	WG	NORM	12/14/17	Stage 2A				X			
440-198571-1	PC-58-EM07	440-198571-9	WG	NORM	12/14/17	Stage 2A				X			
440-198571-1	PC-88-EM07	440-198571-11	WG	NORM	12/14/17	Stage 2A				X			
440-198571-1	PC-92-EM07-FD	440-198571-8	WG	FD	12/14/17	Stage 2A				X	X	X	X
440-198571-1	SWFTS-EM07-20171214-EB	440-198571-6	BW	EB	12/14/17	Stage 2A				X			
440-198571-1	SWFTS-EW07-20171214-FB	440-198571-16	BW	FB	12/14/17	Stage 2A				X			
440-198571-1	SWFTS-MW04-EM07	440-198571-12	WG	NORM	12/14/17	Stage 2A				X			
440-198571-1	SWFTS-MW07A-EM07	440-198571-3	WG	NORM	12/14/17	Stage 2A				X			
440-198571-1	SWFTS-MW07B-EM07	440-198571-4	WG	NORM	12/14/17	Stage 2A				X			
440-198571-1	SWFTS-MW08A-EM07	440-198571-1	WG	NORM	12/14/17	Stage 2A				X			
440-198571-1	SWFTS-MW08C-EM07	440-198571-2	WG	NORM	12/14/17	Stage 2A				X			
440-198571-1	SWFTS-MW11-EM07	440-198571-13	WG	NORM	12/14/17	Stage 2A				X			
440-198571-1	SWFTS-MW12-EM07	440-198571-15	WG	NORM	12/14/17	Stage 2A				X			
440-198571-1	SWFTS-MW13-EM07	440-198571-14	WG	NORM	12/14/17	Stage 2A				X			
440-198571-1	SWFTS-MW22-EM07	440-198571-17	WG	NORM	12/14/17	Stage 2A				X			
440-198571-1/2	PC-92-EM07	440-198571-7	WG	NORM	12/14/17	Stage 2A				X	X	X	X
440-198571-1/2	SWFTS-MW01-EM07	440-198571-10	WG	NORM	12/14/17	Stage 2A				X			
440-203775-1	SWFTS-MW07A-EM08	440-203775-3	WG	NORM	02/19/18	Stage 2A				X			
440-203775-1	SWFTS-MW07B-EM08	440-203775-2	WG	NORM	02/19/18	Stage 2A				X			
440-203775-1/2	SWFTS-MW02-EM08	440-203775-1	WG	NORM	02/19/18	Stage 2A				X			
440-203775-1/2	SWFTS-MW15-EM08	440-203775-4	WG	NORM	02/19/18	Stage 2A				X			
440-203775-1/2	SWFTS-MW20-EM08	440-203775-5	WG	NORM	02/19/18	Stage 2A				X			
440-203841-1	PC-92-EM08-FD	440-203841-3	WG	FD	02/20/18	Stage 2A				X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-203841-1	SWFTS-MW21-EM08-FD	440-203841-10	WG	FD	02/20/18	Stage 2A				X			
440-203841-1/2	PC-91-EM08	440-203841-1	WG	NORM	02/20/18	Stage 2A				X			
440-203841-1/2	PC-92-EM08	440-203841-2	WG	NORM	02/20/18	Stage 2A				X			
440-203841-1/2	SWFTS-MW01-EM08	440-203841-12	WG	NORM	02/20/18	Stage 2A				X			
440-203841-1/2	SWFTS-MW05A-EM08	440-203841-7	WG	NORM	02/20/18	Stage 2A				X			
440-203841-1/2	SWFTS-MW05B-EM08	440-203841-8	WG	NORM	02/20/18	Stage 2A				X			
440-203841-1/2	SWFTS-MW09A-EM08	440-203841-14	WG	NORM	02/20/18	Stage 2A				X			
440-203841-1/2	SWFTS-MW09B-EM08	440-203841-13	WG	NORM	02/20/18	Stage 2A				X			
440-203841-1/2	SWFTS-MW10A-EM08	440-203841-4	WG	NORM	02/20/18	Stage 2A				X	X	X	X
440-203841-1/2	SWFTS-MW10A-EM08-FD	440-203841-5	WG	FD	02/20/18	Stage 2A				X	X	X	X
440-203841-1/2	SWFTS-MW14-EM08	440-203841-11	WG	NORM	02/20/18	Stage 2A				X	X	X	X
440-203841-1/2	SWFTS-MW19-EM08	440-203841-6	WG	NORM	02/20/18	Stage 2A				X			
440-203841-1/2	SWFTS-MW21-EM08	440-203841-9	WG	NORM	02/20/18	Stage 2A				X			
440-203937-1	PC-58-EM08	440-203937-13	WG	NORM	02/21/18	Stage 2A				X			
440-203937-1	PC-97-EM08	440-203937-4	WG	NORM	02/21/18	Stage 2A				X			
440-203937-1	SWFTS-20180221-FB	440-203937-9	BW	FB	02/21/18	Stage 2A				X			
440-203937-1	SWFTS-MW04-EM08	440-203937-2	WG	NORM	02/21/18	Stage 2A				X			
440-203937-1	SWFTS-MW11-EM08	440-203937-10	WG	NORM	02/21/18	Stage 2A				X			
440-203937-1	SWFTS-MW11-EM08-FD	440-203937-11	WG	FD	02/21/18	Stage 2A				X			
440-203937-1	SWFTS-MW22-EM08	440-203937-1	WG	NORM	02/21/18	Stage 2A				X			
440-203937-1	SWFTS-MW23-EM08	440-203937-14	WG	NORM	02/21/18	Stage 2A				X			
440-203937-1/2	PC-94-EM08	440-203937-12	WG	NORM	02/21/18	Stage 2A				X	X	X	X
440-203937-1/2	SWFTS-20180221-EM08-EB	440-203937-3	BW	EB	02/21/18	Stage 2A				X	X	X	X
440-203937-1/2	SWFTS-MW03-EM08	440-203937-5	WG	NORM	02/21/18	Stage 2A				X	X	X	X
440-203937-1/2	SWFTS-MW16-EM08	440-203937-6	WG	NORM	02/21/18	Stage 2A				X	X	X	X
440-203937-1/2	SWFTS-MW24-EM08	440-203937-8	WG	NORM	02/21/18	Stage 2A				X			
440-203937-1/2	SWFTS-MW25-EM08	440-203937-7	WG	NORM	02/21/18	Stage 2A				X	X	X	X
440-204033-1	C0H-2B1-EM08	440-204033-6	WG	NORM	02/22/18	Stage 2A				X			
440-204033-1	PC-88-EM08	440-204033-10	WG	NORM	02/22/18	Stage 2A				X			
440-204033-1	SWFTS-20180222-EM08-EB	440-204033-3	BW	EB	02/22/18	Stage 2A				X			
440-204033-1	SWFTS-20180222-EM08-FB	440-204033-9	BW	FB	02/22/18	Stage 2A				X	X	X	X
440-204033-1	SWFTS-MW06A-EM08	440-204033-1	WG	NORM	02/22/18	Stage 2A				X			
440-204033-1	SWFTS-MW06B-EM08	440-204033-5	WG	NORM	02/22/18	Stage 2A				X			
440-204033-1	SWFTS-MW08A-EM08	440-204033-8	WG	NORM	02/22/18	Stage 2A				X			
440-204033-1	SWFTS-MW12-EM08	440-204033-2	WG	NORM	02/22/18	Stage 2A				X			
440-204033-1	SWFTS-MW13-EM08	440-204033-7	WG	NORM	02/22/18	Stage 2A				X			
440-204033-1	SWFTS-MW17-EM08	440-204033-11	WG	NORM	02/22/18	Stage 2A				X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-204033-1/2	SWFTS-MW18-EM08	440-204033-4	WG	NORM	02/22/18	Stage 2A				X			
440-207137-1	PC-92-EM09-FD	440-207137-3	WG	FD	03/26/18	Stage 2A				X			
440-207137-1	SWFTS-MW10A-EM09-FD	440-207137-8	WG	FD	03/26/18	Stage 2A				X	X	X	X
440-207137-1	SWFTS-MW13-EM09	440-207137-4	WG	NORM	03/26/18	Stage 2A				X			
440-207137-1	SWFTS-MW15-EM09	440-207137-10	WG	NORM	03/26/18	Stage 2A				X			
440-207137-1/2	PC-91-EM09	440-207137-1	WG	NORM	03/26/18	Stage 2A				X			
440-207137-1/2	PC-92-EM09	440-207137-2	WG	NORM	03/26/18	Stage 2A				X			
440-207137-1/2	SWFTS-MW05A-EM09	440-207137-5	WG	NORM	03/26/18	Stage 2A				X			
440-207137-1/2	SWFTS-MW05B-EM09	440-207137-6	WG	NORM	03/26/18	Stage 2A				X			
440-207137-1/2	SWFTS-MW10A-EM09	440-207137-7	WG	NORM	03/26/18	Stage 2A				X	X	X	X
440-207137-1/2	SWFTS-MW14-EM09	440-207137-9	WG	NORM	03/26/18	Stage 2A				X	X	X	X
440-207268-1	PC-97-EM09	440-207268-4	WG	NORM	03/27/18	Stage 2A				X			
440-207268-1	SWFTS-20180327-EM09-EB	440-207268-2	BW	EB	03/27/18	Stage 2A				X	X	X	X
440-207268-1	SWFTS-20180327-EM09-FB	440-207268-16	BW	FB	03/27/18	Stage 2A				X			
440-207268-1	SWFTS-MW04-EM09	440-207268-5	WG	NORM	03/27/18	Stage 2A				X			
440-207268-1	SWFTS-MW18-EM09-FD	440-207268-12	WG	FD	03/27/18	Stage 2A				X			
440-207268-1/2	PC-94-EM09	440-207268-8	WG	NORM	03/27/18	Stage 2A				X	X	X	X
440-207268-1/2	SWFTS-MW01-EM09	440-207268-10	WG	NORM	03/27/18	Stage 2A				X			
440-207268-1/2	SWFTS-MW02-EM09	440-207268-1	WG	NORM	03/27/18	Stage 2A				X			
440-207268-1/2	SWFTS-MW03-EM09	440-207268-15	WG	NORM	03/27/18	Stage 2A				X	X	X	X
440-207268-1/2	SWFTS-MW09A-EM09	440-207268-7	WG	NORM	03/27/18	Stage 2A				X			
440-207268-1/2	SWFTS-MW09B-EM09	440-207268-6	WG	NORM	03/27/18	Stage 2A				X			
440-207268-1/2	SWFTS-MW16-EM09	440-207268-13	WG	NORM	03/27/18	Stage 2A				X	X	X	X
440-207268-1/2	SWFTS-MW18-EM09	440-207268-11	WG	NORM	03/27/18	Stage 2A				X			
440-207268-1/2	SWFTS-MW19-EM09	440-207268-3	WG	NORM	03/27/18	Stage 2A				X			
440-207268-1/2	SWFTS-MW20-EM09	440-207268-9	WG	NORM	03/27/18	Stage 2A				X			
440-207268-1/2	SWFTS-MW21-EM09	440-207268-14	WG	NORM	03/27/18	Stage 2A				X			
440-207497-1	PC-58-EM09-EM09	440-207497-6	WG	NORM	03/28/18	Stage 2A				X			
440-207497-1	SWFTS-20180328-EM09-EB	440-207497-15	BW	EB	03/28/18	Stage 2A				X			
440-207497-1	SWFTS-20180328-EM09-FB	440-207497-14	BW	FB	03/28/18	Stage 2A				X	X	X	X
440-207497-1	SWFTS-MW06A-EM09	440-207497-3	WG	NORM	03/28/18	Stage 2A				X			
440-207497-1	SWFTS-MW06B-EM09	440-207497-2	WG	NORM	03/28/18	Stage 2A				X			
440-207497-1	SWFTS-MW07A-EM09	440-207497-4	WG	NORM	03/28/18	Stage 2A				X			
440-207497-1	SWFTS-MW07B-EM09	440-207497-10	WG	NORM	03/28/18	Stage 2A				X			
440-207497-1	SWFTS-MW11-EM09	440-207497-7	WG	NORM	03/28/18	Stage 2A				X			
440-207497-1	SWFTS-MW11-EM09-FD	440-207497-8	WG	FD	03/28/18	Stage 2A				X			
440-207497-1	SWFTS-MW12-EM09	440-207497-5	WG	NORM	03/28/18	Stage 2A				X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-207497-1	SWFTS-MW17-EM09	440-207497-11	WG	NORM	03/28/18	Stage 2A				X			
440-207497-1	SWFTS-MW22-EM09	440-207497-1	WG	NORM	03/28/18	Stage 2A				X			
440-207497-1	SWFTS-MW23-EM09	440-207497-9	WG	NORM	03/28/18	Stage 2A				X			
440-207497-1/2	SWFTS-MW24-EM09	440-207497-12	WG	NORM	03/28/18	Stage 2A				X			
440-207497-1/2	SWFTS-MW25-EM09	440-207497-13	WG	NORM	03/28/18	Stage 2A				X	X	X	X
440-207586-1	COH-2B1-EM09	440-207586-2	WG	NORM	03/29/18	Stage 2A				X			
440-207586-1	PC-88-EM09	440-207586-3	WG	NORM	03/29/18	Stage 2A				X			
440-207586-1	SWFTS-MW08A-EM09	440-207586-1	WG	NORM	03/29/18	Stage 2A				X			
440-210173-1/2	SWFTS-MW01-EM10	440-210173-1	WG	NORM	04/30/18	Stage 2A				X			
440-210173-1/2	SWFTS-MW02-EM10	440-210173-3	WG	NORM	04/30/18	Stage 2A				X			
440-210173-1/2	SWFTS-MW05A-EM10	440-210173-8	WG	NORM	04/30/18	Stage 2A				X			
440-210173-1/2	SWFTS-MW05B-EM10	440-210173-2	WG	NORM	04/30/18	Stage 2A				X			
440-210173-1/2	SWFTS-MW09B-EM10	440-210173-11	WG	NORM	04/30/18	Stage 2A				X			
440-210173-1/2	SWFTS-MW14-EM10	440-210173-9	WG	NORM	04/30/18	Stage 2A				X	X	X	X
440-210173-1/2	SWFTS-MW19-EM10	440-210173-4	WG	NORM	04/30/18	Stage 2A				X			
440-210173-1/2	SWFTS-MW19-EM10-FD	440-210173-5	WG	FD	04/30/18	Stage 2A				X			
440-210173-1/2	SWFTS-MW20-EM10	440-210173-10	WG	NORM	04/30/18	Stage 2A				X			
440-210173-1/2	SWFTS-MW21-EM10	440-210173-7	WG	NORM	04/30/18	Stage 2A				X			
440-210173-2	SWFTS-MW22-EM10	440-210173-6	WG	NORM	04/30/18	Stage 2A				X			
440-210284-1	SWFTS-EM10-20180501-EB	440-210284-15	BW	EB	05/01/18	Stage 2A				X	X	X	X
440-210284-1	SWFTS-EM10-20180501-FB	440-210284-2	BW	FB	05/01/18	Stage 2A				X	X	X	X
440-210284-1	SWFTS-MW04-EM10	440-210284-5	WG	NORM	05/01/18	Stage 2A				X			
440-210284-1	SWFTS-MW06A-EM10	440-210284-9	WG	NORM	05/01/18	Stage 2A				X			
440-210284-1	SWFTS-MW06A-EM10-FD	440-210284-10	WG	FD	05/01/18	Stage 2A				X			
440-210284-1	SWFTS-MW06B-EM10	440-210284-8	WG	NORM	05/01/18	Stage 2A				X			
440-210284-1	SWFTS-MW11-EM10	440-210284-11	WG	NORM	05/01/18	Stage 2A				X			
440-210284-1/2	PC-91-EM10	440-210284-3	WG	NORM	05/01/18	Stage 2A				X			
440-210284-1/2	PC-92-EM10	440-210284-4	WG	NORM	05/01/18	Stage 2A				X			
440-210284-1/2	PC-94-EM10	440-210284-14	WG	NORM	05/01/18	Stage 2A				X	X	X	X
440-210284-1/2	PC-97-EM10	440-210284-7	WG	NORM	05/01/18	Stage 2A				X			
440-210284-1/2	SWFTS-MW09A-EM10	440-210284-13	WG	NORM	05/01/18	Stage 2A				X			
440-210284-1/2	SWFTS-MW10A-EM10	440-210284-1	WG	NORM	05/01/18	Stage 2A				X	X	X	X
440-210284-1/2	SWFTS-MW18-EM10	440-210284-6	WG	NORM	05/01/18	Stage 2A				X			
440-210367-1	SWFTS-MW11-EM10-FD	440-210367-1	WG	FD	05/01/18	Stage 2A				X			
440-210430-1	COH-2B1-EM10	440-210430-11	WG	NORM	05/02/18	Stage 2A				X			
440-210430-1	PC58-EM10	440-210430-10	WG	NORM	05/02/18	Stage 2A				X			
440-210430-1	PC88-EM10	440-210430-8	WG	NORM	05/02/18	Stage 2A				X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-210430-1	PC88-EM10-FD	440-210430-9	WG	FD	05/02/18	Stage 2A				X			
440-210430-1	SWFTS-EM10-20180502-EB	440-210430-12	BW	EB	05/02/18	Stage 2A				X			
440-210430-1	SWFTS-EM10-20180502-FB	440-210430-4	BW	FB	05/02/18	Stage 2A				X			
440-210430-1	SWFTS-MW07A-EM10	440-210430-2	WG	NORM	05/02/18	Stage 2A				X			
440-210430-1	SWFTS-MW07B-EM10	440-210430-1	WG	NORM	05/02/18	Stage 2A				X			
440-210430-1	SWFTS-MW23-EM10	440-210430-5	WG	NORM	05/02/18	Stage 2A				X			
440-210430-1/2	SWFTS-MW03-EM10	440-210430-6	WG	NORM	05/02/18	Stage 2A				X	X	X	X
440-210430-1/2	SWFTS-MW15-EM10	440-210430-3	WG	NORM	05/02/18	Stage 2A				X			
440-210430-1/2	SWFTS-MW16-EM10	440-210430-13	WG	NORM	05/02/18	Stage 2A				X	X	X	X
440-210430-1/2	SWFTS-MW24-EM10	440-210430-7	WG	NORM	05/02/18	Stage 2A				X			
440-210534-1	SWFTS-MW08A-EM10	440-210534-5	WG	NORM	05/03/18	Stage 2A				X			
440-210534-1	SWFTS-MW12-EM10	440-210534-4	WG	NORM	05/03/18	Stage 2A				X			
440-210534-1	SWFTS-MW13-EM10	440-210534-1	WG	NORM	05/03/18	Stage 2A				X			
440-210534-1	SWFTS-MW17-EM10	440-210534-3	WG	NORM	05/03/18	Stage 2A				X			
440-210534-1	SWFTS-MW25-EM10	440-210534-2	WG	NORM	05/03/18	Stage 2A				X	X	X	X
440-215437-1	COH-2B1-EM11	440-215437-6	WG	NORM	07/10/18	Stage 2A				X	X	X	X
440-215437-1	PC-94-EM11	440-215437-1	WG	NORM	07/10/18	Stage 2A				X	X	X	X
440-215437-1	PC-97-EM11	440-215437-3	WG	NORM	07/10/18	Stage 2A				X	X	X	X
440-215437-1	SWFTS-MW04-EM11	440-215437-4	WG	NORM	07/10/18	Stage 2A				X	X	X	X
440-215437-1	SWFTS-MW19-EM11-FD	440-215437-11	WG	FD	07/10/18	Stage 2A				X	X	X	X
440-215437-1	SWFTS-MW22-EM11	440-215437-9	WG	NORM	07/10/18	Stage 2A				X	X	X	X
440-215437-1	SWFTS-MW23-EM11	440-215437-7	WG	NORM	07/10/18	Stage 2A				X	X	X	X
440-215437-1	SWFTS-MW25-EM11	440-215437-12	WG	NORM	07/10/18	Stage 2A				X	X	X	X
440-215437-1/2	SWFTS-MW01-EM11	440-215437-2	WG	NORM	07/10/18	Stage 2A				X	X	X	X
440-215437-1/2	SWFTS-MW03-EM11	440-215437-5	WG	NORM	07/10/18	Stage 2A				X	X	X	X
440-215437-1/2	SWFTS-MW14-EM11	440-215437-8	WG	NORM	07/10/18	Stage 2A				X	X	X	X
440-215437-1/2	SWFTS-MW19-EM11	440-215437-10	WG	NORM	07/10/18	Stage 2A				X	X	X	X
440-215585-1	SWFTS-20180710-EB	440-215585-1	BW	EB	07/10/18	Stage 2A				X	X	X	X
440-215585-1	SWFTS-20180711-FB	440-215585-11	BW	FB	07/11/18	Stage 2A				X	X	X	X
440-215585-1	SWFTS-MW06A-EM11	440-215585-2	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215585-1	SWFTS-MW06A-EM11-FD	440-215585-3	WG	FD	07/11/18	Stage 2A				X	X	X	X
440-215585-1	SWFTS-MW06B-EM11	440-215585-4	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215585-1	SWFTS-MW07A-EM11	440-215585-7	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215585-1	SWFTS-MW07B-EM11	440-215585-8	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215585-1	SWFTS-MW17-EM11	440-215585-13	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215585-1/2	PC-91-EM11	440-215585-6	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215585-1/2	PC-92-EM11	440-215585-5	WG	NORM	07/11/18	Stage 2A				X	X	X	X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-215585-1/2	SWFTS-MW05A-EM11	440-215585-14	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215585-1/2	SWFTS-MW05B-EM11	440-215585-10	WG	NORM	07/10/18	Stage 2A				X	X	X	X
440-215585-1/2	SWFTS-MW10A-EM11	440-215585-9	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215585-1/2	SWFTS-MW16-EM11	440-215585-12	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215717-1	PC-58-EM11	440-215717-7	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215717-1	PC-88-EM11	440-215717-11	WG	NORM	07/12/18	Stage 2A				X	X	X	X
440-215717-1	PC-88-EM11-FD	440-215717-12	WG	FD	07/12/18	Stage 2A				X	X	X	X
440-215717-1	SWFTS-20180712-EB	440-215717-6	BW	EB	07/12/18	Stage 2A				X	X	X	X
440-215717-1	SWFTS-20180712-FB	440-215717-4	BW	FB	07/12/18	Stage 2A				X	X	X	X
440-215717-1	SWFTS-MW08A-EM11	440-215717-14	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215717-1	SWFTS-MW11-EM11	440-215717-17	WG	NORM	07/12/18	Stage 2A				X	X	X	X
440-215717-1	SWFTS-MW11-EM11-FD	440-215717-18	WG	FD	07/12/18	Stage 2A				X	X	X	X
440-215717-1	SWFTS-MW12-EM11	440-215717-16	WG	NORM	07/12/18	Stage 2A				X	X	X	X
440-215717-1	SWFTS-MW13-EM11	440-215717-15	WG	NORM	07/12/18	Stage 2A				X	X	X	X
440-215717-1/2	SWFTS-MW02-EM11	440-215717-13	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215717-1/2	SWFTS-MW09A-EM11	440-215717-10	WG	NORM	07/12/18	Stage 2A				X	X	X	X
440-215717-1/2	SWFTS-MW09B-EM11	440-215717-9	WG	NORM	07/12/18	Stage 2A				X	X	X	X
440-215717-1/2	SWFTS-MW15-EM11	440-215717-1	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215717-1/2	SWFTS-MW18-EM11	440-215717-2	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215717-1/2	SWFTS-MW20-EM11	440-215717-8	WG	NORM	07/11/18	Stage 2A				X	X	X	X
440-215717-1/2	SWFTS-MW21-EM11	440-215717-3	WG	NORM	07/12/18	Stage 2A				X	X	X	X
440-215717-1/2	SWFTS-MW24-EM11	440-215717-5	WG	NORM	07/12/18	Stage 2A				X	X	X	X
440-215795-1/2	LVWPS-MW101A-EM11	440-215795-1	WG	NORM	07/12/18	Stage 2A				X			
440-215795-1/2	LVWPS-MW104-EM11	440-215795-2	WG	NORM	07/12/18	Stage 2A				X			
440-215795-1/2	LVWPS-MW107A-EM11	440-215795-7	WG	NORM	07/12/18	Stage 2A				X			
440-215795-1/2	LVWPS-MW108A-EM11	440-215795-5	WG	NORM	07/12/18	Stage 2A				X			
440-215795-1/2	LVWPS-MW108A-EM11-FD	440-215795-6	WG	FD	07/12/18	Stage 2A				X			
440-215795-1/2	LVWPS-MW109-EM11	440-215795-3	WG	NORM	07/12/18	Stage 2A				X			
440-215795-1/2	LVWPS-MW111A-EM11	440-215795-8	WG	NORM	07/12/18	Stage 2A				X			
440-215795-1/2	LVWPS-MW112A-EM11	440-215795-4	WG	NORM	07/12/18	Stage 2A				X			
440-216784-1/2	SWFTS-MW09B-EM12	440-216784-1	WG	NORM	07/26/18	Stage 2A							
440-216784-1/2	SWFTS-MW10A-EM12	440-216784-2	WG	NORM	07/26/18	Stage 2A							
440-216784-1/2	SWFTS-MW14-EM12	440-216784-3	WG	NORM	07/26/18	Stage 2A							
440-216784-1/2	SWFTS-MW15-EM12	440-216784-4	WG	NORM	07/26/18	Stage 2A							
440-216784-1/2	SWFTS-MW16-EM12	440-216784-5	WG	NORM	07/26/18	Stage 2A							
440-216784-1/2	SWFTS-MW18-EM12	440-216784-6	WG	NORM	07/26/18	Stage 2A							
440-216784-1/2	SWFTS-MW19-EM12	440-216784-7	WG	NORM	07/26/18	Stage 2A							

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-216784-1/2	SWFTS-MW19-EM12-FD	440-216784-8	WG	FD	07/26/18	Stage 2A							
440-216784-1/2	SWFTS-MW20-EM12	440-216784-9	WG	NORM	07/26/18	Stage 2A							
440-216872-1/2	SWFTS-20180727-EB	440-216872-1	BW	EB	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-20180727-FB	440-216872-2	BW	FB	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-MW01-EM12	440-216872-13	WG	NORM	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-MW01-EM12-FD	440-216872-14	WG	FD	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-MW02-EM12	440-216872-11	WG	NORM	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-MW03-EM12	440-216872-10	WG	NORM	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-MW05A-EM12	440-216872-8	WG	NORM	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-MW05B-EM12	440-216872-7	WG	NORM	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-MW09A-EM12	440-216872-9	WG	NORM	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-MW21-EM12	440-216872-3	WG	NORM	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-MW22-EM12	440-216872-4	WG	NORM	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-MW24-EM12	440-216872-5	WG	NORM	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-MW25-EM12	440-216872-6	WG	NORM	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-PC-91-EM12	440-216872-16	WG	NORM	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-PC-92-EM12	440-216872-15	WG	NORM	07/27/18	Stage 2A							
440-216872-1/2	SWFTS-PC-94-EM12	440-216872-12	WG	NORM	07/27/18	Stage 2A							
440-218109-1	SWFTS-20180814-FB	440-218109-7	BW	FB	08/14/18	Stage 2A				X	X	X	X
440-218109-1	SWFTS-MW06A-EM13	440-218109-4	WG	NORM	08/14/18	Stage 2A				X			
440-218109-1	SWFTS-MW06A-EM13-FD	440-218109-5	WG	FD	08/14/18	Stage 2A				X			
440-218109-1	SWFTS-MW06B-EM13	440-218109-6	WG	NORM	08/14/18	Stage 2A				X			
440-218109-1/2	PC-91-EM-13	440-218109-1	WG	NORM	08/14/18	Stage 2A				X			
440-218109-1/2	SWFTS-MW05A-EM13	440-218109-2	WG	NORM	08/14/18	Stage 2A				X			
440-218109-1/2	SWFTS-MW05B-EM13	440-218109-3	WG	NORM	08/14/18	Stage 2A				X			
440-218109-1/2	SWFTS-MW09A-EM13	440-218109-9	WG	NORM	08/14/18	Stage 2A				X			
440-218109-1/2	SWFTS-MW09B-EM13	440-218109-8	WG	NORM	08/14/18	Stage 2A				X			
440-218109-1/2	SWFTS-MW10A-EM13	440-218109-10	WG	NORM	08/14/18	Stage 2A				X	X	X	X
440-218109-1/2	SWFTS-MW14-EM13	440-218109-11	WG	NORM	08/14/18	Stage 2A				X	X	X	X
440-218208-1	PC-58-EM13	440-218208-5	WG	NORM	08/15/18	Stage 2A				X			
440-218208-1/2	LVWPS-MW104-EM13	440-218208-8	WG	NORM	08/15/18	Stage 2A				X			
440-218208-1/2	LVWPS-MW108A-EM13	440-218208-6	WG	NORM	08/15/18	Stage 2A				X			
440-218208-1/2	LVWPS-MW109-EM13	440-218208-7	WG	NORM	08/15/18	Stage 2A				X			
440-218208-1/2	LVWPS-MW111A-EM13	440-218208-9	WG	NORM	08/15/18	Stage 2A				X			
440-218208-1/2	PC-92-EM13	440-218208-1	WG	NORM	08/15/18	Stage 2A				X			
440-218208-1/2	PC-94-EM13	440-218208-2	WG	NORM	08/15/18	Stage 2A				X	X	X	X
440-218208-1/2	SWFTS-MW02-EM13	440-218208-3	WG	NORM	08/15/18	Stage 2A				X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-218208-1/2	SWFTS-MW03-EM13	440-218208-4	WG	NORM	08/15/18	Stage 2A				X	X	X	X
440-218208-1/2	SWFTS-MW15-EM13	440-218208-12	WG	NORM	08/15/18	Stage 2A				X			
440-218208-1/2	SWFTS-MW16-EM13	440-218208-13	WG	NORM	08/15/18	Stage 2A				X	X	X	X
440-218208-1/2	SWFTS-MW18-EM13	440-218208-14	WG	NORM	08/15/18	Stage 2A				X			
440-218208-1/2	SWFTS-MW19-EM13	440-218208-15	WG	NORM	08/15/18	Stage 2A				X			
440-218208-1/2	SWFTS-MW20-EM13	440-218208-16	WG	NORM	08/15/18	Stage 2A				X			
440-218208-1/2	SWFTS-MW20-EM13-FD	440-218208-17	WG	FD	08/15/18	Stage 2A				X			
440-218208-1/2	SWFTS-MW21-EM13	440-218208-18	WG	NORM	08/15/18	Stage 2A				X			
440-218208-1/2	SWFTS-MW24-EM13	440-218208-11	WG	NORM	08/15/18	Stage 2A				X			
440-218208-1/2	SWFTS-MW25-EM13	440-218208-10	WG	NORM	08/15/18	Stage 2A				X	X	X	X
440-218296-1	COH-2B1-EM13	440-218296-11	WG	NORM	08/16/18	Stage 2A				X			
440-218296-1	PC-88-EM13	440-218296-9	WG	NORM	08/16/18	Stage 2A				X			
440-218296-1	PC-88-EM13-FD	440-218296-10	WG	FD	08/16/18	Stage 2A				X			
440-218296-1	PC-97-EM13	440-218296-8	WG	NORM	08/16/18	Stage 2A				X			
440-218296-1	SWFTS-20180816-EB	440-218296-7	BW	EB	08/16/18	Stage 2A				X	X	X	X
440-218296-1	SWFTS-20180816-EB(2)	440-218296-18	BW	EB	08/16/18	Stage 2A				X	X	X	X
440-218296-1	SWFTS-20180816-FB	440-218296-5	BW	FB	08/16/18	Stage 2A				X	X	X	X
440-218296-1	SWFTS-MW01-EM13	440-218296-6	WG	NORM	08/16/18	Stage 2A				X			
440-218296-1	SWFTS-MW04-EM13	440-218296-1	WG	NORM	08/16/18	Stage 2A				X			
440-218296-1	SWFTS-MW07A-EM13	440-218296-2	WG	NORM	08/16/18	Stage 2A				X			
440-218296-1	SWFTS-MW07B-EM13	440-218296-3	WG	NORM	08/16/18	Stage 2A				X			
440-218296-1	SWFTS-MW08A-EM13	440-218296-4	WG	NORM	08/16/18	Stage 2A				X			
440-218296-1	SWFTS-MW11-EM13	440-218296-12	WG	NORM	08/16/18	Stage 2A				X			
440-218296-1	SWFTS-MW11-EM13-FD	440-218296-13	WG	FD	08/16/18	Stage 2A				X			
440-218296-1	SWFTS-MW12-EM13	440-218296-14	WG	NORM	08/16/18	Stage 2A				X			
440-218296-1	SWFTS-MW13-EM13	440-218296-15	WG	NORM	08/16/18	Stage 2A				X			
440-218296-1	SWFTS-MW17-EM13	440-218296-19	WG	NORM	08/16/18	Stage 2A				X			
440-218296-1	SWFTS-MW22-EM13	440-218296-16	WG	NORM	08/16/18	Stage 2A				X			
440-218296-1	SWFTS-MW23-EM13	440-218296-17	WG	NORM	08/16/18	Stage 2A				X			
440-219797-1	SWFTS-20180910-EB	440-219797-5	BW	EB	09/10/18	Stage 2A				X	X	X	X
440-219797-1	SWFTS-20180910-FB	440-219797-3	BW	FB	09/10/18	Stage 2A				X	X	X	X
440-219797-1/2	SWFTS-MW01-EM14	440-219797-1	WG	NORM	09/10/18	Stage 2A				X			
440-219797-1/2	SWFTS-MW02-EM14	440-219797-2	WG	NORM	09/10/18	Stage 2A				X			
440-219797-1/2	SWFTS-MW10A-EM14	440-219797-4	WG	NORM	09/10/18	Stage 2A				X	X	X	X
440-219797-1/2	SWFTS-MW16-EM14	440-219797-6	WG	NORM	09/10/18	Stage 2A				X	X	X	X
440-219886-1	COH-2B1-EM14	440-219886-10	WG	NORM	09/11/18	Stage 2A				X			
440-219886-1	SWFTS-MW06A-EM14	440-219886-15	WG	NORM	09/11/18	Stage 2A				X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-219886-1	SWFTS-MW06A-EM14-FD	440-219886-16	WG	FD	09/11/18	Stage 2A				X			
440-219886-1	SWFTS-MW06B-EM14	440-219886-14	WG	NORM	09/11/18	Stage 2A				X			
440-219886-1/2	PC-94-EM14	440-219886-9	WG	NORM	09/11/18	Stage 2A				X	X	X	X
440-219886-1/2	SWFTS-MW03-EM14	440-219886-11	WG	NORM	09/11/18	Stage 2A				X	X	X	X
440-219886-1/2	SWFTS-MW05A-EM14	440-219886-7	WG	NORM	09/11/18	Stage 2A				X			
440-219886-1/2	SWFTS-MW05B-EM14	440-219886-8	WG	NORM	09/11/18	Stage 2A				X			
440-219886-1/2	SWFTS-MW09A-EM14	440-219886-12	WG	NORM	09/11/18	Stage 2A				X			
440-219886-1/2	SWFTS-MW09B-EM14	440-219886-13	WG	NORM	09/11/18	Stage 2A				X			
440-219886-1/2	SWFTS-MW14-EM14	440-219886-17	WG	NORM	09/11/18	Stage 2A				X	X	X	X
440-219886-1/2	SWFTS-MW15-EM14	440-219886-2	WG	NORM	09/11/18	Stage 2A				X			
440-219886-1/2	SWFTS-MW18-EM14	440-219886-1	WG	NORM	09/11/18	Stage 2A				X			
440-219886-1/2	SWFTS-MW19-EM14	440-219886-6	WG	NORM	09/11/18	Stage 2A				X			
440-219886-1/2	SWFTS-MW20-EM14	440-219886-3	WG	NORM	09/11/18	Stage 2A				X			
440-219886-1/2	SWFTS-MW20-EM14-FD	440-219886-4	WG	FD	09/11/18	Stage 2A				X			
440-219886-1/2	SWFTS-MW22-EM14	440-219886-5	WG	NORM	09/11/18	Stage 2A				X			
440-220031-1	PC-88-EM14	440-220031-15	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1	PC-88-EM14-FD	440-220031-16	WG	FD	09/12/18	Stage 2A				X			
440-220031-1	PC-91-EM14	440-220031-12	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1	PC-92-EM14	440-220031-13	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1	PC-97-EM14	440-220031-17	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1	SWFTS-MW04-EM14	440-220031-14	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1	SWFTS-MW07A-EM14	440-220031-6	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1	SWFTS-MW07B-EM14	440-220031-7	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1	SWFTS-MW08A-EM14	440-220031-10	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1	SWFTS-MW11-EM14	440-220031-8	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1	SWFTS-MW11-EM14-FD	440-220031-9	WG	FD	09/12/18	Stage 2A				X			
440-220031-1	SWFTS-MW12-EM14	440-220031-11	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1	SWFTS-MW17-EM14	440-220031-5	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1	SWFTS-MW23-EM14	440-220031-1	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1/2	SWFTS-MW21-EM14	440-220031-4	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1/2	SWFTS-MW24-EM14	440-220031-3	WG	NORM	09/12/18	Stage 2A				X			
440-220031-1/2	SWFTS-MW25-EM14	440-220031-2	WG	NORM	09/12/18	Stage 2A				X	X	X	X
440-220125-1	LVWPS-MW104-EM14	440-220125-8	WG	NORM	09/13/18	Stage 2A				X			
440-220125-1	LVWPS-MW108A-EM14	440-220125-4	WG	NORM	09/13/18	Stage 2A				X			
440-220125-1	LVWPS-MW109-EM14	440-220125-1	WG	NORM	09/13/18	Stage 2A				X			
440-220125-1	LVWPS-MW111A-EM14	440-220125-2	WG	NORM	09/13/18	Stage 2A				X			
440-220125-1	PC-58-EM14	440-220125-5	WG	NORM	09/13/18	Stage 2A				X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-220125-1	SWFTS-20180913-EB	440-220125-7	BW	EB	09/13/18	Stage 2A				X	X	X	X
440-220125-1	SWFTS-20180913-FB	440-220125-3	BW	FB	09/13/18	Stage 2A				X	X	X	X
440-220125-1	SWFTS-MW13-EM14	440-220125-6	WG	NORM	09/13/18	Stage 2A				X			
440-221855-1	SWFTS-20181009-EB	440-221855-6	BW	EB	10/09/18	Stage 2A	X			X	X	X	X
440-221855-1	SWFTS-MW19-EM15-FD	440-221855-5	WG	FD	10/09/18	Stage 2A				X	X	X	X
440-221855-1	SWFTS-MW22-EM15	440-221855-2	WG	NORM	10/09/18	Stage 2A				X	X	X	X
440-221855-1/2	SWFTS-MW01-EM15	440-221855-12	WG	NORM	10/09/18	Stage 2A				X	X	X	X
440-221855-1/2	SWFTS-MW03-EM15	440-221855-13	WG	NORM	10/09/18	Stage 2A				X	X	X	X
440-221855-1/2	SWFTS-MW05B-EM15	440-221855-14	WG	NORM	10/09/18	Stage 2A				X	X	X	X
440-221855-1/2	SWFTS-MW09A-EM15	440-221855-7	WG	NORM	10/09/18	Stage 2A				X	X	X	X
440-221855-1/2	SWFTS-MW09B-EM15	440-221855-8	WG	NORM	10/09/18	Stage 2A				X	X	X	X
440-221855-1/2	SWFTS-MW10A-EM15	440-221855-9	WG	NORM	10/09/18	Stage 2A	X			X	X	X	X
440-221855-1/2	SWFTS-MW14-EM15	440-221855-10	WG	NORM	10/09/18	Stage 2A	X			X	X	X	X
440-221855-1/2	SWFTS-MW15-EM15	440-221855-11	WG	NORM	10/09/18	Stage 2A				X	X	X	X
440-221855-1/2	SWFTS-MW19-EM15	440-221855-4	WG	NORM	10/09/18	Stage 2A				X	X	X	X
440-221855-1/2	SWFTS-MW20-EM15	440-221855-1	WG	NORM	10/09/18	Stage 2A				X	X	X	X
440-221855-1/2	SWFTS-MW21-EM15	440-221855-3	WG	NORM	10/09/18	Stage 2A				X	X	X	X
440-221975-1	SWFTS-20181010-FB	440-221975-3	BW	FB	10/10/18	Stage 2A	X			X	X	X	X
440-221975-1	SWFTS-MW06A-EM15	440-221975-8	WG	NORM	10/10/18	Stage 2A				X	X	X	X
440-221975-1	SWFTS-MW06A-EM15-FD	440-221975-10	WG	FD	10/10/18	Stage 2A				X	X	X	X
440-221975-1	SWFTS-MW06B-EM15	440-221975-9	WG	NORM	10/10/18	Stage 2A				X	X	X	X
440-221975-1	SWFTS-MW07A-EM15	440-221975-11	WG	NORM	10/10/18	Stage 2A				X	X	X	X
440-221975-1	SWFTS-MW07B-EM15	440-221975-12	WG	NORM	10/10/18	Stage 2A				X	X	X	X
440-221975-1	SWFTS-MW08A-EM15	440-221975-13	WG	NORM	10/10/18	Stage 2A				X	X	X	X
440-221975-1/2	LVWPS-MW104-EM15	440-221975-5	WG	NORM	10/10/18	Stage 2A				X			
440-221975-1/2	LVWPS-MW108A-EM15	440-221975-1	WG	NORM	10/10/18	Stage 2A				X			
440-221975-1/2	LVWPS-MW109-EM15	440-221975-6	WG	NORM	10/10/18	Stage 2A				X			
440-221975-1/2	LVWPS-MW111A-EM15	440-221975-2	WG	NORM	10/10/18	Stage 2A				X			
440-221975-1/2	LVWPS-MW112A-EM15	440-221975-4	WG	NORM	10/10/18	Stage 2A				X			
440-221975-1/2	PC-91-EM15	440-221975-16	WG	NORM	10/10/18	Stage 2A				X	X	X	X
440-221975-1/2	SWFTS-MW02-EM15	440-221975-15	WG	NORM	10/10/18	Stage 2A				X	X	X	X
440-221975-1/2	SWFTS-MW05A-EM15	440-221975-14	WG	NORM	10/10/18	Stage 2A				X	X	X	X
440-221975-1/2	SWFTS-MW24-EM15	440-221975-7	WG	NORM	10/10/18	Stage 2A				X	X	X	X
440-222092-1	COH-2B1-EM15	440-222092-1	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1	PC-58-EM15	440-222092-19	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1	PC-88-EM15	440-222092-15	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1	PC-88-EM15-FD	440-222092-16	WG	FD	10/11/18	Stage 2A				X	X	X	X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SM2540C	SM2540C-soluble	SM4500-H+	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020A Dissolved
440-222092-1	PC-92-EM15	440-222092-17	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1	PC-94-EM15	440-222092-18	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1	PC-97-EM15	440-222092-13	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1	SWFTS-20181011-EB	440-222092-2	BW	EB	10/11/18	Stage 2A				X	X	X	X
440-222092-1	SWFTS-20181011-FB	440-222092-8	BW	FB	10/11/18	Stage 2A				X	X	X	X
440-222092-1	SWFTS-MW04-EM15	440-222092-9	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1	SWFTS-MW11-EM15	440-222092-10	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1	SWFTS-MW11-EM15-FD	440-222092-11	WG	FD	10/11/18	Stage 2A				X	X	X	X
440-222092-1	SWFTS-MW12-EM15	440-222092-12	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1	SWFTS-MW13-EM15	440-222092-14	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1	SWFTS-MW17-EM15	440-222092-4	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1	SWFTS-MW23-EM15	440-222092-7	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1/2	SWFTS-MW16-EM15	440-222092-3	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1/2	SWFTS-MW18-EM15	440-222092-5	WG	NORM	10/11/18	Stage 2A				X	X	X	X
440-222092-1/2	SWFTS-MW25-EM15	440-222092-6	WG	NORM	10/11/18	Stage 2A				X	X	X	X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-177629-1/2	SWFTS-BH02-WG-26	440-177629-1	WG	NORM	02/21/17	Stage 2A					
440-177629-1/2	SWFTS-BH02-WG-35	440-177629-2	WG	NORM	02/21/17	Stage 2A					
440-177629-1/2	SWFTS-BH02-WG-35-FD	440-177629-3	WG	FD	02/21/17	Stage 2A					
440-177682-1	SWFTS-BH02-SO-34	440-177682-1	SO	NORM	02/21/17	Stage 2B				X	
440-177819-1	SWFTS-BH07-WG-25	440-177819-1	WG	NORM	02/22/17	Stage 2A					
440-177822-1	SWFTS-BH07-SO-14.5	440-177822-1	SO	NORM	02/22/17	Stage 2B					
440-177995-1/2	SWFTS-BH08-WG-22	440-177995-2	WG	NORM	02/23/17	Stage 2A					
440-177995-2	SWFTS-BH07-WG-35	440-177995-1	WG	NORM	02/22/17	Stage 2A					
440-177998-1	SWFTS-BH08-SO-14.5	440-177998-1	SO	NORM	02/23/17	Stage 2B				X	
440-178093-1/2	SWFTS-BH08-WG-36	440-178093-1	WG	NORM	02/23/17	Stage 2A					
440-178093-2	SWFTS-BH08-WG-46	440-178093-2	WG	NORM	02/24/17	Stage 2A					
440-178093-2	SWFTS-BH10-WG-21	440-178093-4	WG	NORM	02/24/17	Stage 2A					
440-178093-2	SWFTS-BH10-WG-36	440-178093-3	WG	NORM	02/24/17	Stage 2A					
440-178098-1	SWFTS-BH08-SO-52.5	440-178098-1	SO	NORM	02/24/17	Stage 2B					
440-178098-1	SWFTS-BH10-SO-12	440-178098-2	SO	NORM	02/24/17	Stage 2B					
440-178282-1	SWFTS-BH01-WG-22	440-178282-3	WG	NORM	02/26/17	Stage 2A					
440-178282-1	SWFTS-BH01-WG-36	440-178282-4	WG	NORM	02/26/17	Stage 2A					
440-178282-1	SWFTS-BH03-WG-26	440-178282-1	WG	NORM	02/25/17	Stage 2A					
440-178282-1	SWFTS-BH03-WG-41	440-178282-2	WG	NORM	02/25/17	Stage 2A					
440-178282-1	SWFTS-BH04-WG-21	440-178282-5	WG	NORM	02/26/17	Stage 2A					
440-178282-1	SWFTS-BH04-WG-36	440-178282-6	WG	NORM	02/26/17	Stage 2A					
440-178282-1	SWFTS-BH09-WG-13.5	440-178282-7	WG	NORM	02/27/17	Stage 2A					
440-178303-1	SWFTS-BH01-SO-16	440-178303-4	SO	NORM	02/26/17	Stage 2B					
440-178303-1	SWFTS-BH03-SO-24	440-178303-3	SO	NORM	02/25/17	Stage 2B				X	
440-178303-1	SWFTS-BH04-SO-14	440-178303-5	SO	NORM	02/26/17	Stage 2B					
440-178303-1	SWFTS-BH09-SO-16	440-178303-6	SO	NORM	02/27/17	Stage 2B				X	
440-178303-1	SWFTS-BH09-SO-33	440-178303-7	SO	NORM	02/27/17	Stage 2B					
440-178303-1	SWFTS-BH10-SO-51	440-178303-1	SO	NORM	02/24/17	Stage 2B					
440-178303-1	SWFTS-BH10-SO-51-FD	440-178303-2	SO	FD	02/24/17	Stage 2B					
440-178410-1	SWFTS-MW02-SO-6	440-178410-5	SO	NORM	02/28/17	Stage 2B					
440-178410-1	SWFTS-MW02-SO-6-FD	440-178410-6	SO	FD	02/28/17	Stage 2B					
440-178410-1	SWFTS-MW02-SO-7	440-178410-7	SO	NORM	02/28/17	Stage 2B					
440-178410-1	SWFTS-MW04-SO-1	440-178410-3	SO	NORM	02/28/17	Stage 2B					
440-178410-1	SWFTS-MW04-SO-15	440-178410-2	SO	NORM	02/28/17	Stage 2B					
440-178410-1	SWFTS-MW04-SO-25	440-178410-1	SO	NORM	02/28/17	Stage 2B					
440-178410-1	SWFTS-MW04-SO-5	440-178410-4	SO	NORM	02/28/17	Stage 2B					
440-178495-1	SWFTS-MW03-WG-21	440-178495-1	WG	NORM	03/01/17	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-178495-1	SWFTS-MW03-WG-32	440-178495-2	WG	NORM	03/01/17	Stage 2A					
440-178495-1	SWFTS-MW03-WG-32-FD	440-178495-3	WG	FD	03/01/17	Stage 2A					
440-178497-1	SWFTS-MW02-SO-14	440-178497-1	SO	NORM	02/28/17	Stage 2B					
440-178497-1	SWFTS-MW02-SO-25	440-178497-2	SO	NORM	02/28/17	Stage 2B					
440-178497-1	SWFTS-MW03-SO-14	440-178497-3	SO	NORM	03/01/17	Stage 2B					
440-178497-1	SWFTS-MW03-SO-14-FD	440-178497-4	SO	FD	03/01/17	Stage 2B					
440-178497-1	SWFTS-MW03-SO-46	440-178497-5	SO	NORM	03/01/17	Stage 2B					
440-178689-1	SWFTS-MW03-SO-57	440-178689-1	SO	NORM	03/01/17	Stage 2B					
440-178689-1	SWFTS-MW03-SO-58	440-178689-2	SO	NORM	03/01/17	Stage 2B					
440-179122-1	SWFTS-MW01-SO-17	440-179122-1	SO	NORM	03/07/17	Stage 2B					
440-179122-1	SWFTS-MW01-SO-21	440-179122-2	SO	NORM	03/07/17	Stage 2B					
440-179122-1	SWFTS-MW01-SO-30	440-179122-3	SO	NORM	03/07/17	Stage 2B					
440-179122-1	SWFTS-MW01-SO-40.5	440-179122-4	SO	NORM	03/07/17	Stage 2B					
440-179273-1	SWFTS-MW06B-SO-12	440-179273-1	SO	NORM	03/07/17	Stage 2B					
440-179273-1	SWFTS-MW06B-SO-29.5	440-179273-2	SO	NORM	03/07/17	Stage 2B					
440-179273-1	SWFTS-MW06B-SO-36.5	440-179273-3	SO	NORM	03/07/17	Stage 2B					
440-179384-1	SWFTS-MW08C-WG-50	440-179384-1	WG	NORM	03/09/17	Stage 2A					
440-179386-1	SWFTS-MW08C-SO-28	440-179386-1	SO	NORM	03/08/17	Stage 4			X	X	
440-179386-1	SWFTS-MW08C-SO-28-FD	440-179386-2	SO	FD	03/08/17	Stage 4			X	X	
440-179386-1	SWFTS-MW08C-SO-43	440-179386-6	SO	NORM	03/08/17	Stage 4					
440-179386-1	SWFTS-MW08C-SO-49	440-179386-3	SO	NORM	03/09/17	Stage 4					
440-179386-1	SWFTS-MW08C-SO-51	440-179386-4	SO	NORM	03/09/17	Stage 4			X	X	
440-179386-1	SWFTS-MW08C-SO-55	440-179386-5	SO	NORM	03/09/17	Stage 4					
440-179386-1	SWFTS-MW08C-SO-60	440-179386-7	SO	NORM	03/09/17	Stage 4					
440-179386-1	SWFTS-MW08C-SO-65	440-179386-8	SO	NORM	03/09/17	Stage 4					
440-179386-1	SWFTS-MW08C-SO-69	440-179386-9	SO	NORM	03/09/17	Stage 4					
440-179551-1	SWFTS-MW05B-SO-26.5	440-179551-1	SO	NORM	03/10/17	Stage 2B					
440-179551-1	SWFTS-MW05B-SO-36.5	440-179551-2	SO	NORM	03/10/17	Stage 2B					
440-179551-1	SWFTS-MW07B-SO-15	440-179551-5	SO	NORM	03/11/17	Stage 2B				X	
440-179551-1	SWFTS-MW07B-SO-28	440-179551-6	SO	NORM	03/11/17	Stage 2B					
440-179551-1	SWFTS-MW07B-SO-28-FD	440-179551-7	SO	FD	03/11/17	Stage 2B					
440-179551-1	SWFTS-MW07B-SO-45	440-179551-8	SO	NORM	03/11/17	Stage 2B				X	
440-179551-1	SWFTS-MW07B-SO-45-FD	440-179551-9	SO	FD	03/11/17	Stage 2B					
440-179551-1	SWFTS-MW07B-SO-5	440-179551-3	SO	NORM	03/11/17	Stage 2B					
440-179551-1	SWFTS-MW07B-SO-53	440-179551-10	SO	NORM	03/11/17	Stage 2B					
440-179551-1	SWFTS-MW07B-SO-8	440-179551-4	SO	NORM	03/11/17	Stage 2B					
440-179551-1	SWFTS-MW10C-SO-14	440-179551-11	SO	NORM	03/12/17	Stage 2B					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-179551-1	SWFTS-MW10C-SO-31.5	440-179551-12	SO	NORM	03/12/17	Stage 2B					
440-179551-1	SWFTS-MW10C-SO-51.5	440-179551-13	SO	NORM	03/13/17	Stage 2B				X	
440-179672-1	SWFTS-WG1-EB	440-179672-2	BW	EB	03/14/17	Stage 2A					
440-179672-1	SWFTS-WG1-FB	440-179672-1	BW	FB	03/14/17	Stage 2A					
440-179673-1	SWFTS-MW09B-SO-19	440-179673-1	SO	NORM	03/14/17	Stage 2B			X	X	
440-179673-1	SWFTS-MW09B-SO-39	440-179673-2	SO	NORM	03/14/17	Stage 2B					
440-179673-1	SWFTS-MW09B-SO-39-FD	440-179673-3	SO	FD	03/14/17	Stage 2B					
440-179673-1	SWFTS-SO1-EB	440-179673-4	BW	EB	03/14/17	Stage 2A					
440-179673-1	SWFTS-SO1-FB	440-179673-5	BW	FB	03/14/17	Stage 2A					
440-179802-1	SWFTS-BH05-SO-20.5	440-179802-1	SO	NORM	03/15/17	Stage 2B					
440-179802-1	SWFTS-BH05-SO-31	440-179802-2	SO	NORM	03/15/17	Stage 2B					
440-179802-1	SWFTS-BH05-SO-31-FD	440-179802-3	SO	FD	03/15/17	Stage 2B					
440-179802-1	SWFTS-BH05-SO-36	440-179802-4	SO	NORM	03/15/17	Stage 2B					
440-179802-1	SWFTS-BH06-SO-14	440-179802-7	SO	NORM	03/15/17	Stage 2B					
440-179802-1	SWFTS-SO2-EB	440-179802-5	BW	EB	03/15/17	Stage 2A					
440-179802-1	SWFTS-SO2-FB	440-179802-6	BW	FB	03/15/17	Stage 2A					
440-180820-1	SWFTS-FIELDQC-BL01-EB	440-180820-6	BW	EB	03/28/17	Stage 2A	X			X	
440-180820-1	SWFTS-FIELDQC-BL01-FB	440-180820-5	BW	FB	03/28/17	Stage 2A	X			X	
440-180820-1/2	SWFTS-MW08C-BL01	440-180820-3	WG	NORM	03/28/17	Stage 2A				X	
440-180820-1/2	SWFTS-MW10C-BL01	440-180820-4	WG	NORM	03/28/17	Stage 2A				X	
440-180820-1/3	PC-58-BL01	440-180820-1	WG	NORM	03/28/17	Stage 2A	X			X	
440-180820-1/3	PC-94-BL01	440-180820-2	WG	NORM	03/28/17	Stage 2A	X			X	
440-180937-1	PC-91-BL01	440-180937-1	WG	NORM	03/29/17	Stage 2A				X	
440-180937-1	PC-92-BL01	440-180937-2	WG	NORM	03/29/17	Stage 2A				X	
440-180937-1	SWFTS-MW01-BL01	440-180937-6	WG	NORM	03/29/17	Stage 2A				X	
440-180937-1	SWFTS-MW02-BL01	440-180937-7	WG	NORM	03/29/17	Stage 2A				X	
440-180937-1	SWFTS-MW09A-BL01	440-180937-3	WG	NORM	03/29/17	Stage 2A				X	
440-180937-1	SWFTS-MW09B-BL01	440-180937-4	WG	NORM	03/29/17	Stage 2A				X	
440-180937-1	SWFTS-MW09B-BL01-FD	440-180937-5	WG	FD	03/29/17	Stage 2A				X	
440-181045-1	SWFTS-MW03-BL01	440-181045-5	WG	NORM	03/30/17	Stage 2A				X	
440-181045-1	SWFTS-MW03-BL01-FD	440-181045-6	WG	FD	03/30/17	Stage 2A				X	
440-181045-1	SWFTS-MW05A-BL01	440-181045-7	WG	NORM	03/30/17	Stage 2A				X	
440-181045-1	SWFTS-MW05B-BL01	440-181045-8	WG	NORM	03/30/17	Stage 2A				X	
440-181045-1	SWFTS-MW06A-BL01	440-181045-1	WG	NORM	03/30/17	Stage 2A				X	
440-181045-1	SWFTS-MW06B-BL01	440-181045-2	WG	NORM	03/30/17	Stage 2A				X	
440-181045-1	SWFTS-MW07A-BL01	440-181045-3	WG	NORM	03/30/17	Stage 2A				X	
440-181045-1	SWFTS-MW07B-BL01	440-181045-4	WG	NORM	03/30/17	Stage 2A				X	

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-181045-1	SWFTS-MW08A-BL01	440-181045-9	WG	NORM	03/30/17	Stage 2A				X	
440-181122-1	SWFTS-MW04-BL01	440-181122-1	WG	NORM	03/31/17	Stage 2A				X	
440-181122-1	SWFTS-MW10A-BL01	440-181122-2	WG	NORM	03/31/17	Stage 2A				X	
440-186188-1	SWFTS-FIELDQC-IW-EB	440-186188-7	BW	EB	06/09/17	Stage 2A					
440-186188-1	SWFTS-FIELDQC-IW-FB	440-186188-6	BW	FB	06/09/17	Stage 2A					
440-186188-1	SWFTS-IW05-SO-28	440-186188-1	SO	NORM	06/09/17	Stage 4					
440-186188-1	SWFTS-IW10-SO-39	440-186188-2	SO	NORM	05/26/17	Stage 4					
440-186188-1	SWFTS-IW10-SO-39-FD	440-186188-3	SO	FD	05/26/17	Stage 4					
440-186188-1	SWFTS-IW12-SO-31	440-186188-4	SO	NORM	06/08/17	Stage 4					
440-186188-1	SWFTS-IW17-SO-33.5	440-186188-5	SO	NORM	05/31/17	Stage 4					
440-188133-1	SWFTS-IW01A-BL02	440-188133-3	WG	NORM	07/11/17	Stage 2A					
440-188133-1	SWFTS-IW01B-BL02	440-188133-13	WG	NORM	07/11/17	Stage 2A					
440-188133-1	SWFTS-IW02A-BL02	440-188133-14	WG	NORM	07/11/17	Stage 2A				X	
440-188133-1	SWFTS-IW02B-BL02	440-188133-2	WG	NORM	07/11/17	Stage 2A				X	
440-188133-1	SWFTS-IW03-BL02	440-188133-4	WG	NORM	07/11/17	Stage 2A					
440-188133-1	SWFTS-IW03-BL02-FD	440-188133-5	WG	FD	07/11/17	Stage 2A					
440-188133-1	SWFTS-IW04-BL02	440-188133-11	WG	NORM	07/11/17	Stage 2A					
440-188133-1	SWFTS-IW04-BL02-FD	440-188133-12	WG	FD	07/11/17	Stage 2A					
440-188133-1	SWFTS-IW05-BL02	440-188133-16	WG	NORM	07/11/17	Stage 2A				X	
440-188133-1	SWFTS-IW06A-BL02	440-188133-10	WG	NORM	07/11/17	Stage 2A					
440-188133-1	SWFTS-IW06B-BL02	440-188133-6	WG	NORM	07/11/17	Stage 2A					
440-188133-1	SWFTS-IW07-BL02	440-188133-7	WG	NORM	07/11/17	Stage 2A					
440-188133-1	SWFTS-IW13A-BL02	440-188133-1	WG	NORM	07/11/17	Stage 2A					
440-188133-1	SWFTS-IW13B-BL02	440-188133-15	WG	NORM	07/11/17	Stage 2A					
440-188133-1	SWFTS-IW16A-BL02	440-188133-9	WG	NORM	07/11/17	Stage 2A					
440-188133-1	SWFTS-IW16B-BL02	440-188133-8	WG	NORM	07/11/17	Stage 2A					
440-188133-1	SWFTS-MW18-BL02	440-188133-17	WG	NORM	07/11/17	Stage 2A				X	X
440-188244-1	PC-91-BL02-FD	440-188244-4	WG	FD	07/12/17	Stage 2A		X		X	
440-188244-1	SWFTS-IW09-BL02-FD	440-188244-3	WG	FD	07/12/17	Stage 2A				X	
440-188244-1	SWFTS-MW11-BL02	440-188244-7	WG	NORM	07/12/17	Stage 2A		X		X	X
440-188244-1	SWFTS-MW13-BL02	440-188244-6	WG	NORM	07/12/17	Stage 2A				X	X
440-188244-1	SWFTS-MW14-BL02	440-188244-8	WG	NORM	07/12/17	Stage 2A				X	X
440-188244-1	SWFTS-MW14-BL02-FD	440-188244-9	WG	FD	07/12/17	Stage 2A				X	X
440-188244-1	SWFTS-MW17-BL02	440-188244-1	WG	NORM	07/12/17	Stage 2A		X		X	
440-188244-1	SWFTS-MW19-BL02	440-188244-2	WG	NORM	07/12/17	Stage 2A				X	X
440-188244-1	SWFTS-MW20-BL02	440-188244-5	WG	NORM	07/12/17	Stage 2A				X	
440-188247-1	PC-91-BL02	440-188247-5	WG	NORM	07/12/17	Stage 2A		X		X	

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-188247-1	PC-92-BL02	440-188247-6	WG	NORM	07/12/17	Stage 2A				X	
440-188247-1	SWFTS-IW08-BL02	440-188247-7	WG	NORM	07/12/17	Stage 2A					
440-188247-1	SWFTS-IW09-BL02	440-188247-8	WG	NORM	07/12/17	Stage 2A				X	
440-188247-1	SWFTS-IW10-BL02	440-188247-9	WG	NORM	07/12/17	Stage 2A					
440-188247-1	SWFTS-IW11-BL02	440-188247-3	WG	NORM	07/12/17	Stage 2A				X	
440-188247-1	SWFTS-IW12-BL02	440-188247-4	WG	NORM	07/12/17	Stage 2A					
440-188247-1	SWFTS-IW14-BL02	440-188247-1	WG	NORM	07/12/17	Stage 2A				X	
440-188247-1	SWFTS-IW15-BL02	440-188247-2	WG	NORM	07/12/17	Stage 2A					
440-188247-1	SWFTS-IW20-BL02	440-188247-10	WG	NORM	07/12/17	Stage 2A				X	
440-188324-1	PC-58-BL02	440-188324-3	WG	NORM	07/13/17	Stage 2A				X	
440-188324-1	SWFTS-MW12-BL02	440-188324-6	WG	NORM	07/13/17	Stage 2A				X	
440-188324-1	SWFTS-MW21-BL02	440-188324-5	WG	NORM	07/13/17	Stage 2A				X	X
440-188324-1	SWFTS-MW22-BL02	440-188324-1	WG	NORM	07/13/17	Stage 2A				X	X
440-188324-1	SWFTS-MW24-BL02	440-188324-2	WG	NORM	07/13/17	Stage 2A				X	X
440-188324-1	SWFTS-MW25-BL02	440-188324-4	WG	NORM	07/13/17	Stage 2A				X	X
440-188325-1	PC-94-BL02	440-188325-1	WG	NORM	07/13/17	Stage 2A		X		X	
440-188325-1	PC-97-BL02	440-188325-8	WG	NORM	07/13/17	Stage 2A				X	
440-188325-1	SWFTS-FIELDQC-BL02-EB	440-188325-9	BW	EB	07/13/17	Stage 2A		X		X	X
440-188325-1	SWFTS-FIELDQC-BL02-FB	440-188325-10	BW	FB	07/13/17	Stage 2A		X		X	X
440-188325-1	SWFTS-IW17-BL02	440-188325-6	WG	NORM	07/13/17	Stage 2A				X	
440-188325-1	SWFTS-IW18-BL02	440-188325-4	WG	NORM	07/13/17	Stage 2A					
440-188325-1	SWFTS-IW19-BL02	440-188325-5	WG	NORM	07/13/17	Stage 2A					
440-188325-1	SWFTS-MW15-BL02	440-188325-3	WG	NORM	07/13/17	Stage 2A		X		X	X
440-188325-1	SWFTS-MW16-BL02	440-188325-2	WG	NORM	07/13/17	Stage 2A				X	
440-188325-1	SWFTS-MW23-BL02	440-188325-7	WG	NORM	07/13/17	Stage 2A				X	
440-189933-1	COH-2B1-BL02	440-189933-1	WG	NORM	08/09/17	Stage 2A					
440-192627-1	SWFTS-EM01-20170920-EB	440-192627-13	BW	EB	09/20/17	Stage 2A					
440-192627-1	SWFTS-EM01-20170920-FB	440-192627-14	BW	FB	09/20/17	Stage 2A					
440-192627-1	SWFTS-MW07A-EM01	440-192627-7	WG	NORM	09/20/17	Stage 2A					
440-192627-1	SWFTS-MW07B-EM01	440-192627-8	WG	NORM	09/20/17	Stage 2A					
440-192627-1	SWFTS-MW08A-EM01	440-192627-9	WG	NORM	09/20/17	Stage 2A					
440-192627-1	SWFTS-MW08A-EM01-FD	440-192627-10	WG	FD	09/20/17	Stage 2A					
440-192627-1	SWFTS-MW11-EM01	440-192627-11	WG	NORM	09/20/17	Stage 2A					
440-192627-1	SWFTS-MW12-EM01	440-192627-2	WG	NORM	09/19/17	Stage 2A					
440-192627-1	SWFTS-MW13-EM01	440-192627-12	WG	NORM	09/20/17	Stage 2A					
440-192627-1	SWFTS-MW17-EM01	440-192627-3	WG	NORM	09/19/17	Stage 2A					
440-192627-1	SWFTS-MW17-EM01-FD	440-192627-4	WG	FD	09/19/17	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-192627-1/2	SWFTS-MW01-EM01	440-192627-1	WG	NORM	09/19/17	Stage 2A					
440-192627-1/2	SWFTS-MW04-EM01	440-192627-5	WG	NORM	09/20/17	Stage 2A					
440-192627-1/2	SWFTS-MW04-EM01-FD	440-192627-6	WG	FD	09/20/17	Stage 2A					
440-192728-1	SWFTS-MW03-EM01	440-192728-12	WG	NORM	09/21/17	Stage 2A					
440-192728-1	SWFTS-MW06B-EM01	440-192728-9	WG	NORM	09/21/17	Stage 2A					
440-192728-1	SWFTS-MW09B-EM01	440-192728-13	WG	NORM	09/21/17	Stage 2A					
440-192728-1	SWFTS-MW22-EM01	440-192728-4	WG	NORM	09/20/17	Stage 2A					
440-192728-1	SWFTS-PC-94-EM01	440-192728-5	WG	NORM	09/20/17	Stage 2A					
440-192728-1/2	SWFTS-MW05A-EM01	440-192728-3	WG	NORM	09/20/17	Stage 2A					
440-192728-1/2	SWFTS-MW14-EM01	440-192728-1	WG	NORM	09/20/17	Stage 2A					
440-192728-1/2	SWFTS-MW15-EM01	440-192728-2	WG	NORM	09/20/17	Stage 2A					
440-192728-1/2	SWFTS-MW18-EM01	440-192728-8	WG	NORM	09/21/17	Stage 2A					
440-192728-1/2	SWFTS-MW19-EM01	440-192728-10	WG	NORM	09/21/17	Stage 2A					
440-192728-1/2	SWFTS-MW21-EM01	440-192728-11	WG	NORM	09/21/17	Stage 2A					
440-192728-1/2	SWFTS-PC-91-EM01	440-192728-6	WG	NORM	09/21/17	Stage 2A					
440-192728-1/2	SWFTS-PC-92-EM01	440-192728-7	WG	NORM	09/21/17	Stage 2A					
440-192818-1	SWFTS-COH-2B1-EM01	440-192818-16	WG	NORM	09/22/17	Stage 2A					
440-192818-1	SWFTS-EM01-20170922-EB	440-192818-6	BW	EB	09/22/17	Stage 2A					
440-192818-1	SWFTS-EM01-20170922-FB	440-192818-11	BW	FB	09/22/17	Stage 2A					
440-192818-1	SWFTS-MW06A-EM01	440-192818-2	WG	NORM	09/21/17	Stage 2A					
440-192818-1	SWFTS-MW09A-EM01	440-192818-1	WG	NORM	09/21/17	Stage 2A					
440-192818-1	SWFTS-MW23-EM01	440-192818-15	WG	NORM	09/22/17	Stage 2A					
440-192818-1	SWFTS-MW24-EM01	440-192818-9	WG	NORM	09/22/17	Stage 2A					
440-192818-1	SWFTS-MW25-EM01	440-192818-14	WG	NORM	09/22/17	Stage 2A					
440-192818-1	SWFTS-PC-88-EM01	440-192818-10	WG	NORM	09/22/17	Stage 2A					
440-192818-1	SWFTS-PC-97-EM01	440-192818-13	WG	NORM	09/22/17	Stage 2A					
440-192818-1	SWFTS-PC-97-EM01-FD	440-192818-12	WG	FD	09/22/17	Stage 2A					
440-192818-1/2	SWFTS-MW02-EM01	440-192818-4	WG	NORM	09/21/17	Stage 2A					
440-192818-1/2	SWFTS-MW05B-EM01	440-192818-8	WG	NORM	09/22/17	Stage 2A					
440-192818-1/2	SWFTS-MW10A-EM01	440-192818-5	WG	NORM	09/21/17	Stage 2A					
440-192818-1/2	SWFTS-MW16-EM01	440-192818-7	WG	NORM	09/22/17	Stage 2A					
440-192818-1/2	SWFTS-MW20-EM01	440-192818-3	WG	NORM	09/21/17	Stage 2A					
440-192973-1	SWFTS-MW07A-EM02	440-192973-1	WG	NORM	09/26/17	Stage 2A					
440-192973-1	SWFTS-MW07B-EM02	440-192973-2	WG	NORM	09/26/17	Stage 2A					
440-192973-1	SWFTS-MW08A-EM02	440-192973-4	WG	NORM	09/26/17	Stage 2A					
440-192973-1	SWFTS-MW08A-EM02-FD	440-192973-5	WG	FD	09/26/17	Stage 2A					
440-192973-1	SWFTS-MW11-EM02	440-192973-3	WG	NORM	09/26/17	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-192973-1	SWFTS-MW12-EM02	440-192973-10	WG	NORM	09/26/17	Stage 2A					
440-192973-1	SWFTS-MW13-EM02	440-192973-9	WG	NORM	09/26/17	Stage 2A					
440-192973-1	SWFTS-MW17-EM02	440-192973-7	WG	NORM	09/26/17	Stage 2A					
440-192973-1	SWFTS-MW17-EM02-FD	440-192973-8	WG	FD	09/26/17	Stage 2A					
440-192973-1/2	SWFTS-MW16-EM02	440-192973-6	WG	NORM	09/26/17	Stage 2A					
440-193062-1	SWFTS-EM02-20170927-EB	440-193062-7	BW	EB	09/27/17	Stage 2A					
440-193062-1	SWFTS-EM02-20170927-FB	440-193062-6	BW	FB	09/27/17	Stage 2A					
440-193062-1	SWFTS-PC-94-EM02	440-193062-14	WG	NORM	09/26/17	Stage 2A					
440-193062-1/2	SWFTS-MW01-EM02	440-193062-2	WG	NORM	09/26/17	Stage 2A					
440-193062-1/2	SWFTS-MW02-EM02	440-193062-11	WG	NORM	09/27/17	Stage 2A					
440-193062-1/2	SWFTS-MW04-EM02	440-193062-3	WG	NORM	09/27/17	Stage 2A					
440-193062-1/2	SWFTS-MW04-EM02-FD	440-193062-4	WG	FD	09/27/17	Stage 2A					
440-193062-1/2	SWFTS-MW05A-EM02	440-193062-9	WG	NORM	09/27/17	Stage 2A					
440-193062-1/2	SWFTS-MW05B-EM02	440-193062-10	WG	NORM	09/27/17	Stage 2A					
440-193062-1/2	SWFTS-MW10A-EM02	440-193062-5	WG	NORM	09/27/17	Stage 2A					
440-193062-1/2	SWFTS-MW14-EM02	440-193062-15	WG	NORM	09/26/17	Stage 2A					
440-193062-1/2	SWFTS-MW15-EM02	440-193062-13	WG	NORM	09/26/17	Stage 2A					
440-193062-1/2	SWFTS-MW20-EM02	440-193062-1	WG	NORM	09/26/17	Stage 2A					
440-193062-1/2	SWFTS-MW21-EM02	440-193062-12	WG	NORM	09/27/17	Stage 2A					
440-193062-1/2	SWFTS-PC-91-EM02	440-193062-16	WG	NORM	09/27/17	Stage 2A					
440-193062-1/2	SWFTS-PC-92-EM02	440-193062-8	WG	NORM	09/27/17	Stage 2A					
440-193167-1	SWFTS-EM02-20170928-EB	440-193167-8	BW	EB	09/28/17	Stage 2A					
440-193167-1	SWFTS-MW03-EM02	440-193167-1	WG	NORM	09/27/17	Stage 2A					
440-193167-1	SWFTS-MW06A-EM02	440-193167-3	WG	NORM	09/27/17	Stage 2A					
440-193167-1	SWFTS-MW06B-EM02	440-193167-4	WG	NORM	09/27/17	Stage 2A					
440-193167-1	SWFTS-MW09A-EM02	440-193167-14	WG	NORM	09/28/17	Stage 2A					
440-193167-1	SWFTS-MW09B-EM02	440-193167-15	WG	NORM	09/28/17	Stage 2A					
440-193167-1	SWFTS-MW22-EM02	440-193167-2	WG	NORM	09/27/17	Stage 2A					
440-193167-1	SWFTS-MW23-EM02	440-193167-13	WG	NORM	09/28/17	Stage 2A					
440-193167-1	SWFTS-MW24-EM02	440-193167-12	WG	NORM	09/28/17	Stage 2A					
440-193167-1	SWFTS-MW25-EM02	440-193167-11	WG	NORM	09/28/17	Stage 2A					
440-193167-1	SWFTS-PC-88-EM02	440-193167-7	WG	NORM	09/28/17	Stage 2A					
440-193167-1	SWFTS-PC-97-EM02	440-193167-9	WG	NORM	09/28/17	Stage 2A					
440-193167-1	SWFTS-PC-97-EM02-FD	440-193167-10	WG	FD	09/28/17	Stage 2A					
440-193167-1/2	SWFTS-MW18-EM02	440-193167-5	WG	NORM	09/27/17	Stage 2A					
440-193167-1/2	SWFTS-MW19-EM02	440-193167-6	WG	NORM	09/28/17	Stage 2A					
440-193472-1	SWFTS-MW07A-EM03	440-193472-6	WG	NORM	10/03/17	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-193472-1	SWFTS-MW07B-EM03	440-193472-7	WG	NORM	10/03/17	Stage 2A					
440-193472-1	SWFTS-MW11-EM03	440-193472-1	WG	NORM	10/03/17	Stage 2A					
440-193472-1	SWFTS-MW17-EM03	440-193472-8	WG	NORM	10/03/17	Stage 2A					
440-193472-1	SWFTS-MW17-EM03-FD	440-193472-9	WG	FD	10/03/17	Stage 2A					
440-193472-1/2	SWFTS-MW05A-EM03	440-193472-4	WG	NORM	10/03/17	Stage 2A					
440-193472-1/2	SWFTS-MW05B-EM03	440-193472-5	WG	NORM	10/03/17	Stage 2A					
440-193472-1/2	SWFTS-MW16-EM03	440-193472-3	WG	NORM	10/03/17	Stage 2A					
440-193472-1/2	SWFTS-MW18-EM03	440-193472-2	WG	NORM	10/03/17	Stage 2A					
440-193622-1	SWFTS-EM03-20171004-EB	440-193622-7	BW	EB	10/04/17	Stage 2A					
440-193622-1	SWFTS-MW06A-EM03	440-193622-4	WG	NORM	10/03/17	Stage 2A					
440-193622-1	SWFTS-MW06B-EM03	440-193622-5	WG	NORM	10/03/17	Stage 2A					
440-193622-1	SWFTS-MW12-EM03	440-193622-2	WG	NORM	10/03/17	Stage 2A					
440-193622-1	SWFTS-MW13-EM03	440-193622-1	WG	NORM	10/03/17	Stage 2A					
440-193622-1	SWFTS-PC-88-EM03	440-193622-6	WG	NORM	10/04/17	Stage 2A					
440-193622-1	SWFTS-PC-97-EM03	440-193622-8	WG	NORM	10/04/17	Stage 2A					
440-193622-1/2	SWFTS-MW14-EM03	440-193622-3	WG	NORM	10/03/17	Stage 2A					
440-193625-1	SWFTS-EM03-20171004-FB	440-193625-7	BW	FB	10/04/17	Stage 2A					
440-193625-1	SWFTS-PC-97-EM03-FD	440-193625-1	WG	FD	10/04/17	Stage 2A					
440-193625-1/2	SWFTS-MW01-EM03	440-193625-6	WG	NORM	10/04/17	Stage 2A					
440-193625-1/2	SWFTS-MW10A-EM03	440-193625-5	WG	NORM	10/04/17	Stage 2A					
440-193625-1/2	SWFTS-MW-15-EM03	440-193625-4	WG	NORM	10/04/17	Stage 2A					
440-193625-1/2	SWFTS-PC-91-EM03	440-193625-2	WG	NORM	10/04/17	Stage 2A					
440-193625-1/2	SWFTS-PC-92-EM03	440-193625-3	WG	NORM	10/04/17	Stage 2A					
440-193712-1	SWFTS-COH-2B1-EM03	440-193712-10	WG	NORM	10/05/17	Stage 2A					
440-193712-1	SWFTS-MW03-20171005-EB	440-193712-8	BW	EB	10/05/17	Stage 2A					
440-193712-1	SWFTS-MW03-EM03	440-193712-7	WG	NORM	10/04/17	Stage 2A					
440-193712-1	SWFTS-MW08A-EM03	440-193712-16	WG	NORM	10/05/17	Stage 2A					
440-193712-1	SWFTS-MW08A-EM03-FD	440-193712-15	WG	FD	10/05/17	Stage 2A					
440-193712-1	SWFTS-MW09A-EM03	440-193712-5	WG	NORM	10/04/17	Stage 2A					
440-193712-1	SWFTS-MW09B-EM03	440-193712-6	WG	NORM	10/04/17	Stage 2A					
440-193712-1	SWFTS-MW22-EM03	440-193712-14	WG	NORM	10/05/17	Stage 2A					
440-193712-1	SWFTS-MW23-EM03	440-193712-11	WG	NORM	10/05/17	Stage 2A					
440-193712-1	SWFTS-MW24-EM03	440-193712-12	WG	NORM	10/05/17	Stage 2A					
440-193712-1	SWFTS-MW25-EM03	440-193712-9	WG	NORM	10/05/17	Stage 2A					
440-193712-1	SWFTS-PC-94-EM03	440-193712-18	WG	NORM	10/05/17	Stage 2A					
440-193712-1/2	SWFTS-MW02-EM03	440-193712-3	WG	NORM	10/04/17	Stage 2A					
440-193712-1/2	SWFTS-MW04-EM03	440-193712-1	WG	NORM	10/04/17	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-193712-1/2	SWFTS-MW04-EM03-FD	440-193712-2	WG	FD	10/04/17	Stage 2A					
440-193712-1/2	SWFTS-MW19-EM03	440-193712-13	WG	NORM	10/05/17	Stage 2A					
440-193712-1/2	SWFTS-MW20-EM03	440-193712-4	WG	NORM	10/04/17	Stage 2A					
440-193712-1/2	SWFTS-MW21-EM03	440-193712-17	WG	NORM	10/05/17	Stage 2A					
440-193989-1	SWFTS-EM04-20171010-EB	440-193989-6	BW	EB	10/10/17	Stage 2A		X			X
440-193989-1	SWFTS-EM04-20171010-FB	440-193989-5	BW	FB	10/10/17	Stage 2A		X			X
440-193989-1	SWFTS-MW13-EM04	440-193989-4	WG	NORM	10/10/17	Stage 2A					
440-193989-1	SWFTS-MW17-EM04	440-193989-3	WG	NORM	10/10/17	Stage 2A					X
440-193989-1/2	SWFTS-MW05A-EM04	440-193989-2	WG	NORM	10/10/17	Stage 2A					
440-193989-1/2	SWFTS-MW05B-EM04	440-193989-1	WG	NORM	10/10/17	Stage 2A					
440-194090-1	SWFTS-MW12-EM04	440-194090-1	WG	NORM	10/11/17	Stage 2A		X			X
440-194090-1	SWFTS-MW23-EM04	440-194090-7	WG	NORM	10/11/17	Stage 2A		X			X
440-194090-1	SWFTS-MW6A-EM04	440-194090-4	WG	NORM	10/11/17	Stage 2A					
440-194090-1	SWFTS-MW6B-EM04	440-194090-5	WG	NORM	10/11/17	Stage 2A					
440-194090-1	SWFTS-PC-88-EM04	440-194090-2	WG	NORM	10/11/17	Stage 2A					
440-194090-1	SWFTS-PC-88-EM04-FD	440-194090-3	WG	FD	10/11/17	Stage 2A					
440-194090-1/2	SWFTS-MW21-EM04	440-194090-8	WG	NORM	10/11/17	Stage 2A		X			X
440-194090-1/2	SWFTS-PC-94-EM04	440-194090-6	WG	NORM	10/11/17	Stage 2A		X			X
440-194094-1	SWFTS-MW08A-EM04	440-194094-4	WG	NORM	10/10/17	Stage 2A					
440-194094-1	SWFTS-MW09A-EM04	440-194094-7	WG	NORM	10/11/17	Stage 2A					
440-194094-1	SWFTS-MW09B-EM04	440-194094-5	WG	NORM	10/11/17	Stage 2A					
440-194094-1	SWFTS-MW11-EM04	440-194094-8	WG	NORM	10/11/17	Stage 2A		X			X
440-194094-1	SWFTS-PC-58-EM04	440-194094-6	WG	NORM	10/11/17	Stage 2A					
440-194094-1/2	SWFTS-MW01-EM04	440-194094-2	WG	NORM	10/10/17	Stage 2A					X
440-194094-1/2	SWFTS-MW15-EM04	440-194094-1	WG	NORM	10/10/17	Stage 2A					X
440-194094-1/2	SWFTS-MW18-EM04	440-194094-3	WG	NORM	10/10/17	Stage 2A					
440-194202-1	SWFTS-EM04-20171012-EB	440-194202-4	BW	EB	10/12/17	Stage 2A		X			X
440-194202-1	SWFTS-EM04-20171012-FB	440-194202-3	BW	FB	10/12/17	Stage 2A		X			X
440-194202-1/2	SWFTS-MW20-EM04	440-194202-1	WG	NORM	10/12/17	Stage 2A		X			X
440-194202-1/2	SWFTS-MW20-EM04-FD	440-194202-2	WG	FD	10/12/17	Stage 2A		X			X
440-194204-1	SWFTS-COH-2B1-EM04	440-194204-2	WG	NORM	10/12/17	Stage 2A					
440-194204-1	SWFTS-MW03-EM04	440-194204-8	WG	NORM	10/12/17	Stage 2A		X			X
440-194204-1/2	SWFTS-MW02-EM04	440-194204-6	WG	NORM	10/12/17	Stage 2A		X			X
440-194204-1/2	SWFTS-MW16-EM04	440-194204-7	WG	NORM	10/12/17	Stage 2A		X			X
440-194204-1/2	SWFTS-MW19-EM04	440-194204-1	WG	NORM	10/12/17	Stage 2A					
440-194204-1/2	SWFTS-PC-91-EM04	440-194204-3	WG	NORM	10/12/17	Stage 2A					
440-194204-1/2	SWFTS-PC-92-EM04	440-194204-4	WG	NORM	10/12/17	Stage 2A					X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-194204-1/2	SWFTS-PC-92-EM04-FD	440-194204-5	WG	FD	10/12/17	Stage 2A					X
440-194242-1	SWFTS-MW07A-EM04	440-194242-3	WG	NORM	10/11/17	Stage 2A					
440-194242-1	SWFTS-MW07B-EM04	440-194242-4	WG	NORM	10/11/17	Stage 2A					
440-194242-1	SWFTS-MW22-EM04	440-194242-9	WG	NORM	10/12/17	Stage 2A					
440-194242-1	SWFTS-MW24-EM04	440-194242-2	WG	NORM	10/11/17	Stage 2A					
440-194242-1	SWFTS-MW25-EM04	440-194242-1	WG	NORM	10/11/17	Stage 2A					
440-194242-1	SWFTS-PC-97-EM04	440-194242-5	WG	NORM	10/11/17	Stage 2A					
440-194242-1	SWFTS-PC-97-EM04-FD	440-194242-6	WG	FD	10/11/17	Stage 2A					
440-194242-1/2	SWFTS-MW04-EM04	440-194242-7	WG	NORM	10/11/17	Stage 2A					X
440-194242-1/2	SWFTS-MW10A-EM04	440-194242-10	WG	NORM	10/12/17	Stage 2A					
440-194242-1/2	SWFTS-MW14-EM04	440-194242-8	WG	NORM	10/11/17	Stage 2A					X
440-194846-1	SWFTS-MW05A-EM05	440-194846-4	WG	NORM	10/23/17	Stage 2A					
440-194846-1	SWFTS-MW05B-EM05	440-194846-5	WG	NORM	10/23/17	Stage 2A					
440-194846-1	SWFTS-MW06A-EM05	440-194846-7	WG	NORM	10/23/17	Stage 2A					
440-194846-1	SWFTS-MW06B-EM05	440-194846-6	WG	NORM	10/23/17	Stage 2A					
440-194846-1	SWFTS-MW08A-EM05	440-194846-1	WG	NORM	10/23/17	Stage 2A					
440-194846-1	SWFTS-MW08A-EM05-FD	440-194846-2	WG	FD	10/23/17	Stage 2A					
440-194846-1	SWFTS-MW18-EM05	440-194846-3	WG	NORM	10/23/17	Stage 2A					
440-194947-1	SWFTS-MW04-EM05	440-194947-6	WG	NORM	10/24/17	Stage 2A					
440-194947-1	SWFTS-MW04-EM05-FD	440-194947-7	WG	FD	10/24/17	Stage 2A					
440-194947-1	SWFTS-MW07A-EM05	440-194947-4	WG	NORM	10/24/17	Stage 2A					
440-194947-1	SWFTS-MW07B-EM05	440-194947-3	WG	NORM	10/24/17	Stage 2A					
440-194947-1	SWFTS-MW10A-EM05	440-194947-8	WG	NORM	10/24/17	Stage 2A					
440-194947-1	SWFTS-MW11-EM05	440-194947-9	WG	NORM	10/24/17	Stage 2A					
440-194947-1	SWFTS-MW12-EM05	440-194947-10	WG	NORM	10/24/17	Stage 2A					
440-194947-1	SWFTS-MW13-EM05	440-194947-11	WG	NORM	10/24/17	Stage 2A					
440-194947-1	SWFTS-MW16-EM05	440-194947-2	WG	NORM	10/24/17	Stage 2A					
440-194947-1	SWFTS-MW17-EM05	440-194947-1	WG	NORM	10/24/17	Stage 2A					
440-194947-1	SWFTS-MW17-EM05-FD	440-194947-5	WG	FD	10/24/17	Stage 2A					
440-195026-1	SWFTS-MW01-EM05	440-195026-8	WG	NORM	10/25/17	Stage 2A					
440-195026-1	SWFTS-MW09A-EM05	440-195026-2	WG	NORM	10/25/17	Stage 2A					
440-195026-1	SWFTS-MW09B-EM05	440-195026-1	WG	NORM	10/25/17	Stage 2A					
440-195026-1	SWFTS-MW20-EM05	440-195026-5	WG	NORM	10/25/17	Stage 2A					
440-195026-1	SWFTS-PC-88-EM05	440-195026-9	WG	NORM	10/25/17	Stage 2A					
440-195026-1	SWFTS-PC-91-EM05	440-195026-4	WG	NORM	10/25/17	Stage 2A					
440-195026-1	SWFTS-PC-92-EM05	440-195026-3	WG	NORM	10/25/17	Stage 2A					
440-195026-1	SWFTS-PC-97-EM05	440-195026-6	WG	NORM	10/25/17	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-195026-1	SWFTS-PC-97-EM05-FD	440-195026-7	WG	FD	10/25/17	Stage 2A					
440-195136-1	SWFTS-COH-2B1-EM05	440-195136-4	WG	NORM	10/26/17	Stage 2A					
440-195136-1	SWFTS-EM05-20171025-EB	440-195136-8	BW	EB	10/26/17	Stage 2A					
440-195136-1	SWFTS-EM05-20171025-FB	440-195136-6	BW	FB	10/26/17	Stage 2A					
440-195136-1	SWFTS-EM05-20171026-EB	440-195136-7	BW	EB	10/26/17	Stage 2A					
440-195136-1	SWFTS-EM05-20171026-FB	440-195136-9	BW	FB	10/26/17	Stage 2A					
440-195136-1	SWFTS-MW03-EM05	440-195136-5	WG	NORM	10/26/17	Stage 2A					
440-195136-1	SWFTS-MW22-EM05	440-195136-10	WG	NORM	10/26/17	Stage 2A					
440-195136-1	SWFTS-MW23-EM05	440-195136-11	WG	NORM	10/26/17	Stage 2A					
440-195136-1	SWFTS-MW24-EM05	440-195136-3	WG	NORM	10/26/17	Stage 2A					
440-195136-1	SWFTS-MW25-EM05	440-195136-2	WG	NORM	10/26/17	Stage 2A					
440-195136-1	SWFTS-PC-94-EM05	440-195136-1	WG	NORM	10/26/17	Stage 2A					
440-195218-1	SWFTS-MW02-EM05	440-195218-2	WG	NORM	10/26/17	Stage 2A					
440-195218-1	SWFTS-MW14-EM05	440-195218-4	WG	NORM	10/27/17	Stage 2A					
440-195218-1	SWFTS-MW15-EM05	440-195218-3	WG	NORM	10/27/17	Stage 2A					
440-195218-1	SWFTS-MW19-EM05	440-195218-5	WG	NORM	10/27/17	Stage 2A					
440-195218-1	SWFTS-MW21-EM05	440-195218-6	WG	NORM	10/27/17	Stage 2A					
440-196558-1/2	SWFTS-IW01A-EM06	440-196558-6	WG	NORM	11/14/17	Stage 2A					
440-196558-1/2	SWFTS-MW02-EM06	440-196558-3	WG	NORM	11/14/17	Stage 2A					
440-196558-1/2	SWFTS-MW05A-EM06	440-196558-1	WG	NORM	11/14/17	Stage 2A					
440-196558-1/2	SWFTS-MW05B-EM06	440-196558-2	WG	NORM	11/14/17	Stage 2A					
440-196558-1/2	SWFTS-MW12-EM06	440-196558-5	WG	NORM	11/14/17	Stage 2A					
440-196558-1/2	SWFTS-MW15-EM06	440-196558-4	WG	NORM	11/14/17	Stage 2A					
440-196558-2	SWFTS-IW01A-EM06B	440-196558-7	WG	NORM	11/14/17	Stage 2A					
440-196558-2	SWFTS-IW01B-EM06B	440-196558-8	WG	NORM	11/14/17	Stage 2A					
440-196558-2	SWFTS-IW02A-EM06B	440-196558-9	WG	NORM	11/14/17	Stage 2A					
440-196558-2	SWFTS-IW02B-EM06B	440-196558-10	WG	NORM	11/14/17	Stage 2A					
440-196558-2	SWFTS-IW06A-EM06B	440-196558-11	WG	NORM	11/14/17	Stage 2A					
440-196558-2	SWFTS-IW06B-EM06B	440-196558-12	WG	NORM	11/14/17	Stage 2A					
440-196558-2	SWFTS-IW13A-EM06B	440-196558-13	WG	NORM	11/14/17	Stage 2A					
440-196558-2	SWFTS-IW13B-EM06B	440-196558-14	WG	NORM	11/14/17	Stage 2A					
440-196558-2	SWFTS-IW14-EM06B	440-196558-15	WG	NORM	11/14/17	Stage 2A					
440-196558-2	SWFTS-IW14-EM06B-FD	440-196558-16	WG	FD	11/14/17	Stage 2A					
440-196558-2	SWFTS-IW17-EM06B	440-196558-17	WG	NORM	11/14/17	Stage 2A					
440-196558-2	SWFTS-IW18-EM06B	440-196558-18	WG	NORM	11/14/17	Stage 2A					
440-196558-2	SWFTS-IW20-EM06B	440-196558-19	WG	NORM	11/14/17	Stage 2A					
440-196659-1	SWFTS-MW07A-EM06	440-196659-7	WG	NORM	11/15/17	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-196659-1	SWFTS-MW07B-EM06	440-196659-8	WG	NORM	11/15/17	Stage 2A					
440-196659-1	SWFTS-MW08A-EM06	440-196659-4	WG	NORM	11/15/17	Stage 2A					
440-196659-1	SWFTS-MW13-EM06	440-196659-1	WG	NORM	11/15/17	Stage 2A					
440-196659-1	SWFTS-MW17-EM06	440-196659-5	WG	NORM	11/15/17	Stage 2A					
440-196659-1	SWFTS-MW17-EM06-FD	440-196659-6	WG	FD	11/15/17	Stage 2A					
440-196659-1/2	SWFTS-MW04-EM06	440-196659-2	WG	NORM	11/15/17	Stage 2A					
440-196659-1/2	SWFTS-MW14-EM06	440-196659-3	WG	NORM	11/15/17	Stage 2A					X
440-196665-1	SWFTS-MW23-EM06	440-196665-3	WG	NORM	11/15/17	Stage 2A					
440-196665-1	SWFTS-MW24-EM06	440-196665-1	WG	NORM	11/15/17	Stage 2A					
440-196665-1	SWFTS-MW25-EM06	440-196665-2	WG	NORM	11/15/17	Stage 2A					
440-196665-1/2	SWFTS-MW01-EM06	440-196665-4	WG	NORM	11/15/17	Stage 2A					
440-196665-1/2	SWFTS-MW21-EM06	440-196665-5	WG	NORM	11/15/17	Stage 2A					
440-196690-1	PC-88-EM06	440-196690-9	WG	NORM	11/15/17	Stage 2A					
440-196690-1	PC-88-EM06-FD	440-196690-10	WG	FD	11/15/17	Stage 2A					
440-196690-1	SWFTS-EM06-20171114-EB	440-196690-2	BW	EB	11/14/17	Stage 2A					X
440-196690-1	SWFTS-EM06-20171114-FB	440-196690-1	BW	FB	11/14/17	Stage 2A					X
440-196690-1	SWFTS-EM06-20171115-EB	440-196690-4	BW	EB	11/15/17	Stage 2A					
440-196690-1	SWFTS-EM06-20171115-FB	440-196690-3	BW	FB	11/15/17	Stage 2A					
440-196690-1/2	SWFTS-IW01B-EM06	440-196690-5	WG	NORM	11/15/17	Stage 2A					
440-196690-1/2	SWFTS-IW06A-EM06	440-196690-6	WG	NORM	11/15/17	Stage 2A					
440-196690-1/2	SWFTS-IW06B-EM06	440-196690-7	WG	NORM	11/15/17	Stage 2A					
440-196690-1/2	SWFTS-IW17-EM06	440-196690-8	WG	NORM	11/15/17	Stage 2A					
440-196690-1/2	SWFTS-MW18-EM06	440-196690-11	WG	NORM	11/15/17	Stage 2A					
440-196786-1	SWFTS-EM06-20171116-EB	440-196786-1	BW	EB	11/16/17	Stage 2A					
440-196786-1	SWFTS-EM06-20171116-FB	440-196786-2	BW	FB	11/16/17	Stage 2A					
440-196786-1	SWFTS-MW03-EM06	440-196786-16	WG	NORM	11/16/17	Stage 2A					
440-196786-1	SWFTS-MW06A-EM06	440-196786-19	WG	NORM	11/16/17	Stage 2A					
440-196786-1	SWFTS-MW06B-EM06	440-196786-20	WG	NORM	11/16/17	Stage 2A					
440-196786-1	SWFTS-MW09A-EM06	440-196786-14	WG	NORM	11/16/17	Stage 2A					
440-196786-1	SWFTS-MW09B-EM06	440-196786-15	WG	NORM	11/16/17	Stage 2A					
440-196786-1	SWFTS-MW11-EM06	440-196786-3	WG	NORM	11/16/17	Stage 2A					
440-196786-1	SWFTS-MW22-EM06	440-196786-18	WG	NORM	11/16/17	Stage 2A					
440-196786-1	SWFTS-PC-58-EM06	440-196786-11	WG	NORM	11/16/17	Stage 2A					
440-196786-1	SWFTS-PC-97-EM06	440-196786-13	WG	NORM	11/16/17	Stage 2A					
440-196786-1/2	PC-94-EM06	440-196786-17	WG	NORM	11/16/17	Stage 2A					
440-196786-1/2	SWFTS-MW10A-EM06	440-196786-5	WG	NORM	11/16/17	Stage 2A					X
440-196786-1/2	SWFTS-MW10A-EM06-FD	440-196786-6	WG	FD	11/16/17	Stage 2A					X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-196786-1/2	SWFTS-MW16-EM06	440-196786-4	WG	NORM	11/16/17	Stage 2A					X
440-196786-1/2	SWFTS-MW-19-EM06	440-196786-12	WG	NORM	11/16/17	Stage 2A					
440-196786-1/2	SWFTS-MW20-EM06	440-196786-7	WG	NORM	11/16/17	Stage 2A					
440-196786-1/2	SWFTS-PC-91-EM06	440-196786-8	WG	NORM	11/16/17	Stage 2A					
440-196786-1/2	SWFTS-PC-92-EM06	440-196786-9	WG	NORM	11/16/17	Stage 2A					
440-196786-1/2	SWFTS-PC-92-EM06-FD	440-196786-10	WG	FD	11/16/17	Stage 2A					
440-198276-1	SWFTS-EM07-20171211-EB	440-198276-15	BW	EB	12/11/17	Stage 2A					
440-198276-1	SWFTS-EM07-20171211-FB	440-198276-16	BW	FB	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW03-EM07	440-198276-1	WG	NORM	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW04-EM07	440-198276-2	WG	NORM	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW05-EM07	440-198276-3	WG	NORM	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW07-EM07	440-198276-4	WG	NORM	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW08-EM07	440-198276-5	WG	NORM	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW09-EM07	440-198276-6	WG	NORM	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW10-EM07	440-198276-8	WG	NORM	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW11-EM07	440-198276-7	WG	NORM	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW12-EM07	440-198276-9	WG	NORM	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW15-EM07	440-198276-10	WG	NORM	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW15-EM07-FD	440-198276-11	WG	FD	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW16A-EM07	440-198276-12	WG	NORM	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW16B-EM07	440-198276-13	WG	NORM	12/11/17	Stage 2A					
440-198276-1	SWFTS-IW19-EM07	440-198276-14	WG	NORM	12/11/17	Stage 2A					
440-198371-1	SWFTS-MW10C-EM07	440-198371-9	WG	NORM	12/12/17	Stage 2A					
440-198371-1	SWFTS-MW23-EM07	440-198371-2	WG	NORM	12/12/17	Stage 2A					
440-198371-1/2	PC-94-EM07	440-198371-14	WG	NORM	12/12/17	Stage 2A					
440-198371-1/2	SWFTS-MW03-EM07	440-198371-13	WG	NORM	12/12/17	Stage 2A					
440-198371-1/2	SWFTS-MW09A-EM07	440-198371-6	WG	NORM	12/12/17	Stage 2A					
440-198371-1/2	SWFTS-MW09B-EM07	440-198371-7	WG	NORM	12/12/17	Stage 2A					
440-198371-1/2	SWFTS-MW10A-EM07	440-198371-10	WG	NORM	12/12/17	Stage 2A					
440-198371-1/2	SWFTS-MW10A-EM07-FD	440-198371-11	WG	FD	12/12/17	Stage 2A					
440-198371-1/2	SWFTS-MW14-EM07	440-198371-12	WG	NORM	12/12/17	Stage 2A					
440-198371-1/2	SWFTS-MW16-EM07	440-198371-4	WG	NORM	12/12/17	Stage 2A					
440-198371-1/2	SWFTS-MW19-EM07	440-198371-8	WG	NORM	12/12/17	Stage 2A					
440-198371-1/2	SWFTS-MW20-EM07	440-198371-3	WG	NORM	12/12/17	Stage 2A					
440-198371-1/2	SWFTS-MW24-EM07	440-198371-5	WG	NORM	12/12/17	Stage 2A					
440-198371-1/2	SWFTS-MW25-EM07	440-198371-1	WG	NORM	12/12/17	Stage 2A					
440-198508-1	PC-91-EM07	440-198508-9	WG	NORM	12/13/17	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-198508-1	PC-97-EM07-FD	440-198508-12	WG	FD	12/13/17	Stage 2A					
440-198508-1	SWFTS-EM07-20171213-EB	440-198508-14	BW	EB	12/13/17	Stage 2A					X
440-198508-1	SWFTS-EM07-20171213-FB	440-198508-15	BW	FB	12/13/17	Stage 2A					X
440-198508-1	SWFTS-MW06A-EM07	440-198508-1	WG	NORM	12/13/17	Stage 2A					
440-198508-1	SWFTS-MW06B-EM07	440-198508-2	WG	NORM	12/13/17	Stage 2A					
440-198508-1	SWFTS-MW17-EM07	440-198508-6	WG	NORM	12/13/17	Stage 2A					
440-198508-1	SWFTS-MW17-EM07-FD	440-198508-7	WG	FD	12/13/17	Stage 2A					
440-198508-1/2	PC-97-EM07	440-198508-11	WG	NORM	12/13/17	Stage 2A					
440-198508-1/2	SWFTS-MW02-EM07	440-198508-8	WG	NORM	12/13/17	Stage 2A					
440-198508-1/2	SWFTS-MW05A-EM07	440-198508-3	WG	NORM	12/13/17	Stage 2A					
440-198508-1/2	SWFTS-MW05B-EM07	440-198508-4	WG	NORM	12/13/17	Stage 2A					
440-198508-1/2	SWFTS-MW15-EM07	440-198508-13	WG	NORM	12/13/17	Stage 2A					
440-198508-1/2	SWFTS-MW18-EM07	440-198508-5	WG	NORM	12/13/17	Stage 2A					X
440-198508-1/2	SWFTS-MW21-EM07	440-198508-10	WG	NORM	12/13/17	Stage 2A					X
440-198571-1	COH-2B1-EM07	440-198571-5	WG	NORM	12/14/17	Stage 2A					
440-198571-1	PC-58-EM07	440-198571-9	WG	NORM	12/14/17	Stage 2A					
440-198571-1	PC-88-EM07	440-198571-11	WG	NORM	12/14/17	Stage 2A					
440-198571-1	PC-92-EM07-FD	440-198571-8	WG	FD	12/14/17	Stage 2A					X
440-198571-1	SWFTS-EM07-20171214-EB	440-198571-6	BW	EB	12/14/17	Stage 2A					
440-198571-1	SWFTS-EW07-20171214-FB	440-198571-16	BW	FB	12/14/17	Stage 2A					
440-198571-1	SWFTS-MW04-EM07	440-198571-12	WG	NORM	12/14/17	Stage 2A					
440-198571-1	SWFTS-MW07A-EM07	440-198571-3	WG	NORM	12/14/17	Stage 2A					
440-198571-1	SWFTS-MW07B-EM07	440-198571-4	WG	NORM	12/14/17	Stage 2A					
440-198571-1	SWFTS-MW08A-EM07	440-198571-1	WG	NORM	12/14/17	Stage 2A					
440-198571-1	SWFTS-MW08C-EM07	440-198571-2	WG	NORM	12/14/17	Stage 2A					
440-198571-1	SWFTS-MW11-EM07	440-198571-13	WG	NORM	12/14/17	Stage 2A					
440-198571-1	SWFTS-MW12-EM07	440-198571-15	WG	NORM	12/14/17	Stage 2A					
440-198571-1	SWFTS-MW13-EM07	440-198571-14	WG	NORM	12/14/17	Stage 2A					
440-198571-1	SWFTS-MW22-EM07	440-198571-17	WG	NORM	12/14/17	Stage 2A					
440-198571-1/2	PC-92-EM07	440-198571-7	WG	NORM	12/14/17	Stage 2A					X
440-198571-1/2	SWFTS-MW01-EM07	440-198571-10	WG	NORM	12/14/17	Stage 2A					
440-203775-1	SWFTS-MW07A-EM08	440-203775-3	WG	NORM	02/19/18	Stage 2A					
440-203775-1	SWFTS-MW07B-EM08	440-203775-2	WG	NORM	02/19/18	Stage 2A					
440-203775-1/2	SWFTS-MW02-EM08	440-203775-1	WG	NORM	02/19/18	Stage 2A					
440-203775-1/2	SWFTS-MW15-EM08	440-203775-4	WG	NORM	02/19/18	Stage 2A					
440-203775-1/2	SWFTS-MW20-EM08	440-203775-5	WG	NORM	02/19/18	Stage 2A					
440-203841-1	PC-92-EM08-FD	440-203841-3	WG	FD	02/20/18	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-203841-1	SWFTS-MW21-EM08-FD	440-203841-10	WG	FD	02/20/18	Stage 2A					
440-203841-1/2	PC-91-EM08	440-203841-1	WG	NORM	02/20/18	Stage 2A					
440-203841-1/2	PC-92-EM08	440-203841-2	WG	NORM	02/20/18	Stage 2A					
440-203841-1/2	SWFTS-MW01-EM08	440-203841-12	WG	NORM	02/20/18	Stage 2A					
440-203841-1/2	SWFTS-MW05A-EM08	440-203841-7	WG	NORM	02/20/18	Stage 2A					
440-203841-1/2	SWFTS-MW05B-EM08	440-203841-8	WG	NORM	02/20/18	Stage 2A					
440-203841-1/2	SWFTS-MW09A-EM08	440-203841-14	WG	NORM	02/20/18	Stage 2A					
440-203841-1/2	SWFTS-MW09B-EM08	440-203841-13	WG	NORM	02/20/18	Stage 2A					
440-203841-1/2	SWFTS-MW10A-EM08	440-203841-4	WG	NORM	02/20/18	Stage 2A					X
440-203841-1/2	SWFTS-MW10A-EM08-FD	440-203841-5	WG	FD	02/20/18	Stage 2A					X
440-203841-1/2	SWFTS-MW14-EM08	440-203841-11	WG	NORM	02/20/18	Stage 2A					X
440-203841-1/2	SWFTS-MW19-EM08	440-203841-6	WG	NORM	02/20/18	Stage 2A					
440-203841-1/2	SWFTS-MW21-EM08	440-203841-9	WG	NORM	02/20/18	Stage 2A					
440-203937-1	PC-58-EM08	440-203937-13	WG	NORM	02/21/18	Stage 2A					
440-203937-1	PC-97-EM08	440-203937-4	WG	NORM	02/21/18	Stage 2A					
440-203937-1	SWFTS-20180221-FB	440-203937-9	BW	FB	02/21/18	Stage 2A					
440-203937-1	SWFTS-MW04-EM08	440-203937-2	WG	NORM	02/21/18	Stage 2A					
440-203937-1	SWFTS-MW11-EM08	440-203937-10	WG	NORM	02/21/18	Stage 2A					
440-203937-1	SWFTS-MW11-EM08-FD	440-203937-11	WG	FD	02/21/18	Stage 2A					
440-203937-1	SWFTS-MW22-EM08	440-203937-1	WG	NORM	02/21/18	Stage 2A					
440-203937-1	SWFTS-MW23-EM08	440-203937-14	WG	NORM	02/21/18	Stage 2A					
440-203937-1/2	PC-94-EM08	440-203937-12	WG	NORM	02/21/18	Stage 2A					
440-203937-1/2	SWFTS-20180221-EM08-EB	440-203937-3	BW	EB	02/21/18	Stage 2A					X
440-203937-1/2	SWFTS-MW03-EM08	440-203937-5	WG	NORM	02/21/18	Stage 2A					
440-203937-1/2	SWFTS-MW16-EM08	440-203937-6	WG	NORM	02/21/18	Stage 2A					X
440-203937-1/2	SWFTS-MW24-EM08	440-203937-8	WG	NORM	02/21/18	Stage 2A					
440-203937-1/2	SWFTS-MW25-EM08	440-203937-7	WG	NORM	02/21/18	Stage 2A					
440-204033-1	COH-2B1-EM08	440-204033-6	WG	NORM	02/22/18	Stage 2A					
440-204033-1	PC-88-EM08	440-204033-10	WG	NORM	02/22/18	Stage 2A					
440-204033-1	SWFTS-20180222-EM08-EB	440-204033-3	BW	EB	02/22/18	Stage 2A					
440-204033-1	SWFTS-20180222-EM08-FB	440-204033-9	BW	FB	02/22/18	Stage 2A					X
440-204033-1	SWFTS-MW06A-EM08	440-204033-1	WG	NORM	02/22/18	Stage 2A					
440-204033-1	SWFTS-MW06B-EM08	440-204033-5	WG	NORM	02/22/18	Stage 2A					
440-204033-1	SWFTS-MW08A-EM08	440-204033-8	WG	NORM	02/22/18	Stage 2A					
440-204033-1	SWFTS-MW12-EM08	440-204033-2	WG	NORM	02/22/18	Stage 2A					
440-204033-1	SWFTS-MW13-EM08	440-204033-7	WG	NORM	02/22/18	Stage 2A					
440-204033-1	SWFTS-MW17-EM08	440-204033-11	WG	NORM	02/22/18	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-204033-1/2	SWFTS-MW18-EM08	440-204033-4	WG	NORM	02/22/18	Stage 2A					
440-207137-1	PC-92-EM09-FD	440-207137-3	WG	FD	03/26/18	Stage 2A					
440-207137-1	SWFTS-MW10A-EM09-FD	440-207137-8	WG	FD	03/26/18	Stage 2A					X
440-207137-1	SWFTS-MW13-EM09	440-207137-4	WG	NORM	03/26/18	Stage 2A					
440-207137-1	SWFTS-MW15-EM09	440-207137-10	WG	NORM	03/26/18	Stage 2A					
440-207137-1/2	PC-91-EM09	440-207137-1	WG	NORM	03/26/18	Stage 2A					
440-207137-1/2	PC-92-EM09	440-207137-2	WG	NORM	03/26/18	Stage 2A					
440-207137-1/2	SWFTS-MW05A-EM09	440-207137-5	WG	NORM	03/26/18	Stage 2A					
440-207137-1/2	SWFTS-MW05B-EM09	440-207137-6	WG	NORM	03/26/18	Stage 2A					
440-207137-1/2	SWFTS-MW10A-EM09	440-207137-7	WG	NORM	03/26/18	Stage 2A					X
440-207137-1/2	SWFTS-MW14-EM09	440-207137-9	WG	NORM	03/26/18	Stage 2A					X
440-207268-1	PC-97-EM09	440-207268-4	WG	NORM	03/27/18	Stage 2A					
440-207268-1	SWFTS-20180327-EM09-EB	440-207268-2	BW	EB	03/27/18	Stage 2A					X
440-207268-1	SWFTS-20180327-EM09-FB	440-207268-16	BW	FB	03/27/18	Stage 2A					
440-207268-1	SWFTS-MW04-EM09	440-207268-5	WG	NORM	03/27/18	Stage 2A					
440-207268-1	SWFTS-MW18-EM09-FD	440-207268-12	WG	FD	03/27/18	Stage 2A					
440-207268-1/2	PC-94-EM09	440-207268-8	WG	NORM	03/27/18	Stage 2A					
440-207268-1/2	SWFTS-MW01-EM09	440-207268-10	WG	NORM	03/27/18	Stage 2A					
440-207268-1/2	SWFTS-MW02-EM09	440-207268-1	WG	NORM	03/27/18	Stage 2A					
440-207268-1/2	SWFTS-MW03-EM09	440-207268-15	WG	NORM	03/27/18	Stage 2A					
440-207268-1/2	SWFTS-MW09A-EM09	440-207268-7	WG	NORM	03/27/18	Stage 2A					
440-207268-1/2	SWFTS-MW09B-EM09	440-207268-6	WG	NORM	03/27/18	Stage 2A					
440-207268-1/2	SWFTS-MW16-EM09	440-207268-13	WG	NORM	03/27/18	Stage 2A					X
440-207268-1/2	SWFTS-MW18-EM09	440-207268-11	WG	NORM	03/27/18	Stage 2A					
440-207268-1/2	SWFTS-MW19-EM09	440-207268-3	WG	NORM	03/27/18	Stage 2A					
440-207268-1/2	SWFTS-MW20-EM09	440-207268-9	WG	NORM	03/27/18	Stage 2A					
440-207268-1/2	SWFTS-MW21-EM09	440-207268-14	WG	NORM	03/27/18	Stage 2A					
440-207497-1	PC-58-EM09-EM09	440-207497-6	WG	NORM	03/28/18	Stage 2A					
440-207497-1	SWFTS-20180328-EM09-EB	440-207497-15	BW	EB	03/28/18	Stage 2A					
440-207497-1	SWFTS-20180328-EM09-FB	440-207497-14	BW	FB	03/28/18	Stage 2A					X
440-207497-1	SWFTS-MW06A-EM09	440-207497-3	WG	NORM	03/28/18	Stage 2A					
440-207497-1	SWFTS-MW06B-EM09	440-207497-2	WG	NORM	03/28/18	Stage 2A					
440-207497-1	SWFTS-MW07A-EM09	440-207497-4	WG	NORM	03/28/18	Stage 2A					
440-207497-1	SWFTS-MW07B-EM09	440-207497-10	WG	NORM	03/28/18	Stage 2A					
440-207497-1	SWFTS-MW11-EM09	440-207497-7	WG	NORM	03/28/18	Stage 2A					
440-207497-1	SWFTS-MW11-EM09-FD	440-207497-8	WG	FD	03/28/18	Stage 2A					
440-207497-1	SWFTS-MW12-EM09	440-207497-5	WG	NORM	03/28/18	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-207497-1	SWFTS-MW17-EM09	440-207497-11	WG	NORM	03/28/18	Stage 2A					
440-207497-1	SWFTS-MW22-EM09	440-207497-1	WG	NORM	03/28/18	Stage 2A					
440-207497-1	SWFTS-MW23-EM09	440-207497-9	WG	NORM	03/28/18	Stage 2A					
440-207497-1/2	SWFTS-MW24-EM09	440-207497-12	WG	NORM	03/28/18	Stage 2A					
440-207497-1/2	SWFTS-MW25-EM09	440-207497-13	WG	NORM	03/28/18	Stage 2A					
440-207586-1	COH-2B1-EM09	440-207586-2	WG	NORM	03/29/18	Stage 2A					
440-207586-1	PC-88-EM09	440-207586-3	WG	NORM	03/29/18	Stage 2A					
440-207586-1	SWFTS-MW08A-EM09	440-207586-1	WG	NORM	03/29/18	Stage 2A					
440-210173-1/2	SWFTS-MW01-EM10	440-210173-1	WG	NORM	04/30/18	Stage 2A					
440-210173-1/2	SWFTS-MW02-EM10	440-210173-3	WG	NORM	04/30/18	Stage 2A					
440-210173-1/2	SWFTS-MW05A-EM10	440-210173-8	WG	NORM	04/30/18	Stage 2A					
440-210173-1/2	SWFTS-MW05B-EM10	440-210173-2	WG	NORM	04/30/18	Stage 2A					
440-210173-1/2	SWFTS-MW09B-EM10	440-210173-11	WG	NORM	04/30/18	Stage 2A					
440-210173-1/2	SWFTS-MW14-EM10	440-210173-9	WG	NORM	04/30/18	Stage 2A					X
440-210173-1/2	SWFTS-MW19-EM10	440-210173-4	WG	NORM	04/30/18	Stage 2A					
440-210173-1/2	SWFTS-MW19-EM10-FD	440-210173-5	WG	FD	04/30/18	Stage 2A					
440-210173-1/2	SWFTS-MW20-EM10	440-210173-10	WG	NORM	04/30/18	Stage 2A					
440-210173-1/2	SWFTS-MW21-EM10	440-210173-7	WG	NORM	04/30/18	Stage 2A					
440-210173-2	SWFTS-MW22-EM10	440-210173-6	WG	NORM	04/30/18	Stage 2A					
440-210284-1	SWFTS-EM10-20180501-EB	440-210284-15	BW	EB	05/01/18	Stage 2A					
440-210284-1	SWFTS-EM10-20180501-FB	440-210284-2	BW	FB	05/01/18	Stage 2A					
440-210284-1	SWFTS-MW04-EM10	440-210284-5	WG	NORM	05/01/18	Stage 2A					
440-210284-1	SWFTS-MW06A-EM10	440-210284-9	WG	NORM	05/01/18	Stage 2A					
440-210284-1	SWFTS-MW06A-EM10-FD	440-210284-10	WG	FD	05/01/18	Stage 2A					
440-210284-1	SWFTS-MW06B-EM10	440-210284-8	WG	NORM	05/01/18	Stage 2A					
440-210284-1	SWFTS-MW11-EM10	440-210284-11	WG	NORM	05/01/18	Stage 2A					
440-210284-1/2	PC-91-EM10	440-210284-3	WG	NORM	05/01/18	Stage 2A					
440-210284-1/2	PC-92-EM10	440-210284-4	WG	NORM	05/01/18	Stage 2A					
440-210284-1/2	PC-94-EM10	440-210284-14	WG	NORM	05/01/18	Stage 2A					
440-210284-1/2	PC-97-EM10	440-210284-7	WG	NORM	05/01/18	Stage 2A					
440-210284-1/2	SWFTS-MW09A-EM10	440-210284-13	WG	NORM	05/01/18	Stage 2A					
440-210284-1/2	SWFTS-MW10A-EM10	440-210284-1	WG	NORM	05/01/18	Stage 2A					X
440-210284-1/2	SWFTS-MW18-EM10	440-210284-6	WG	NORM	05/01/18	Stage 2A					
440-210367-1	SWFTS-MW11-EM10-FD	440-210367-1	WG	FD	05/01/18	Stage 2A					
440-210430-1	COH-2B1-EM10	440-210430-11	WG	NORM	05/02/18	Stage 2A					
440-210430-1	PC58-EM10	440-210430-10	WG	NORM	05/02/18	Stage 2A					
440-210430-1	PC88-EM10	440-210430-8	WG	NORM	05/02/18	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-210430-1	PC88-EM10-FD	440-210430-9	WG	FD	05/02/18	Stage 2A					
440-210430-1	SWFTS-EM10-20180502-EB	440-210430-12	BW	EB	05/02/18	Stage 2A					
440-210430-1	SWFTS-EM10-20180502-FB	440-210430-4	BW	FB	05/02/18	Stage 2A					
440-210430-1	SWFTS-MW07A-EM10	440-210430-2	WG	NORM	05/02/18	Stage 2A					
440-210430-1	SWFTS-MW07B-EM10	440-210430-1	WG	NORM	05/02/18	Stage 2A					
440-210430-1	SWFTS-MW23-EM10	440-210430-5	WG	NORM	05/02/18	Stage 2A					
440-210430-1/2	SWFTS-MW03-EM10	440-210430-6	WG	NORM	05/02/18	Stage 2A					
440-210430-1/2	SWFTS-MW15-EM10	440-210430-3	WG	NORM	05/02/18	Stage 2A					
440-210430-1/2	SWFTS-MW16-EM10	440-210430-13	WG	NORM	05/02/18	Stage 2A					X
440-210430-1/2	SWFTS-MW24-EM10	440-210430-7	WG	NORM	05/02/18	Stage 2A					
440-210534-1	SWFTS-MW08A-EM10	440-210534-5	WG	NORM	05/03/18	Stage 2A					
440-210534-1	SWFTS-MW12-EM10	440-210534-4	WG	NORM	05/03/18	Stage 2A					
440-210534-1	SWFTS-MW13-EM10	440-210534-1	WG	NORM	05/03/18	Stage 2A					
440-210534-1	SWFTS-MW17-EM10	440-210534-3	WG	NORM	05/03/18	Stage 2A					
440-210534-1	SWFTS-MW25-EM10	440-210534-2	WG	NORM	05/03/18	Stage 2A					
440-215437-1	COH-2B1-EM11	440-215437-6	WG	NORM	07/10/18	Stage 2A					
440-215437-1	PC-94-EM11	440-215437-1	WG	NORM	07/10/18	Stage 2A					
440-215437-1	PC-97-EM11	440-215437-3	WG	NORM	07/10/18	Stage 2A					
440-215437-1	SWFTS-MW04-EM11	440-215437-4	WG	NORM	07/10/18	Stage 2A					
440-215437-1	SWFTS-MW19-EM11-FD	440-215437-11	WG	FD	07/10/18	Stage 2A					
440-215437-1	SWFTS-MW22-EM11	440-215437-9	WG	NORM	07/10/18	Stage 2A					
440-215437-1	SWFTS-MW23-EM11	440-215437-7	WG	NORM	07/10/18	Stage 2A					
440-215437-1	SWFTS-MW25-EM11	440-215437-12	WG	NORM	07/10/18	Stage 2A					
440-215437-1/2	SWFTS-MW01-EM11	440-215437-2	WG	NORM	07/10/18	Stage 2A					
440-215437-1/2	SWFTS-MW03-EM11	440-215437-5	WG	NORM	07/10/18	Stage 2A					
440-215437-1/2	SWFTS-MW14-EM11	440-215437-8	WG	NORM	07/10/18	Stage 2A					X
440-215437-1/2	SWFTS-MW19-EM11	440-215437-10	WG	NORM	07/10/18	Stage 2A					
440-215585-1	SWFTS-20180710-EB	440-215585-1	BW	EB	07/10/18	Stage 2A					X
440-215585-1	SWFTS-20180711-FB	440-215585-11	BW	FB	07/11/18	Stage 2A					X
440-215585-1	SWFTS-MW06A-EM11	440-215585-2	WG	NORM	07/11/18	Stage 2A					
440-215585-1	SWFTS-MW06A-EM11-FD	440-215585-3	WG	FD	07/11/18	Stage 2A					
440-215585-1	SWFTS-MW06B-EM11	440-215585-4	WG	NORM	07/11/18	Stage 2A					
440-215585-1	SWFTS-MW07A-EM11	440-215585-7	WG	NORM	07/11/18	Stage 2A					
440-215585-1	SWFTS-MW07B-EM11	440-215585-8	WG	NORM	07/11/18	Stage 2A					
440-215585-1	SWFTS-MW17-EM11	440-215585-13	WG	NORM	07/11/18	Stage 2A					
440-215585-1/2	PC-91-EM11	440-215585-6	WG	NORM	07/11/18	Stage 2A					
440-215585-1/2	PC-92-EM11	440-215585-5	WG	NORM	07/11/18	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-215585-1/2	SWFTS-MW05A-EM11	440-215585-14	WG	NORM	07/11/18	Stage 2A					
440-215585-1/2	SWFTS-MW05B-EM11	440-215585-10	WG	NORM	07/10/18	Stage 2A					
440-215585-1/2	SWFTS-MW10A-EM11	440-215585-9	WG	NORM	07/11/18	Stage 2A					X
440-215585-1/2	SWFTS-MW16-EM11	440-215585-12	WG	NORM	07/11/18	Stage 2A					X
440-215717-1	PC-58-EM11	440-215717-7	WG	NORM	07/11/18	Stage 2A					
440-215717-1	PC-88-EM11	440-215717-11	WG	NORM	07/12/18	Stage 2A					
440-215717-1	PC-88-EM11-FD	440-215717-12	WG	FD	07/12/18	Stage 2A					
440-215717-1	SWFTS-20180712-EB	440-215717-6	BW	EB	07/12/18	Stage 2A					
440-215717-1	SWFTS-20180712-FB	440-215717-4	BW	FB	07/12/18	Stage 2A					
440-215717-1	SWFTS-MW08A-EM11	440-215717-14	WG	NORM	07/11/18	Stage 2A					
440-215717-1	SWFTS-MW11-EM11	440-215717-17	WG	NORM	07/12/18	Stage 2A					X
440-215717-1	SWFTS-MW11-EM11-FD	440-215717-18	WG	FD	07/12/18	Stage 2A					X
440-215717-1	SWFTS-MW12-EM11	440-215717-16	WG	NORM	07/12/18	Stage 2A					
440-215717-1	SWFTS-MW13-EM11	440-215717-15	WG	NORM	07/12/18	Stage 2A					
440-215717-1/2	SWFTS-MW02-EM11	440-215717-13	WG	NORM	07/11/18	Stage 2A					
440-215717-1/2	SWFTS-MW09A-EM11	440-215717-10	WG	NORM	07/12/18	Stage 2A					
440-215717-1/2	SWFTS-MW09B-EM11	440-215717-9	WG	NORM	07/12/18	Stage 2A					
440-215717-1/2	SWFTS-MW15-EM11	440-215717-1	WG	NORM	07/11/18	Stage 2A					
440-215717-1/2	SWFTS-MW18-EM11	440-215717-2	WG	NORM	07/11/18	Stage 2A					
440-215717-1/2	SWFTS-MW20-EM11	440-215717-8	WG	NORM	07/11/18	Stage 2A					
440-215717-1/2	SWFTS-MW21-EM11	440-215717-3	WG	NORM	07/12/18	Stage 2A					
440-215717-1/2	SWFTS-MW24-EM11	440-215717-5	WG	NORM	07/12/18	Stage 2A					
440-215795-1/2	LVWPS-MW101A-EM11	440-215795-1	WG	NORM	07/12/18	Stage 2A					
440-215795-1/2	LVWPS-MW104-EM11	440-215795-2	WG	NORM	07/12/18	Stage 2A					
440-215795-1/2	LVWPS-MW107A-EM11	440-215795-7	WG	NORM	07/12/18	Stage 2A					
440-215795-1/2	LVWPS-MW108A-EM11	440-215795-5	WG	NORM	07/12/18	Stage 2A					
440-215795-1/2	LVWPS-MW108A-EM11-FD	440-215795-6	WG	FD	07/12/18	Stage 2A					
440-215795-1/2	LVWPS-MW109-EM11	440-215795-3	WG	NORM	07/12/18	Stage 2A					
440-215795-1/2	LVWPS-MW111A-EM11	440-215795-8	WG	NORM	07/12/18	Stage 2A					
440-215795-1/2	LVWPS-MW112A-EM11	440-215795-4	WG	NORM	07/12/18	Stage 2A					
440-216784-1/2	SWFTS-MW09B-EM12	440-216784-1	WG	NORM	07/26/18	Stage 2A					
440-216784-1/2	SWFTS-MW10A-EM12	440-216784-2	WG	NORM	07/26/18	Stage 2A					
440-216784-1/2	SWFTS-MW14-EM12	440-216784-3	WG	NORM	07/26/18	Stage 2A					
440-216784-1/2	SWFTS-MW15-EM12	440-216784-4	WG	NORM	07/26/18	Stage 2A					
440-216784-1/2	SWFTS-MW16-EM12	440-216784-5	WG	NORM	07/26/18	Stage 2A					
440-216784-1/2	SWFTS-MW18-EM12	440-216784-6	WG	NORM	07/26/18	Stage 2A					
440-216784-1/2	SWFTS-MW19-EM12	440-216784-7	WG	NORM	07/26/18	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-216784-1/2	SWFTS-MW19-EM12-FD	440-216784-8	WG	FD	07/26/18	Stage 2A					
440-216784-1/2	SWFTS-MW20-EM12	440-216784-9	WG	NORM	07/26/18	Stage 2A					
440-216872-1/2	SWFTS-20180727-EB	440-216872-1	BW	EB	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-20180727-FB	440-216872-2	BW	FB	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-MW01-EM12	440-216872-13	WG	NORM	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-MW01-EM12-FD	440-216872-14	WG	FD	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-MW02-EM12	440-216872-11	WG	NORM	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-MW03-EM12	440-216872-10	WG	NORM	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-MW05A-EM12	440-216872-8	WG	NORM	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-MW05B-EM12	440-216872-7	WG	NORM	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-MW09A-EM12	440-216872-9	WG	NORM	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-MW21-EM12	440-216872-3	WG	NORM	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-MW22-EM12	440-216872-4	WG	NORM	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-MW24-EM12	440-216872-5	WG	NORM	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-MW25-EM12	440-216872-6	WG	NORM	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-PC-91-EM12	440-216872-16	WG	NORM	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-PC-92-EM12	440-216872-15	WG	NORM	07/27/18	Stage 2A					
440-216872-1/2	SWFTS-PC-94-EM12	440-216872-12	WG	NORM	07/27/18	Stage 2A					
440-218109-1	SWFTS-20180814-FB	440-218109-7	BW	FB	08/14/18	Stage 2A					X
440-218109-1	SWFTS-MW06A-EM13	440-218109-4	WG	NORM	08/14/18	Stage 2A					
440-218109-1	SWFTS-MW06A-EM13-FD	440-218109-5	WG	FD	08/14/18	Stage 2A					
440-218109-1	SWFTS-MW06B-EM13	440-218109-6	WG	NORM	08/14/18	Stage 2A					
440-218109-1/2	PC-91-EM-13	440-218109-1	WG	NORM	08/14/18	Stage 2A					
440-218109-1/2	SWFTS-MW05A-EM13	440-218109-2	WG	NORM	08/14/18	Stage 2A					
440-218109-1/2	SWFTS-MW05B-EM13	440-218109-3	WG	NORM	08/14/18	Stage 2A					
440-218109-1/2	SWFTS-MW09A-EM13	440-218109-9	WG	NORM	08/14/18	Stage 2A					
440-218109-1/2	SWFTS-MW09B-EM13	440-218109-8	WG	NORM	08/14/18	Stage 2A					
440-218109-1/2	SWFTS-MW10A-EM13	440-218109-10	WG	NORM	08/14/18	Stage 2A					X
440-218109-1/2	SWFTS-MW14-EM13	440-218109-11	WG	NORM	08/14/18	Stage 2A					X
440-218208-1	PC-58-EM13	440-218208-5	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	LVWPS-MW104-EM13	440-218208-8	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	LVWPS-MW108A-EM13	440-218208-6	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	LVWPS-MW109-EM13	440-218208-7	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	LVWPS-MW111A-EM13	440-218208-9	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	PC-92-EM13	440-218208-1	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	PC-94-EM13	440-218208-2	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	SWFTS-MW02-EM13	440-218208-3	WG	NORM	08/15/18	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-218208-1/2	SWFTS-MW03-EM13	440-218208-4	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	SWFTS-MW15-EM13	440-218208-12	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	SWFTS-MW16-EM13	440-218208-13	WG	NORM	08/15/18	Stage 2A					X
440-218208-1/2	SWFTS-MW18-EM13	440-218208-14	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	SWFTS-MW19-EM13	440-218208-15	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	SWFTS-MW20-EM13	440-218208-16	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	SWFTS-MW20-EM13-FD	440-218208-17	WG	FD	08/15/18	Stage 2A					
440-218208-1/2	SWFTS-MW21-EM13	440-218208-18	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	SWFTS-MW24-EM13	440-218208-11	WG	NORM	08/15/18	Stage 2A					
440-218208-1/2	SWFTS-MW25-EM13	440-218208-10	WG	NORM	08/15/18	Stage 2A					
440-218296-1	COH-2B1-EM13	440-218296-11	WG	NORM	08/16/18	Stage 2A					
440-218296-1	PC-88-EM13	440-218296-9	WG	NORM	08/16/18	Stage 2A					
440-218296-1	PC-88-EM13-FD	440-218296-10	WG	FD	08/16/18	Stage 2A					
440-218296-1	PC-97-EM13	440-218296-8	WG	NORM	08/16/18	Stage 2A					
440-218296-1	SWFTS-20180816-EB	440-218296-7	BW	EB	08/16/18	Stage 2A					X
440-218296-1	SWFTS-20180816-EB(2)	440-218296-18	BW	EB	08/16/18	Stage 2A					X
440-218296-1	SWFTS-20180816-FB	440-218296-5	BW	FB	08/16/18	Stage 2A					X
440-218296-1	SWFTS-MW01-EM13	440-218296-6	WG	NORM	08/16/18	Stage 2A					
440-218296-1	SWFTS-MW04-EM13	440-218296-1	WG	NORM	08/16/18	Stage 2A					
440-218296-1	SWFTS-MW07A-EM13	440-218296-2	WG	NORM	08/16/18	Stage 2A					
440-218296-1	SWFTS-MW07B-EM13	440-218296-3	WG	NORM	08/16/18	Stage 2A					
440-218296-1	SWFTS-MW08A-EM13	440-218296-4	WG	NORM	08/16/18	Stage 2A					
440-218296-1	SWFTS-MW11-EM13	440-218296-12	WG	NORM	08/16/18	Stage 2A					
440-218296-1	SWFTS-MW11-EM13-FD	440-218296-13	WG	FD	08/16/18	Stage 2A					
440-218296-1	SWFTS-MW12-EM13	440-218296-14	WG	NORM	08/16/18	Stage 2A					
440-218296-1	SWFTS-MW13-EM13	440-218296-15	WG	NORM	08/16/18	Stage 2A					
440-218296-1	SWFTS-MW17-EM13	440-218296-19	WG	NORM	08/16/18	Stage 2A					
440-218296-1	SWFTS-MW22-EM13	440-218296-16	WG	NORM	08/16/18	Stage 2A					
440-218296-1	SWFTS-MW23-EM13	440-218296-17	WG	NORM	08/16/18	Stage 2A					
440-219797-1	SWFTS-20180910-EB	440-219797-5	BW	EB	09/10/18	Stage 2A					X
440-219797-1	SWFTS-20180910-FB	440-219797-3	BW	FB	09/10/18	Stage 2A					X
440-219797-1/2	SWFTS-MW01-EM14	440-219797-1	WG	NORM	09/10/18	Stage 2A					
440-219797-1/2	SWFTS-MW02-EM14	440-219797-2	WG	NORM	09/10/18	Stage 2A					
440-219797-1/2	SWFTS-MW10A-EM14	440-219797-4	WG	NORM	09/10/18	Stage 2A					X
440-219797-1/2	SWFTS-MW16-EM14	440-219797-6	WG	NORM	09/10/18	Stage 2A					X
440-219886-1	COH-2B1-EM14	440-219886-10	WG	NORM	09/11/18	Stage 2A					
440-219886-1	SWFTS-MW06A-EM14	440-219886-15	WG	NORM	09/11/18	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-219886-1	SWFTS-MW06A-EM14-FD	440-219886-16	WG	FD	09/11/18	Stage 2A					
440-219886-1	SWFTS-MW06B-EM14	440-219886-14	WG	NORM	09/11/18	Stage 2A					
440-219886-1/2	PC-94-EM14	440-219886-9	WG	NORM	09/11/18	Stage 2A					
440-219886-1/2	SWFTS-MW03-EM14	440-219886-11	WG	NORM	09/11/18	Stage 2A					
440-219886-1/2	SWFTS-MW05A-EM14	440-219886-7	WG	NORM	09/11/18	Stage 2A					
440-219886-1/2	SWFTS-MW05B-EM14	440-219886-8	WG	NORM	09/11/18	Stage 2A					
440-219886-1/2	SWFTS-MW09A-EM14	440-219886-12	WG	NORM	09/11/18	Stage 2A					
440-219886-1/2	SWFTS-MW09B-EM14	440-219886-13	WG	NORM	09/11/18	Stage 2A					
440-219886-1/2	SWFTS-MW14-EM14	440-219886-17	WG	NORM	09/11/18	Stage 2A					X
440-219886-1/2	SWFTS-MW15-EM14	440-219886-2	WG	NORM	09/11/18	Stage 2A					
440-219886-1/2	SWFTS-MW18-EM14	440-219886-1	WG	NORM	09/11/18	Stage 2A					
440-219886-1/2	SWFTS-MW19-EM14	440-219886-6	WG	NORM	09/11/18	Stage 2A					
440-219886-1/2	SWFTS-MW20-EM14	440-219886-3	WG	NORM	09/11/18	Stage 2A					
440-219886-1/2	SWFTS-MW20-EM14-FD	440-219886-4	WG	FD	09/11/18	Stage 2A					
440-219886-1/2	SWFTS-MW22-EM14	440-219886-5	WG	NORM	09/11/18	Stage 2A					
440-220031-1	PC-88-EM14	440-220031-15	WG	NORM	09/12/18	Stage 2A					
440-220031-1	PC-88-EM14-FD	440-220031-16	WG	FD	09/12/18	Stage 2A					
440-220031-1	PC-91-EM14	440-220031-12	WG	NORM	09/12/18	Stage 2A					
440-220031-1	PC-92-EM14	440-220031-13	WG	NORM	09/12/18	Stage 2A					
440-220031-1	PC-97-EM14	440-220031-17	WG	NORM	09/12/18	Stage 2A					
440-220031-1	SWFTS-MW04-EM14	440-220031-14	WG	NORM	09/12/18	Stage 2A					
440-220031-1	SWFTS-MW07A-EM14	440-220031-6	WG	NORM	09/12/18	Stage 2A					
440-220031-1	SWFTS-MW07B-EM14	440-220031-7	WG	NORM	09/12/18	Stage 2A					
440-220031-1	SWFTS-MW08A-EM14	440-220031-10	WG	NORM	09/12/18	Stage 2A					
440-220031-1	SWFTS-MW11-EM14	440-220031-8	WG	NORM	09/12/18	Stage 2A					
440-220031-1	SWFTS-MW11-EM14-FD	440-220031-9	WG	FD	09/12/18	Stage 2A					
440-220031-1	SWFTS-MW12-EM14	440-220031-11	WG	NORM	09/12/18	Stage 2A					
440-220031-1	SWFTS-MW17-EM14	440-220031-5	WG	NORM	09/12/18	Stage 2A					
440-220031-1	SWFTS-MW23-EM14	440-220031-1	WG	NORM	09/12/18	Stage 2A					
440-220031-1/2	SWFTS-MW21-EM14	440-220031-4	WG	NORM	09/12/18	Stage 2A					
440-220031-1/2	SWFTS-MW24-EM14	440-220031-3	WG	NORM	09/12/18	Stage 2A					
440-220031-1/2	SWFTS-MW25-EM14	440-220031-2	WG	NORM	09/12/18	Stage 2A					
440-220125-1	LVWPS-MW104-EM14	440-220125-8	WG	NORM	09/13/18	Stage 2A					
440-220125-1	LVWPS-MW108A-EM14	440-220125-4	WG	NORM	09/13/18	Stage 2A					
440-220125-1	LVWPS-MW109-EM14	440-220125-1	WG	NORM	09/13/18	Stage 2A					
440-220125-1	LVWPS-MW111A-EM14	440-220125-2	WG	NORM	09/13/18	Stage 2A					
440-220125-1	PC-58-EM14	440-220125-5	WG	NORM	09/13/18	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-220125-1	SWFTS-20180913-EB	440-220125-7	BW	EB	09/13/18	Stage 2A					X
440-220125-1	SWFTS-20180913-FB	440-220125-3	BW	FB	09/13/18	Stage 2A					X
440-220125-1	SWFTS-MW13-EM14	440-220125-6	WG	NORM	09/13/18	Stage 2A					
440-221855-1	SWFTS-20181009-EB	440-221855-6	BW	EB	10/09/18	Stage 2A					X
440-221855-1	SWFTS-MW19-EM15-FD	440-221855-5	WG	FD	10/09/18	Stage 2A					
440-221855-1	SWFTS-MW22-EM15	440-221855-2	WG	NORM	10/09/18	Stage 2A					
440-221855-1/2	SWFTS-MW01-EM15	440-221855-12	WG	NORM	10/09/18	Stage 2A					
440-221855-1/2	SWFTS-MW03-EM15	440-221855-13	WG	NORM	10/09/18	Stage 2A					
440-221855-1/2	SWFTS-MW05B-EM15	440-221855-14	WG	NORM	10/09/18	Stage 2A					
440-221855-1/2	SWFTS-MW09A-EM15	440-221855-7	WG	NORM	10/09/18	Stage 2A					
440-221855-1/2	SWFTS-MW09B-EM15	440-221855-8	WG	NORM	10/09/18	Stage 2A					
440-221855-1/2	SWFTS-MW10A-EM15	440-221855-9	WG	NORM	10/09/18	Stage 2A					X
440-221855-1/2	SWFTS-MW14-EM15	440-221855-10	WG	NORM	10/09/18	Stage 2A					X
440-221855-1/2	SWFTS-MW15-EM15	440-221855-11	WG	NORM	10/09/18	Stage 2A					
440-221855-1/2	SWFTS-MW19-EM15	440-221855-4	WG	NORM	10/09/18	Stage 2A					
440-221855-1/2	SWFTS-MW20-EM15	440-221855-1	WG	NORM	10/09/18	Stage 2A					
440-221855-1/2	SWFTS-MW21-EM15	440-221855-3	WG	NORM	10/09/18	Stage 2A					
440-221975-1	SWFTS-20181010-FB	440-221975-3	BW	FB	10/10/18	Stage 2A					X
440-221975-1	SWFTS-MW06A-EM15	440-221975-8	WG	NORM	10/10/18	Stage 2A					
440-221975-1	SWFTS-MW06A-EM15-FD	440-221975-10	WG	FD	10/10/18	Stage 2A					
440-221975-1	SWFTS-MW06B-EM15	440-221975-9	WG	NORM	10/10/18	Stage 2A					
440-221975-1	SWFTS-MW07A-EM15	440-221975-11	WG	NORM	10/10/18	Stage 2A					
440-221975-1	SWFTS-MW07B-EM15	440-221975-12	WG	NORM	10/10/18	Stage 2A					
440-221975-1	SWFTS-MW08A-EM15	440-221975-13	WG	NORM	10/10/18	Stage 2A					
440-221975-1/2	LVWPS-MW104-EM15	440-221975-5	WG	NORM	10/10/18	Stage 2A					
440-221975-1/2	LVWPS-MW108A-EM15	440-221975-1	WG	NORM	10/10/18	Stage 2A					
440-221975-1/2	LVWPS-MW109-EM15	440-221975-6	WG	NORM	10/10/18	Stage 2A					
440-221975-1/2	LVWPS-MW111A-EM15	440-221975-2	WG	NORM	10/10/18	Stage 2A					
440-221975-1/2	LVWPS-MW112A-EM15	440-221975-4	WG	NORM	10/10/18	Stage 2A					
440-221975-1/2	PC-91-EM15	440-221975-16	WG	NORM	10/10/18	Stage 2A					
440-221975-1/2	SWFTS-MW02-EM15	440-221975-15	WG	NORM	10/10/18	Stage 2A					
440-221975-1/2	SWFTS-MW05A-EM15	440-221975-14	WG	NORM	10/10/18	Stage 2A					
440-221975-1/2	SWFTS-MW24-EM15	440-221975-7	WG	NORM	10/10/18	Stage 2A					
440-222092-1	COH-2B1-EM15	440-222092-1	WG	NORM	10/11/18	Stage 2A					
440-222092-1	PC-58-EM15	440-222092-19	WG	NORM	10/11/18	Stage 2A					
440-222092-1	PC-88-EM15	440-222092-15	WG	NORM	10/11/18	Stage 2A					
440-222092-1	PC-88-EM15-FD	440-222092-16	WG	FD	10/11/18	Stage 2A					

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	SW-6020A Total	SW-7199	SW-9045C-soluble	SW-9060	VFA-IC
440-222092-1	PC-92-EM15	440-222092-17	WG	NORM	10/11/18	Stage 2A					
440-222092-1	PC-94-EM15	440-222092-18	WG	NORM	10/11/18	Stage 2A					
440-222092-1	PC-97-EM15	440-222092-13	WG	NORM	10/11/18	Stage 2A					
440-222092-1	SWFTS-20181011-EB	440-222092-2	BW	EB	10/11/18	Stage 2A					
440-222092-1	SWFTS-20181011-FB	440-222092-8	BW	FB	10/11/18	Stage 2A					
440-222092-1	SWFTS-MW04-EM15	440-222092-9	WG	NORM	10/11/18	Stage 2A					
440-222092-1	SWFTS-MW11-EM15	440-222092-10	WG	NORM	10/11/18	Stage 2A					X
440-222092-1	SWFTS-MW11-EM15-FD	440-222092-11	WG	FD	10/11/18	Stage 2A					X
440-222092-1	SWFTS-MW12-EM15	440-222092-12	WG	NORM	10/11/18	Stage 2A					
440-222092-1	SWFTS-MW13-EM15	440-222092-14	WG	NORM	10/11/18	Stage 2A					
440-222092-1	SWFTS-MW17-EM15	440-222092-4	WG	NORM	10/11/18	Stage 2A					
440-222092-1	SWFTS-MW23-EM15	440-222092-7	WG	NORM	10/11/18	Stage 2A					
440-222092-1/2	SWFTS-MW16-EM15	440-222092-3	WG	NORM	10/11/18	Stage 2A					X
440-222092-1/2	SWFTS-MW18-EM15	440-222092-5	WG	NORM	10/11/18	Stage 2A					
440-222092-1/2	SWFTS-MW25-EM15	440-222092-6	WG	NORM	10/11/18	Stage 2A					

Table 3 Validation Qualifiers and Definitions

Validation Qualifier	Definition
J-	The result is an estimated quantity, but the result may be biased low.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Table 4 Validation Checks and Stages

Verification and Validation Checks	Stage 1	Stage 2A	Stage 2B	Stage 4
Documentation identifies the laboratory receiving and conducting analyses, and includes documentation for all samples submitted by the project or requester for analyses.	X	X	X	X
Requested analytical methods were performed and the analysis dates are present.	X	X	X	X
Requested target analyte results are reported along with the original laboratory data qualifiers and data qualifier definitions for each reported result (and the uncertainty of each result and clear indication of the type of uncertainty reported if required, e.g., for radiochemical analyses).	X	X	X	X
Requested target analyte result units are reported (along with their associated uncertainty units if required, e.g., for radiochemical analyses).	X	X	X	X
Requested reporting limits for all samples are present and results at and below the requested (required) reporting limits are clearly identified (including sample detection limits if required).	X	X	X	X
Sampling dates (including times if needed), date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) are documented.	X	X	X	X
For radiochemical analyses, the sample-specific critical values (sometimes called "critical level," "decision level," or "detection threshold") and sample-specific minimum detectable value, activity, or concentration for all samples are reported, and results at and below the requested (required) critical values are clearly identified.	X	X	X	X
For radiochemical analyses, the chemical yield (if applicable to the method) and reference date and time (especially for short lived isotopes) are reported for all samples (as appropriate).	X	X	X	X
Sample results are evaluated by comparing sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample characteristics (e.g., percent moisture) to the requirements and guidelines present in national or regional data validation documents, analytical method(s), or contract.	X	X	X	X
Requested methods (handling, preparation, cleanup, and analytical) are performed.		X	X	X
Method dates (including dates, times and duration of analysis for radiation counting measurements and other methods, if needed) for handling (e.g., Toxicity Characteristic Leaching Procedure), preparation, cleanup and analysis are present, as appropriate.		X	X	X
Sample-related QC data and QC acceptance criteria (e.g., method blanks, surrogate recoveries, deuterated monitoring compound (DMC) recoveries, laboratory control sample (LCS) recoveries, duplicate analyses, matrix spike and matrix spike duplicate recoveries, serial dilutions, post digestion spikes, standard reference materials) are provided and linked to the reported field samples (including the field quality control samples such as trip and equipment blanks).		X	X	X
Requested spike analytes or compounds (e.g., surrogate, DMCs, LCS spikes, post digestion spikes) have been added, as appropriate.		X	X	X
Sample holding times (from sampling date to preparation and preparation to analysis) are evaluated.		X	X	X
Frequency of QC samples is checked for appropriateness (e.g., one LCS per 20 samples in a preparation batch).		X	X	X

Table 4 Validation Checks and Stages

Verification and Validation Checks	Stage 1	Stage 2A	Stage 2B	Stage 4
Sample results are evaluated by comparing holding times and sample-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract.		X	X	X
Initial calibration data (e.g., initial calibration standards, initial calibration verification [ICV] standards, initial calibration blanks [ICBs]) are provided for all requested analytes and linked to field samples reported. For each initial calibration, the calibration type used is present along with the initial calibration equation used including any weighting factor(s) applied and the associated correlation coefficients, as appropriate. Recalculations of the standard concentrations using the initial calibration curve are present, along with their associated percent recoveries, as appropriate (e.g., if required by the project, method, or contract). For the ICV standard, the associated percent recovery (or percent difference, as appropriate) is present.			X	X
Appropriate number and concentration of initial calibration standards are present.			X	X
Continuing calibration data (e.g., continuing calibration verification [CCV] standards and continuing calibration blanks [CCBs]) are provided for all requested analytes and linked to field samples reported, as appropriate. For the CCV standard(s), the associated percent recoveries (or percent differences, as appropriate) are present.			X	X
Reported samples are bracketed by CCV standards and CCB standards as appropriate.			X	X
Method specific instrument performance checks are present as appropriate (e.g., tunes for mass spectrometry methods, DDT/Endrin breakdown checks for pesticides and aroclors, instrument blanks and interference checks for ICP methods).			X	X
Frequency of instrument QC samples is checked for appropriateness (e.g., gas chromatography-mass spectroscopy [GC-MS] tunes have been run every 12 hours).			X	X
Sample results are evaluated by comparing instrument-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s), or contract.			X	X
Instrument response data (e.g., GC peak areas, ICP corrected intensities) are reported for requested analytes, surrogates, internal standards, and DMCs for all requested field samples, matrix spikes, matrix spike duplicates, LCS, and method blanks, as well as calibration data and instrument QC checks (e.g., tunes, DDT/Endrin breakdowns, interelement correction factors, and Florisil cartridge checks).				X
Reported target analyte instrument responses are associated with appropriate internal standard analyte(s) for each (or selected) analyte(s) (for methods using internal standard for calibration).				X
Fit and appropriateness of the initial calibration curve used or required (e.g., mean calibration factor, regression analysis [linear or non-linear, with or without weighting factors, with or without forcing]) is checked with recalculation of the initial calibration curve for each (or selected) analyte(s) from the instrument response.				X
Comparison of instrument response to the minimum response requirements for each (or selected) analyte(s)				X

Table 4 Validation Checks and Stages

Verification and Validation Checks	Stage 1	Stage 2A	Stage 2B	Stage 4
Recalculation of each (or selected) opening and closing CCV (and CCB) response from the peak data reported for each (or selected) analyte(s) from the instrument response, as appropriate				X
Compliance check of recalculated opening and/or closing CCV (and CCB) response to recalculated initial calibration response for each (or selected) analyte(s)				X
Recalculation of percent ratios for each (or selected) tune from the instrument response, as appropriate				X
Compliance check of recalculated percent ratio for each (or selected) tune from the instrument response.				X
Recalculation of each (or selected) instrument performance check (e.g., DDT/Endrin breakdown for pesticide analysis, instrument blanks, interference checks) from the instrument response				X
Recalculation and compliance check of retention time windows (for chromatographic methods) for each (or selected) analyte(s) from the laboratory reported retention times				X
Recalculation of reported results for each reported (or selected) target analyte(s) from the instrument response				X
Recalculation of each (or selected) reported spike recovery (surrogate recoveries, DMC recoveries, LCS recoveries, duplicate analyses, matrix spike and matrix spike duplicate recoveries, serial dilutions, post digestion spikes, standard reference materials, etc.) from the instrument response				X
Each (or selected) sample result(s) and spike recovery(ies) are evaluated by comparing the recalculated numbers to the laboratory reported numbers according to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract.				X
All required instrument outputs (e.g., chromatograms, mass spectra, atomic emission spectra, instrument background corrections, and interference corrections) for evaluating sample and instrument performance are present.				X
Sample results are evaluated by checking each (or selected) instrument output (e.g., chromatograms, mass spectra, atomic emission spectra data, instrument background corrections, interference corrections) for correct identification and quantitation of analytes (e.g., peak integrations, use of appropriate internal standards for quantitation, elution order of analytes, and interferences).				X
Each (or selected) instrument's output(s) is evaluated for confirmation of non-detected or tentatively identified analytes.				X

Table 5 Reason Codes

Reason Code	Description of Qualification
a	Qualified due to low abundance (radiochemical activity)
be	Qualified due to equipment blank contamination
bf	Qualified due to field blank contamination
bl	Qualified due to lab blank contamination
bt	Qualified due to trip blank contamination
bp	Qualified due to pump blank contamination (for wells without dedicated pumps)
br	Qualified due to filter blank contamination (aqueous hexavalent chromium and dissolved sample fractions)
brr	Better result was reported
c	Qualified due to calibration problems
cp	Qualified due to insufficient ingrowth (radiochemical only)
dc	Dual column confirmation % difference exceeded
e	Sample concentration exceeded the calibration range
fd	Qualified due to field duplicate imprecision
h	Qualified due to holding time exceedance
i	Qualified due to internal standard areas or retention times
k	Qualified as Estimated Maximum Possible Concentrations (dioxins and PCB congeners)
l	Qualified due to LCS recoveries
ld	Qualified due to lab duplicate imprecision (matrix duplicate, MSD, LCSD)
m	Qualified due to matrix spike recoveries
nb	Qualified due to negative lab blank contamination (nondetect results only)
nd	Qualified due to non-detected target analyte
o	Other
p	Qualified as a false positive due to contamination during shipping
pH	Sample preservation not within acceptance range
q	Qualified due to quantitation problem
s	Qualified due to surrogate recoveries
sd	Serial dilution did not meet control criteria
sp	Detected value reported between MDL/SQL and RL/PQL
st	Sample receipt temperature exceeded
t	Qualified due to elevated helium tracer concentrations
vh	Headspace detected in aqueous sample containers submitted for volatile analysis
x	Qualified due to low % solids
z	Qualified due to interference check sample results

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
440-188247-1	PC-91-BL02	07/12/17	SW-7199	Total	Chromium [VI]	0.45	ug/L	J	0.25	2	J	sp	Detect < PQL
440-188324-1	SWFTS-MW25-BL02	07/13/17	EPA 300.1B	Total	Chlorite	500	ug/L	U	500	1000	UJ	s	Surrogate Recovery
440-188324-1	SWFTS-MW24-BL02	07/13/17	SW-6010B	Dissolved	Aluminum	0.064	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-188324-1	SWFTS-MW25-BL02	07/13/17	SW-6010B	Dissolved	Aluminum	0.063	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-188324-1	SWFTS-MW22-BL02	07/13/17	SW-6010B	Dissolved	Potassium	29	mg/L	F1	0.25	0.5	J+	m	MS Recovery
440-188324-1	SWFTS-MW22-BL02	07/13/17	SW-6020A	Dissolved	Antimony	0.5	ug/L	UF1	0.5	2	UJ	m	MS Recovery
440-188324-1	SWFTS-MW21-BL02	07/13/17	SW-9060	Total	Total Organic Carbon	0.94	mg/L	J	0.65	1	J	sp	Detect < PQL
440-188324-1	SWFTS-MW12-BL02	07/13/17	SW-9060	Total	Total Organic Carbon	0.88	mg/L	J	0.65	1	J	sp	Detect < PQL
440-188324-1	SWFTS-MW22-BL02	07/13/17	VFA-IC	Total	Acetic acid	5.8	mg/L	U	5.8	20	UJ	st	Temperature
440-188324-1	SWFTS-MW24-BL02	07/13/17	VFA-IC	Total	Acetic acid	5.8	mg/L	U	5.8	20	UJ	st	Temperature
440-188324-1	SWFTS-MW25-BL02	07/13/17	VFA-IC	Total	Acetic acid	5.8	mg/L	U	5.8	20	UJ	st	Temperature
440-188324-1	SWFTS-MW21-BL02	07/13/17	VFA-IC	Total	Acetic acid	5.8	mg/L	U	5.8	20	UJ	st	Temperature
440-188324-1	SWFTS-MW22-BL02	07/13/17	VFA-IC	Total	Formic-acid	5.2	mg/L	U	5.2	20	UJ	st	Temperature
440-188324-1	SWFTS-MW24-BL02	07/13/17	VFA-IC	Total	Formic-acid	5.2	mg/L	U	5.2	20	UJ	st	Temperature
440-188324-1	SWFTS-MW25-BL02	07/13/17	VFA-IC	Total	Formic-acid	5.2	mg/L	U	5.2	20	UJ	st	Temperature
440-188324-1	SWFTS-MW21-BL02	07/13/17	VFA-IC	Total	Formic-acid	5.2	mg/L	U	5.2	20	UJ	st	Temperature
440-188324-1	SWFTS-MW22-BL02	07/13/17	VFA-IC	Total	Lactic acid	6.2	mg/L	U	6.2	20	UJ	st	Temperature
440-188324-1	SWFTS-MW24-BL02	07/13/17	VFA-IC	Total	Lactic acid	6.2	mg/L	U	6.2	20	UJ	st	Temperature
440-188324-1	SWFTS-MW25-BL02	07/13/17	VFA-IC	Total	Lactic acid	6.2	mg/L	U	6.2	20	UJ	st	Temperature
440-188324-1	SWFTS-MW21-BL02	07/13/17	VFA-IC	Total	Lactic acid	6.2	mg/L	U	6.2	20	UJ	st	Temperature
440-188324-1	SWFTS-MW22-BL02	07/13/17	VFA-IC	Total	n-Butyric Acid	5.2	mg/L	U	5.2	20	UJ	st	Temperature
440-188324-1	SWFTS-MW24-BL02	07/13/17	VFA-IC	Total	n-Butyric Acid	5.2	mg/L	U	5.2	20	UJ	st	Temperature
440-188324-1	SWFTS-MW25-BL02	07/13/17	VFA-IC	Total	n-Butyric Acid	5.2	mg/L	U	5.2	20	UJ	st	Temperature
440-188324-1	SWFTS-MW21-BL02	07/13/17	VFA-IC	Total	n-Butyric Acid	5.2	mg/L	U	5.2	20	UJ	st	Temperature
440-188324-1	SWFTS-MW22-BL02	07/13/17	VFA-IC	Total	Propionic acid	7	mg/L	U	7	20	UJ	st	Temperature
440-188324-1	SWFTS-MW24-BL02	07/13/17	VFA-IC	Total	Propionic acid	7	mg/L	U	7	20	UJ	st	Temperature
440-188324-1	SWFTS-MW25-BL02	07/13/17	VFA-IC	Total	Propionic acid	7	mg/L	U	7	20	UJ	st	Temperature
440-188324-1	SWFTS-MW21-BL02	07/13/17	VFA-IC	Total	Propionic acid	7	mg/L	U	7	20	UJ	st	Temperature
440-188324-1	SWFTS-MW22-BL02	07/13/17	VFA-IC	Total	Pyruvic Acid	7.4	mg/L	U	7.4	30	UJ	st	Temperature
440-188324-1	SWFTS-MW24-BL02	07/13/17	VFA-IC	Total	Pyruvic Acid	7.4	mg/L	U	7.4	30	UJ	st	Temperature
440-188324-1	SWFTS-MW25-BL02	07/13/17	VFA-IC	Total	Pyruvic Acid	7.4	mg/L	UF1	7.4	30	UJ	m,st	MS Recovery, Temperature
440-188324-1	SWFTS-MW21-BL02	07/13/17	VFA-IC	Total	Pyruvic Acid	7.4	mg/L	U	7.4	30	UJ	st	Temperature
440-188325-1	SWFTS-MW23-BL02	07/13/17	EPA 300.0	Total	Nitrate [as N]	0.14	mg/L	J	0.11	0.22	J	sp	Detect < PQL
440-188325-1	SWFTS-MW23-BL02	07/13/17	SW-6010B	Dissolved	Aluminum	0.052	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-188325-1	PC-97-BL02	07/13/17	SW-6010B	Dissolved	Aluminum	0.05	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-188325-1	PC-97-BL02	07/13/17	SW-6010B	Dissolved	Cobalt	0.0062	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-188325-1	PC-97-BL02	07/13/17	SW-6010B	Dissolved	Copper	0.0053	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-188325-1	PC-97-BL02	07/13/17	SW-6010B	Dissolved	Iron	0.058	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-188325-1	PC-97-BL02	07/13/17	SW-6010B	Dissolved	Titanium	0.0031	mg/L	J	0.0025	0.005	J	sp	Detect < PQL
440-188325-1	PC-97-BL02	07/13/17	SW-6020A	Dissolved	Selenium	1	ug/L	J	0.5	2	J	sp	Detect < PQL
440-188325-1	SWFTS-FIELDQC-BL02-FB	07/13/17	VFA-IC	Total	Acetic acid	0.29	mg/L	U	0.29	1	UJ	st	Temperature
440-188325-1	SWFTS-MW15-BL02	07/13/17	VFA-IC	Total	Acetic acid	5.8	mg/L	U	5.8	20	UJ	st	Temperature
440-188325-1	SWFTS-FIELDQC-BL02-EB	07/13/17	VFA-IC	Total	Acetic acid	0.29	mg/L	U	0.29	1	UJ	st	Temperature
440-188325-1	SWFTS-FIELDQC-BL02-FB	07/13/17	VFA-IC	Total	Formic-acid	0.26	mg/L	U	0.26	1	UJ	st	Temperature
440-188325-1	SWFTS-MW15-BL02	07/13/17	VFA-IC	Total	Formic-acid	5.2	mg/L	U	5.2	20	UJ	st	Temperature
440-188325-1	SWFTS-FIELDQC-BL02-EB	07/13/17	VFA-IC	Total	Formic-acid	0.26	mg/L	U	0.26	1	UJ	st	Temperature
440-188325-1	SWFTS-FIELDQC-BL02-FB	07/13/17	VFA-IC	Total	Lactic acid	0.31	mg/L	U	0.31	1	UJ	st	Temperature
440-188325-1	SWFTS-MW15-BL02	07/13/17	VFA-IC	Total	Lactic acid	6.2	mg/L	U	6.2	20	UJ	st	Temperature
440-188325-1	SWFTS-FIELDQC-BL02-EB	07/13/17	VFA-IC	Total	Lactic acid	0.31	mg/L	U	0.31	1	UJ	st	Temperature
440-188325-1	SWFTS-FIELDQC-BL02-FB	07/13/17	VFA-IC	Total	n-Butyric Acid	0.26	mg/L	U	0.26	1	UJ	st	Temperature
440-188325-1	SWFTS-MW15-BL02	07/13/17	VFA-IC	Total	n-Butyric Acid	5.2	mg/L	U	5.2	20	UJ	st	Temperature
440-188325-1	SWFTS-FIELDQC-BL02-EB	07/13/17	VFA-IC	Total	n-Butyric Acid	0.26	mg/L	U	0.26	1	UJ	st	Temperature
440-188325-1	SWFTS-FIELDQC-BL02-FB	07/13/17	VFA-IC	Total	Propionic acid	0.35	mg/L	U	0.35	1	UJ	st	Temperature
440-188325-1	SWFTS-MW15-BL02	07/13/17	VFA-IC	Total	Propionic acid	7	mg/L	U	7	20	UJ	st	Temperature

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
440-188325-1	SWFTS-FIELDQC-BL02-EB	07/13/17	VFA-IC	Total	Propionic acid	0.35	mg/L	U	0.35	1	UJ	st	Temperature
440-188325-1	SWFTS-FIELDQC-BL02-FB	07/13/17	VFA-IC	Total	Pyruvic Acid	0.37	mg/L	U	0.37	1.5	UJ	st	Temperature
440-188325-1	SWFTS-MW15-BL02	07/13/17	VFA-IC	Total	Pyruvic Acid	7.4	mg/L	U	7.4	30	UJ	st	Temperature
440-188325-1	SWFTS-FIELDQC-BL02-EB	07/13/17	VFA-IC	Total	Pyruvic Acid	0.37	mg/L	U	0.37	1.5	UJ	st	Temperature
440-189933-1	COH-2B1-BL02	08/09/17	EPA 300.0	Total	Nitrate [as N]	5.5	mg/L	U	5.5	11	R	brr	Better result reported
440-189933-1	COH-2B1-BL02	08/09/17	SW-6010B	Dissolved	Copper	0.0054	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-189933-1	COH-2B1-BL02	08/09/17	SW-6010B	Dissolved	Strontium	4	mg/L	F1	0.01	0.02	J+	m	MS Recovery
440-192728-1	SWFTS-PC-94-EM01	09/20/17	EPA 300.0	Total	Nitrate [as N]	0.58	mg/L	J	0.55	1.1	J	sp	Detect < PQL
440-192728-1	SWFTS-PC-91-EM01	09/21/17	EPA 300.0	Total	Nitrate [as N]	0.5	mg/L	J	0.28	0.55	J	sp	Detect < PQL
440-192728-1	SWFTS-PC-92-EM01	09/21/17	EPA 300.0	Total	Nitrate [as N]	11	mg/L	U	11	22	R	brr	Better result reported
440-192818-1	SWFTS-PC-88-EM01	09/22/17	EPA 300.0	Total	Nitrate [as N]	11	mg/L	U	11	22	R	brr	Better result reported
440-192818-1	SWFTS-COH-2B1-EM01	09/22/17	EPA 300.0	Total	Nitrate [as N]	0.53	mg/L	J	0.28	0.55	J	sp	Detect < PQL
440-192818-1	SWFTS-MW23-EM01	09/22/17	EPA 300.1B	Total	Chlorate	160	ug/L	J	100	200	J	sp	Detect < PQL
440-192818-2	SWFTS-MW10A-EM01	09/21/17	EPA 314.0	Total	Perchlorate	1.9	ug/L	J	1.9	8	J	sp	Detect < PQL
440-193062-1	SWFTS-MW21-EM02	09/27/17	EPA 300.0	Total	Nitrate [as N]	1.8	mg/L	J	1.1	2.2	J	sp	Detect < PQL
440-193062-1	SWFTS-MW01-EM02	09/26/17	EPA 300.0	Total	Nitrate [as N]	1.4	mg/L	J	1.1	2.2	J	sp	Detect < PQL
440-193062-1	SWFTS-MW10A-EM02	09/27/17	EPA 300.0	Total	Nitrate [as N]	0.66	mg/L	J	0.55	1.1	J	sp	Detect < PQL
440-193062-1	SWFTS-PC-92-EM02	09/27/17	EPA 300.0	Total	Nitrate [as N]	11	mg/L	U	11	22	R	brr	Better result reported
440-193167-1	SWFTS-PC-88-EM02	09/28/17	EPA 300.0	Total	Nitrate [as N]	11	mg/L	U	11	22	R	brr	Better result reported
440-193167-1	SWFTS-PC-88-EM02	09/28/17	EPA 314.0	Total	Perchlorate	14000	ug/L	F1	480	2000	J+	m	MS Recovery
440-193472-1	SWFTS-MW05A-EM03	10/03/17	SM5310B	Total	Total Organic Carbon	0.8	mg/L	J	0.65	1	J	sp	Detect < PQL
440-193622-1	SWFTS-MW13-EM03	10/03/17	EPA 300.0	Total	Nitrate [as N]	17	mg/L	H	0.55	1.1	J-	h	Holding Time
440-193622-1	SWFTS-MW12-EM03	10/03/17	EPA 300.0	Total	Nitrate [as N]	14	mg/L	H	0.55	1.1	J-	h	Holding Time
440-193622-1	SWFTS-MW14-EM03	10/03/17	EPA 300.0	Total	Nitrate [as N]	0.55	mg/L	UH	0.55	1.1	UJ	h	Holding Time
440-193622-1	SWFTS-MW06A-EM03	10/03/17	EPA 300.0	Total	Nitrate [as N]	2	mg/L	H	0.11	0.22	J-	h	Holding Time
440-193622-1	SWFTS-PC-88-EM03	10/04/17	EPA 300.0	Total	Nitrate [as N]	11	mg/L	U	11	22	R	brr	Better result reported
440-193622-1	SWFTS-MW12-EM03	10/03/17	SM5310B	Total	Total Organic Carbon	0.78	mg/L	J	0.65	1	J	sp	Detect < PQL
440-193625-1	SWFTS-PC-92-EM03	10/04/17	EPA 300.0	Total	Nitrate [as N]	11	mg/L	U	11	22	R	brr	Better result reported
440-193712-1	SWFTS-PC-94-EM03	10/05/17	EPA 300.0	Total	Nitrate [as N]	1.3	mg/L	J	1.1	2.2	J	sp	Detect < PQL
440-193712-1	SWFTS-MW03-20171005-EB	10/05/17	EPA 314.0	Total	Perchlorate	1.1	ug/L	J	0.95	4	J	sp	Detect < PQL
440-193989-1	SWFTS-EM04-20171010-EB	10/10/17	RSK175	Total	Methane	0.00028	mg/L	J	0.00025	0.00099	J	sp	Detect < PQL
440-193989-1	SWFTS-MW13-EM04	10/10/17	SM5310B	Total	Total Organic Carbon	0.98	mg/L	J	0.65	1	J	sp	Detect < PQL
440-193989-1	SWFTS-EM04-20171010-EB	10/10/17	SW-6010B	Dissolved	Aluminum	0.056	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-193989-1	SWFTS-MW17-EM04	10/10/17	SW-6010B	Dissolved	Copper	0.0051	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-193989-1	SWFTS-EM04-20171010-FB	10/10/17	SW-6010B	Dissolved	Magnesium	0.014	mg/L	J	0.01	0.02	J	sp	Detect < PQL
440-193989-1	SWFTS-EM04-20171010-FB	10/10/17	SW-6010B	Dissolved	Sodium	0.3	mg/L	J	0.26	0.5	J	sp	Detect < PQL
440-193989-1	SWFTS-MW05A-EM04	10/10/17	SW-6010B	Dissolved	Zinc	0.017	mg/L	J	0.012	0.02	J	sp	Detect < PQL
440-193989-1	SWFTS-MW05B-EM04	10/10/17	SW-6020A	Dissolved	Selenium	2.5	ug/L	UF1F2	2.5	10	UJ	m	MS Recovery
440-193989-1	SWFTS-EM04-20171010-EB	10/10/17	SW-7199	Total	Chromium [VI]	0.27	ug/L	J	0.25	2	J	sp	Detect < PQL
440-193989-1	SWFTS-MW17-EM04	10/10/17	VFA-IC	Total	Pyruvic Acid	3.7	mg/L	UF1	3.7	15	UJ	m	MS Recovery
440-194090-1	SWFTS-PC-94-EM04	10/11/17	EPA 300.0	Total	Nitrate [as N]	0.78	mg/L	J	0.55	1.1	J	sp	Detect < PQL
440-194090-1	SWFTS-MW23-EM04	10/11/17	EPA 365.3	Total	Phosphorus, Total	0.036	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-194090-1	SWFTS-MW12-EM04	10/11/17	SM5310B	Total	Total Organic Carbon	0.93	mg/L	J	0.65	1	J	sp	Detect < PQL
440-194090-1	SWFTS-PC-94-EM04	10/11/17	SW-6010B	Dissolved	Aluminum	0.38	mg/L	J	0.05	0.1	J+	be	EB
440-194090-1	SWFTS-MW6B-EM04	10/11/17	SW-6010B	Dissolved	Cobalt	0.0056	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-194090-1	SWFTS-PC-88-EM04-FD	10/11/17	SW-6010B	Dissolved	Copper	0.0072	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-194090-1	SWFTS-MW23-EM04	10/11/17	SW-6010B	Dissolved	Copper	0.0055	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-194090-1	SWFTS-PC-88-EM04	10/11/17	SW-6010B	Dissolved	Nickel	0.0079	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-194090-1	SWFTS-PC-88-EM04-FD	10/11/17	SW-6010B	Dissolved	Nickel	0.0085	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-194090-1	SWFTS-PC-94-EM04	10/11/17	SW-6010B	Dissolved	Nickel	0.0097	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-194090-1	SWFTS-MW21-EM04	10/11/17	SW-6010B	Dissolved	Nickel	0.0078	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-194090-1	SWFTS-MW6A-EM04	10/11/17	SW-6020A	Dissolved	Selenium	1.4	ug/L	J	0.5	2	J	sp	Detect < PQL
440-194090-1	SWFTS-MW6B-EM04	10/11/17	SW-6020A	Dissolved	Selenium	1.3	ug/L	J	0.5	2	J	sp	Detect < PQL
440-194090-1	SWFTS-MW21-EM04	10/11/17	SW-7199	Total	Chromium [VI]	1.9	ug/L	J	0.25	2	J	be,sp	EB, Detect < PQL

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
440-196786-1	PC-94-EM06	11/16/17	SW-6010B	Dissolved	Phosphorus, Total	0.13	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-196786-1	PC-94-EM06	11/16/17	SW-6010B	Dissolved	Vanadium	0.0077	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-196786-1	SWFTS-MW16-EM06	11/16/17	SW-6010B	Dissolved	Vanadium	0.0091	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-198276-1	SWFTS-IW03-EM07	12/11/17	SM5310B	Total	Total Organic Carbon	340	mg/L		33	50	J-	h,pH	Holding Time, Preservation
440-198276-1	SWFTS-IW15-EM07	12/11/17	SM5310B	Total	Total Organic Carbon	1300	mg/L		65	100	J-	h,pH	Holding Time, Preservation
440-198276-1	SWFTS-IW15-EM07-FD	12/11/17	SM5310B	Total	Total Organic Carbon	1300	mg/L		65	100	J-	h,pH	Holding Time, Preservation
440-198276-1	SWFTS-IW16A-EM07	12/11/17	SM5310B	Total	Total Organic Carbon	2800	mg/L		65	100	J-	h,pH	Holding Time, Preservation
440-198276-1	SWFTS-IW16B-EM07	12/11/17	SM5310B	Total	Total Organic Carbon	940	mg/L		65	100	J-	h,pH	Holding Time, Preservation
440-198276-1	SWFTS-IW19-EM07	12/11/17	SM5310B	Total	Total Organic Carbon	4100	mg/L		130	200	J-	h,pH	Holding Time, Preservation
440-198276-1	SWFTS-IW04-EM07	12/11/17	SM5310B	Total	Total Organic Carbon	4600	mg/L		130	200	J-	h,pH	Holding Time, Preservation
440-198276-1	SWFTS-IW05-EM07	12/11/17	SM5310B	Total	Total Organic Carbon	3700	mg/L		65	100	J-	h,pH	Holding Time, Preservation
440-198276-1	SWFTS-IW07-EM07	12/11/17	SM5310B	Total	Total Organic Carbon	5600	mg/L		130	200	J-	h,pH	Holding Time, Preservation
440-198276-1	SWFTS-IW08-EM07	12/11/17	SM5310B	Total	Total Organic Carbon	6700	mg/L		130	200	J-	h,pH	Holding Time, Preservation
440-198276-1	SWFTS-IW09-EM07	12/11/17	SM5310B	Total	Total Organic Carbon	290	mg/L		130	200	J-	h,pH	Holding Time, Preservation
440-198276-1	SWFTS-IW11-EM07	12/11/17	SM5310B	Total	Total Organic Carbon	1000	mg/L		130	200	J-	h,pH	Holding Time, Preservation
440-198276-1	SWFTS-IW10-EM07	12/11/17	SM5310B	Total	Total Organic Carbon	290	mg/L		65	100	J-	h,pH	Holding Time, Preservation
440-198276-1	SWFTS-IW12-EM07	12/11/17	SM5310B	Total	Total Organic Carbon	2700	mg/L		130	200	J-	h,pH	Holding Time, Preservation
440-198371-1	SWFTS-MW10A-EM07-FD	12/12/17	EPA 300.0	Total	Nitrate [as N]	11	mg/L	U	11	22	R	brr	Better result reported
440-198371-1	SWFTS-MW25-EM07	12/12/17	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.12	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-198371-1	SWFTS-MW25-EM07	12/12/17	SW-6010B	Dissolved	Cobalt	0.0066	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-198371-1	SWFTS-MW25-EM07	12/12/17	SW-6010B	Dissolved	Copper	0.0082	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-198371-1	SWFTS-MW25-EM07	12/12/17	SW-6020A	Dissolved	Thallium	0.5	ug/L	J	0.5	1	J	sp	Detect < PQL
440-198508-1	SWFTS-MW21-EM07	12/13/17	EPA 300.0	Total	Nitrate [as N]	22	mg/L		22	11	R	brr	Better result reported
440-198508-1	SWFTS-MW05B-EM07	12/13/17	EPA 300.0	Total	Nitrate [as N]	0.36	mg/L	J	0.28	0.55	J	sp	Detect < PQL
440-198508-1	SWFTS-MW21-EM07	12/13/17	EPA 300.0	Total	Nitrite [as N]	14	mg/L	U	14	30	R	brr	Better result reported
440-198508-1	SWFTS-MW12-EM07	12/13/17	EPA 300.0	Total	Sulfate	2500	mg/L	F1	50	100	J-	m	MS Recovery
440-198508-1	SWFTS-EM07-20171213-EB	12/13/17	EPA 300.0	Total	Sulfate	0.27	mg/L	J	0.25	0.5	J	sp	Detect < PQL
440-198508-1	SWFTS-MW21-EM07	12/13/17	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.1	mg/L	UF1	0.1	0.2	UJ	m	MS Recovery
440-198508-1	PC-91-EM07	12/13/17	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.1	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-198508-1	SWFTS-MW15-EM07	12/13/17	SW-6010B	Dissolved	Aluminum	0.098	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-198508-1	PC-91-EM07	12/13/17	SW-6010B	Dissolved	Cobalt	0.005	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-198508-1	SWFTS-MW21-EM07	12/13/17	SW-6010B	Dissolved	Copper	0.014	mg/L	J	0.01	0.02	J	sp	Detect < PQL
440-198508-1	SWFTS-MW15-EM07	12/13/17	SW-6010B	Dissolved	Copper	0.0082	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-198508-1	SWFTS-MW18-EM07	12/13/17	SW-6010B	Dissolved	Copper	0.009	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-198508-1	PC-91-EM07	12/13/17	SW-6010B	Dissolved	Copper	0.0071	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-198508-1	SWFTS-MW21-EM07	12/13/17	SW-6020A	Dissolved	Antimony	0.5	ug/L	J	0.5	2	J	sp	Detect < PQL
440-198508-1	SWFTS-MW21-EM07	12/13/17	SW-6020A	Dissolved	Selenium	37	ug/L	F1	0.5	2	J+	m	MS Recovery
440-198508-1	SWFTS-MW21-EM07	12/13/17	VFA-IC	Total	Pyruvic Acid	3.7	mg/L	UF1	3.7	15	UJ	m	MS Recovery
440-198571-1	PC-92-EM07	12/14/17	SW-6010B	Dissolved	Copper	0.0085	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-198571-1	PC-92-EM07-FD	12/14/17	SW-6010B	Dissolved	Copper	0.0078	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-203841-1	SWFTS-MW14-EM08	02/20/18	EPA 300.1B	Total	Chlorite	200	ug/L	UF1	200	400	R	m	MS Recovery
440-203841-1	SWFTS-MW14-EM08	02/20/18	RSK175	Total	Methane	0.76	mg/L		0.00025	0.00099	J-	h	Holding Time
440-203841-1	SWFTS-MW14-EM08	02/20/18	SW-6010B	Dissolved	Beryllium	0.002	mg/L	J	0.002	0.004	J	sp	Detect < PQL
440-203841-1	SWFTS-MW14-EM08	02/20/18	SW-6020A	Dissolved	Antimony	0.65	ug/L	J	0.5	2	J	sp	Detect < PQL
440-203841-1	SWFTS-MW10A-EM08	02/20/18	SW-6020A	Dissolved	Antimony	1	ug/L	J	0.5	2	J	sp	Detect < PQL
440-203841-1	SWFTS-MW14-EM08	02/20/18	SW-6020A	Dissolved	Selenium	7.3	ug/L	F1	0.5	2	J-	m	MS Recovery
440-203841-1	SWFTS-MW10A-EM08-FD	02/20/18	SW-6020A	Dissolved	Selenium	1.9	ug/L	J	0.5	2	J	sp	Detect < PQL
440-203841-1	SWFTS-MW14-EM08	02/20/18	VFA-IC	Total	Formic-acid	6.9	mg/L	J	5.2	20	J	sp	Detect < PQL
440-203841-1	SWFTS-MW10A-EM08	02/20/18	VFA-IC	Total	Lactic acid	5.8	mg/L	J	3.1	10	J	sp	Detect < PQL
440-203841-1	SWFTS-MW10A-EM08-FD	02/20/18	VFA-IC	Total	Lactic acid	5.3	mg/L	J	3.1	10	J	sp	Detect < PQL
440-203841-1	SWFTS-MW14-EM08	02/20/18	VFA-IC	Total	Propionic acid	100	mg/L	F1	7	20	J+	m	MS Recovery
440-203841-2	SWFTS-MW10A-EM08	02/20/18	Calculated	Total	Total Nitrogen	0.15	mg/L		0.11	0.11	J	fd	FD
440-203841-2	SWFTS-MW10A-EM08-FD	02/20/18	Calculated	Total	Total Nitrogen	1.5	mg/L		0.11	0.11	J	fd	FD
440-203841-2	PC-91-EM08	02/20/18	EPA 300.0	Total	Nitrate [as N]	0.88	mg/L	J	0.55	1.1	J	sp	Detect < PQL

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
440-203841-2	SWFTS-MW14-EM08	02/20/18	EPA 300.0	Total	Nitrate [as N]	28	mg/L	U	28	55	R	brr	Better result reported
440-203841-2	SWFTS-MW10A-EM08-FD	02/20/18	EPA 300.0	Total	Nitrate [as N]	1.3	mg/L	J	1.1	2.2	J	sp	Detect < PQL
440-203841-2	SWFTS-MW14-EM08	02/20/18	EPA 300.0	Total	Nitrite [as N]	35	mg/L	U	35	75	R	brr	Better result reported
440-203841-2	SWFTS-MW10A-EM08	02/20/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.15	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-203937-1	SWFTS-MW22-EM08	02/21/18	EPA 300.0	Total	Nitrate [as N]	0.89	mg/L	J	0.55	1.1	J	sp	Detect < PQL
440-203937-1	SWFTS-MW24-EM08	02/21/18	EPA 300.0	Total	Nitrate [as N]	28	mg/L	U	28	55	R	brr	Better result reported
440-203937-1	SWFTS-MW11-EM08	02/21/18	EPA 300.0	Total	Sulfate	2500	mg/L	E	5	10	R	brr	Better result reported
440-203937-1	SWFTS-MW23-EM08	02/21/18	EPA 300.1B	Total	Chlorate	300	ug/L	H	50	100	J-	h	Holding Time
440-203937-1	SWFTS-MW03-EM08	02/21/18	SW-6010B	Dissolved	Aluminum	0.43	mg/L		0.05	0.1	J+	be	EB
440-203937-1	SWFTS-MW16-EM08	02/21/18	SW-6010B	Dissolved	Aluminum	0.48	mg/L		0.05	0.1	J+	be	EB
440-203937-1	SWFTS-20180221-EM08-EB	02/21/18	SW-6010B	Dissolved	Calcium	0.94	mg/L	B	0.05	0.1	J+	bl	Lab Blank
440-203937-1	PC-94-EM08	02/21/18	SW-6010B	Dissolved	Cobalt	0.0073	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-203937-1	SWFTS-MW03-EM08	02/21/18	SW-6010B	Dissolved	Copper	0.0051	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-203937-1	SWFTS-20180221-EM08-EB	02/21/18	SW-6010B	Dissolved	Iron	0.088	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-203937-1	SWFTS-MW03-EM08	02/21/18	SW-6010B	Dissolved	Iron	0.34	mg/L		0.05	0.1	J+	be	EB
440-203937-1	SWFTS-MW16-EM08	02/21/18	SW-6010B	Dissolved	Phosphorus, Total	0.12	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-203937-1	SWFTS-MW03-EM08	02/21/18	SW-6010B	Dissolved	Silicon	36	mg/L		0.1	0.2	J+	be	EB
440-203937-1	SWFTS-MW16-EM08	02/21/18	SW-6010B	Dissolved	Silicon	40	mg/L		0.1	0.2	J+	be	EB
440-203937-1	SWFTS-20180221-EM08-EB	02/21/18	SW-6010B	Dissolved	Titanium	0.0041	mg/L	J	0.0025	0.005	J	sp	Detect < PQL
440-203937-1	SWFTS-MW03-EM08	02/21/18	SW-6010B	Dissolved	Titanium	0.014	mg/L		0.0025	0.005	J+	be	EB
440-203937-1	SWFTS-MW16-EM08	02/21/18	SW-6010B	Dissolved	Titanium	0.021	mg/L		0.0025	0.005	J+	be	EB
440-203937-1	SWFTS-MW03-EM08	02/21/18	SW-6020A	Dissolved	Thallium	1.6	ug/L	J	1	2	J	sp	Detect < PQL
440-203937-1	SWFTS-MW16-EM08	02/21/18	VFA-IC	Total	Lactic acid	7	mg/L	J	3.1	10	J	sp	Detect < PQL
440-203937-2	SWFTS-MW25-EM08	02/21/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.11	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-204033-1	C0H-2B1-EM08	02/22/18	EPA 300.0	Total	Nitrate [as N]	0.57	mg/L	J	0.55	1.1	J	sp	Detect < PQL
440-204033-1	SWFTS-MW06A-EM08	02/22/18	EPA 300.0	Total	Sulfate	1100	mg/L	E	1.3	2.5	R	brr	Better result reported
440-204033-1	SWFTS-MW18-EM08	02/22/18	EPA 300.0	Total	Sulfate	2000	mg/L	E	5	10	R	brr	Better result reported
440-204033-1	SWFTS-20180222-EM08-FB	02/22/18	SW-6010B	Dissolved	Calcium	0.054	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-204033-1	SWFTS-20180222-EM08-FB	02/22/18	SW-6010B	Dissolved	Sodium	0.32	mg/L	J	0.26	0.5	J	sp	Detect < PQL
440-207137-1	SWFTS-MW13-EM09	03/26/18	EPA 300.0	Total	Nitrate [as N]	16	mg/L	F1	0.28	0.55	J+	m	MS Recovery
440-207137-1	SWFTS-MW10A-EM09-FD	03/26/18	EPA 300.0	Total	Nitrate [as N]	0.36	mg/L	J	0.28	0.55	J	sp	Detect < PQL
440-207137-1	PC-91-EM09	03/26/18	EPA 300.0	Total	Sulfate	870	mg/L	E	1.3	2.5	R	brr	Better result reported
440-207137-1	SWFTS-MW13-EM09	03/26/18	EPA 300.0	Total	Sulfate	3900	mg/L	E	1.3	2.5	R	brr	Better result reported
440-207137-1	SWFTS-MW10A-EM09-FD	03/26/18	SM5310B	Total	Total Organic Carbon	2.8	mg/L		0.65	1	J-	h,pH	Holding Time, Preservation
440-207137-1	SWFTS-MW10A-EM09	03/26/18	SW-6010B	Dissolved	Aluminum	0.072	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-207137-1	SWFTS-MW14-EM09	03/26/18	SW-6010B	Dissolved	Barium	0.042	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-207137-1	SWFTS-MW14-EM09	03/26/18	SW-6010B	Dissolved	Boron	2.8	mg/L	F1B	0.13	0.25	J+	m	MS Recovery
440-207137-1	SWFTS-MW10A-EM09	03/26/18	SW-6010B	Dissolved	Nickel	0.011	mg/L		0.005	0.01	J	fd	FD
440-207137-1	SWFTS-MW10A-EM09-FD	03/26/18	SW-6010B	Dissolved	Nickel	0.027	mg/L		0.005	0.01	J	fd	FD
440-207137-1	SWFTS-MW14-EM09	03/26/18	SW-6010B	Dissolved	Nickel	0.026	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-207137-1	SWFTS-MW14-EM09	03/26/18	SW-6010B	Dissolved	Potassium	35	mg/L	F1	1.3	2.5	J+	m	MS Recovery
440-207137-1	SWFTS-MW10A-EM09-FD	03/26/18	SW-6020A	Dissolved	Antimony	0.5	ug/L	J	0.5	2	J	sp	Detect < PQL
440-207137-1	SWFTS-MW14-EM09	03/26/18	SW-6020A	Dissolved	Antimony	2.5	ug/L	UF1	2.5	10	UJ	m	MS Recovery
440-207137-1	SWFTS-MW14-EM09	03/26/18	SW-6020A	Dissolved	Selenium	190	ug/L	F1	2.5	10	J-	m	MS Recovery
440-207137-1	SWFTS-MW10A-EM09	03/26/18	VFA-IC	Total	Formic-acid	1.3	mg/L	U^	1.3	5	UJ	c	Calibration
440-207137-1	SWFTS-MW10A-EM09	03/26/18	VFA-IC	Total	Lactic acid	1.6	mg/L	U^	1.6	5	UJ	c	Calibration
440-207137-2	SWFTS-MW10A-EM09	03/26/18	EPA 300.0	Total	Nitrate [as N]	0.37	mg/L	J	0.28	0.55	J	sp	Detect < PQL
440-207137-2	SWFTS-MW14-EM09	03/26/18	EPA 300.0	Total	Nitrate [as N]	11	mg/L	U	11	22	R	brr	Better result reported
440-207137-2	SWFTS-MW14-EM09	03/26/18	EPA 300.0	Total	Nitrite [as N]	14	mg/L	U	14	30	R	brr	Better result reported
440-207137-2	SWFTS-MW14-EM09	03/26/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	2.5	mg/L	U	2.5	5	R	brr	Better result reported
440-207268-1	SWFTS-MW02-EM09	03/27/18	EPA 300.0	Total	Sulfate	1800	mg/L	E	1.3	2.5	R	brr	Better result reported
440-207268-1	SWFTS-MW16-EM09	03/27/18	SW-6010B	Dissolved	Aluminum	0.26	mg/L		0.05	0.1	J+	be	EB
440-207268-1	SWFTS-MW03-EM09	03/27/18	SW-6010B	Dissolved	Aluminum	0.1	mg/L	Dissolved	0.05	0.1	J+	be	EB
440-207268-1	SWFTS-20180327-EM09-EB	03/27/18	SW-6010B	Dissolved	Aluminum	0.051	mg/L	J	0.05	0.1	J	sp	Detect < PQL

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
440-207268-1	SWFTS-20180327-EM09-EB	03/27/18	SW-6010B	Dissolved	Calcium	0.13	mg/L	B	0.05	0.1	J+	bl	Lab Blank
440-207268-1	PC-94-EM09	03/27/18	SW-6010B	Dissolved	Cobalt	0.0097	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-207268-1	PC-94-EM09	03/27/18	SW-6010B	Dissolved	Copper	0.0065	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-207268-1	SWFTS-MW03-EM09	03/27/18	SW-6010B	Dissolved	Iron	0.058	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-207268-1	SWFTS-20180327-EM09-EB	03/27/18	SW-6010B	Dissolved	Magnesium	0.014	mg/L	J	0.01	0.02	J	sp	Detect < PQL
440-207268-1	PC-94-EM09	03/27/18	SW-6010B	Dissolved	Nickel	0.0085	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-207268-1	SWFTS-MW03-EM09	03/27/18	SW-6020A	Dissolved	Antimony	0.58	ug/L	J	0.5	2	J	sp	Detect < PQL
440-207268-2	PC-94-EM09	03/27/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.14	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-207497-1	SWFTS-MW24-EM09	03/28/18	EPA 300.0	Total	Sulfate	1600	mg/L	F2F1	130	250	J	ld,m	Lab RPD, MS Recovery
440-207497-1	SWFTS-20180328-EM09-FB	03/28/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.14	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-207497-1	SWFTS-MW25-EM09	03/28/18	SW-6010B	Dissolved	Aluminum	0.089	mg/L	J	0.05	0.1	J	bf,sp	FB, Detect < PQL
440-207497-1	SWFTS-20180328-EM09-FB	03/28/18	SW-6010B	Dissolved	Aluminum	0.059	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-207497-1	SWFTS-20180328-EM09-FB	03/28/18	SW-6010B	Dissolved	Calcium	0.12	mg/L	B	0.05	0.1	J+	bl	Lab Blank
440-207497-1	SWFTS-20180328-EM09-FB	03/28/18	SW-6010B	Dissolved	Magnesium	0.016	mg/L	JB	0.01	0.02	J	bl,sp	Lab Blank, Detect < PQL
440-207497-1	SWFTS-MW25-EM09	03/28/18	SW-6020A	Dissolved	Selenium	2.6	ug/L	J	0.5	2	J+	bf	FB
440-207497-2	SWFTS-MW24-EM09	03/28/18	EPA 300.0	Total	Nitrate [as N]	28	mg/L	U	28	55	R	brr	Better result reported
440-207586-1	SWFTS-MW08A-EM09	03/29/18	EPA 300.0	Total	Sulfate	2000	mg/L	E	2.5	5	R	brr	Better result reported
440-210173-1	SWFTS-MW02-EM10	04/30/18	EPA 300.0	Total	Nitrate [as N]	0.95	mg/L	J	0.55	1.1	J	sp	Detect < PQL
440-210173-1	SWFTS-MW05A-EM10	04/30/18	EPA 314.0	Total	Perchlorate	6400	ug/L	J	480	2000	J	o	Other
440-210173-2	SWFTS-MW01-EM10	04/30/18	EPA 300.0	Total	Sulfate	1900	mg/L	E	2.5	5	R	brr	Better result reported
440-210173-2	SWFTS-MW14-EM10	04/30/18	EPA 300.1B	Total	Chlorate	26	ug/L	J	25	100	J	sp	Detect < PQL
440-210173-2	SWFTS-MW14-EM10	04/30/18	SW-6010B	Dissolved	Potassium	37	mg/L	F1	1.3	2.5	J+	m	MS Recovery
440-210284-1	PC-97-EM10	05/01/18	EPA 300.0	Total	Nitrate [as N]	0.088	mg/L	J	0.055	0.11	J	sp	Detect < PQL
440-210284-1	SWFTS-MW10A-EM10	05/01/18	EPA 300.0	Total	Sulfate	1700	mg/L	E	2.5	5	R	brr	Better result reported
440-210284-1	SWFTS-MW06A-EM10-FD	05/01/18	EPA 300.1B	Total	Chlorate	13	ug/L	J	5	20	J	sp	Detect < PQL
440-210284-1	SWFTS-MW06A-EM10	05/01/18	EPA 300.1B	Total	Chlorate	10	ug/L	J	5	20	J	sp	Detect < PQL
440-210284-1	SWFTS-MW06A-EM10	05/01/18	EPA 314.0	Total	Perchlorate	760	ug/L	J	48	200	J	o	Other
440-210284-1	PC-94-EM10	05/01/18	SW-6010B	Dissolved	Aluminum	0.052	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-210284-1	PC-94-EM10	05/01/18	SW-6010B	Dissolved	Boron	2.6	mg/L	F1	0.025	0.05	J+	m	MS Recovery
440-210284-1	SWFTS-EM10-20180501-FB	05/01/18	SW-6010B	Dissolved	Calcium	0.095	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-210284-1	PC-94-EM10	05/01/18	SW-6010B	Dissolved	Cobalt	0.0066	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-210284-1	SWFTS-EM10-20180501-FB	05/01/18	SW-6010B	Dissolved	Magnesium	0.014	mg/L	J	0.01	0.02	J	sp	Detect < PQL
440-210284-1	PC-94-EM10	05/01/18	SW-6010B	Dissolved	Nickel	0.0076	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-210284-1	SWFTS-EM10-20180501-EB	05/01/18	SW-6010B	Dissolved	Sodium	0.35	mg/L	JB	0.26	0.5	J	bl,sp	Lab Blank, Detect < PQL
440-210284-1	PC-94-EM10	05/01/18	SW-6010B	Dissolved	Titanium	0.0031	mg/L	J	0.0025	0.005	J	sp	Detect < PQL
440-210284-1	SWFTS-MW10A-EM10	05/01/18	SW-6010B	Dissolved	Vanadium	0.005	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-210284-1	SWFTS-MW10A-EM10	05/01/18	SW-6020A	Dissolved	Selenium	10	ug/L	J	5	20	J	sp	Detect < PQL
440-210284-1	SWFTS-EM10-20180501-FB	05/01/18	SW-6020A	Dissolved	Selenium	0.5	ug/L	J	0.5	2	J	sp	Detect < PQL
440-210284-1	SWFTS-MW10A-EM10	05/01/18	VFA-IC	Total	Acetic acid	2.9	mg/L	U	2.9	10	UJ	st	Temperature
440-210284-1	SWFTS-MW10A-EM10	05/01/18	VFA-IC	Total	Formic-acid	2.6	mg/L	U	2.6	10	UJ	st	Temperature
440-210284-1	SWFTS-MW10A-EM10	05/01/18	VFA-IC	Total	Lactic acid	3.1	mg/L	U	3.1	10	UJ	st	Temperature
440-210284-1	SWFTS-MW10A-EM10	05/01/18	VFA-IC	Total	n-Butyric Acid	2.6	mg/L	U	2.6	10	UJ	st	Temperature
440-210284-1	SWFTS-MW10A-EM10	05/01/18	VFA-IC	Total	Propionic acid	3.5	mg/L	U	3.5	10	UJ	st	Temperature
440-210284-1	SWFTS-MW10A-EM10	05/01/18	VFA-IC	Total	Pyruvic Acid	3.7	mg/L	U	3.7	15	UJ	st	Temperature
440-210284-2	SWFTS-MW10A-EM10	05/01/18	EPA 300.0	Total	Nitrate [as N]	0.96	mg/L	J	0.55	1.1	J	sp	Detect < PQL
440-210284-2	PC-94-EM10	05/01/18	EPA 300.0	Total	Nitrate [as N]	28	mg/L	U	28	55	R	brr	Better result reported
440-210284-2	PC-94-EM10	05/01/18	EPA 300.0	Total	Nitrite [as N]	35	mg/L	U	35	75	R	brr	Better result reported
440-210284-2	PC-94-EM10	05/01/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.1	mg/L	UF1	0.1	0.2	UJ	m	MS Recovery
440-210367-1	SWFTS-MW11-EM10-FD	05/01/18	EPA 300.0	Total	Sulfate	2300	mg/L	E	5	10	R	brr	Better result reported
440-210430-1	PC58-EM10	05/02/18	EPA 300.0	Total	Sulfate	1700	mg/L	E	2.5	5	R	brr	Better result reported
440-210430-1	SWFTS-MW16-EM10	05/02/18	EPA 300.0	Total	Sulfate	1600	mg/L	E	0.25	0.5	R	brr	Better result reported
440-210430-1	SWFTS-MW03-EM10	05/02/18	EPA 365.3	Total	Phosphorus, Total	0.031	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-210430-1	SWFTS-MW03-EM10	05/02/18	SW-6010B	Dissolved	Aluminum	0.13	mg/L	B	0.05	0.1	J+	bl	Lab Blank
440-210430-1	SWFTS-MW03-EM10	05/02/18	SW-6010B	Dissolved	Titanium	0.0046	mg/L	J	0.0025	0.005	J	sp	Detect < PQL

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
440-210430-1	SWFTS-MW16-EM10	05/02/18	SW-6020A	Dissolved	Antimony	0.8	ug/L	J	0.5	2	J	sp	Detect < PQL
440-210430-1	SWFTS-MW16-EM10	05/02/18	SW-6020A	Dissolved	Thallium	0.5	ug/L	UF1	0.5	1	UJ	m	MS Recovery
440-210430-1	SWFTS-MW03-EM10	05/02/18	SW-6020A	Dissolved	Thallium	0.91	ug/L	J	0.5	1	J	sp	Detect < PQL
440-210430-1	SWFTS-MW16-EM10	05/02/18	VFA-IC	Total	Pyruvic Acid	3.7	mg/L	UF1	3.7	15	UJ	m	MS Recovery
440-210430-2	SWFTS-MW16-EM10	05/02/18	EPA 314.0	Total	Perchlorate	1500	ug/L	J	950	4000	J	sp	Detect < PQL
440-210534-1	SWFTS-MW17-EM10	05/03/18	EPA 300.0	Total	Sulfate	2100	mg/L	E	13	25	R	brr	Better result reported
440-210534-1	SWFTS-MW17-EM10	05/03/18	EPA 314.0	Total	Perchlorate	1900	ug/L	F1	95	400	J-	m	MS Recovery
440-210534-1	SWFTS-MW25-EM10	05/03/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.12	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-210534-1	SWFTS-MW12-EM10	05/03/18	SM5310B	Total	Total Organic Carbon	0.89	mg/L	J	0.65	1	J	sp	Detect < PQL
440-210534-1	SWFTS-MW25-EM10	05/03/18	SW-6010B	Dissolved	Aluminum	0.077	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-210534-1	SWFTS-MW25-EM10	05/03/18	SW-6010B	Dissolved	Cobalt	0.0051	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-210534-1	SWFTS-MW25-EM10	05/03/18	SW-6010B	Dissolved	Iron	0.057	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-210534-1	SWFTS-MW25-EM10	05/03/18	SW-6010B	Dissolved	Titanium	0.0037	mg/L	J	0.0025	0.005	J	sp	Detect < PQL
440-210534-1	SWFTS-MW25-EM10	05/03/18	SW-6020A	Dissolved	Selenium	12	ug/L	J	5	20	J	sp	Detect < PQL
440-215437-1	SWFTS-MW03-EM11	07/10/18	EPA 300.0	Total	Sulfate	2500	mg/L	E	2.5	5	R	brr	Better result reported
440-215437-1	SWFTS-MW23-EM11	07/10/18	EPA 300.0	Total	Sulfate	1000	mg/L	E	0.25	0.5	R	brr	Better result reported
440-215437-1	SWFTS-MW23-EM11	07/10/18	EPA 300.1B	Total	Chlorate	18	ug/L	J	5	20	J	sp	Detect < PQL
440-215437-1	SWFTS-MW03-EM11	07/10/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.13	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-215437-1	SWFTS-MW19-EM11	07/10/18	EPA 365.3	Total	Phosphorus, Total	0.035	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-215437-1	SWFTS-MW19-EM11-FD	07/10/18	EPA 365.3	Total	Phosphorus, Total	0.028	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-215437-1	SWFTS-MW01-EM11	07/10/18	EPA 365.3	Total	Phosphorus, Total	0.046	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-215437-1	SWFTS-MW03-EM11	07/10/18	EPA 365.3	Total	Phosphorus, Total	0.038	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-215437-1	SWFTS-MW23-EM11	07/10/18	SW-6010B	Dissolved	Aluminum	0.058	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-215437-1	SWFTS-MW03-EM11	07/10/18	SW-6010B	Dissolved	Boron	2.9	mg/L	F1	0.025	0.05	J+	m	MS Recovery
440-215437-1	SWFTS-MW19-EM11-FD	07/10/18	SW-6010B	Dissolved	Cobalt	0.0052	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215437-1	PC-97-EM11	07/10/18	SW-6010B	Dissolved	Cobalt	0.006	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215437-1	SWFTS-MW01-EM11	07/10/18	SW-6010B	Dissolved	Iron	0.055	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-215437-1	SWFTS-MW14-EM11	07/10/18	SW-6010B	Dissolved	Iron	0.062	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-215437-1	PC-94-EM11	07/10/18	SW-6010B	Dissolved	Nickel	0.0087	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215437-1	SWFTS-MW01-EM11	07/10/18	SW-6010B	Dissolved	Nickel	0.0096	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215437-1	SWFTS-MW03-EM11	07/10/18	SW-6010B	Dissolved	Vanadium	0.0089	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215437-1	SWFTS-MW03-EM11	07/10/18	SW-6020A	Dissolved	Antimony	6.1	ug/L	J	5	20	J	sp	Detect < PQL
440-215437-1	PC-94-EM11	07/10/18	SW-6020A	Dissolved	Selenium	19	ug/L	J	5	20	J	sp	Detect < PQL
440-215437-1	SWFTS-MW19-EM11	07/10/18	SW-6020A	Dissolved	Selenium	6	ug/L	J	5	20	J	sp	Detect < PQL
440-215437-1	SWFTS-MW19-EM11-FD	07/10/18	SW-6020A	Dissolved	Selenium	5.9	ug/L	J	5	20	J	sp	Detect < PQL
440-215437-1	SWFTS-MW25-EM11	07/10/18	SW-6020A	Dissolved	Selenium	6.6	ug/L	J	5	20	J	sp	Detect < PQL
440-215437-1	SWFTS-MW04-EM11	07/10/18	SW-6020A	Dissolved	Selenium	6.5	ug/L	J	5	20	J	sp	Detect < PQL
440-215437-1	SWFTS-MW03-EM11	07/10/18	SW-6020A	Dissolved	Selenium	9.1	ug/L	JF1	5	20	J-	m	MS Recovery
440-215437-1	COH-2B1-EM11	07/10/18	SW-6020A	Dissolved	Selenium	10	ug/L	J	5	20	J	sp	Detect < PQL
440-215437-1	SWFTS-MW22-EM11	07/10/18	SW-6020A	Dissolved	Selenium	11	ug/L	J	5	20	J	sp	Detect < PQL
440-215585-1	SWFTS-MW06A-EM11	07/11/18	EPA 300.0	Total	Nitrate [as N]	0.11	mg/L	J	0.11	0.22	J	sp	Detect < PQL
440-215585-1	SWFTS-MW06B-EM11	07/11/18	EPA 300.0	Total	Nitrate [as N]	0.18	mg/L	J	0.11	0.22	J	sp	Detect < PQL
440-215585-1	SWFTS-MW10A-EM11	07/11/18	EPA 300.1B	Total	Chlorate	40	ug/L	J	25	100	J	sp	Detect < PQL
440-215585-1	SWFTS-MW10A-EM11	07/11/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.1	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-215585-1	SWFTS-MW06A-EM11-FD	07/11/18	EPA 365.3	Total	Phosphorus, Total	0.047	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-215585-1	PC-91-EM11	07/11/18	EPA 365.3	Total	Phosphorus, Total	0.049	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-215585-1	SWFTS-MW07B-EM11	07/11/18	EPA 365.3	Total	Phosphorus, Total	0.025	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-215585-1	SWFTS-20180711-FB	07/11/18	SW-6010B	Dissolved	Calcium	0.059	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-215585-1	SWFTS-MW07B-EM11	07/11/18	SW-6010B	Dissolved	Chromium	0.0043	mg/L	J	0.0025	0.005	J	sp	Detect < PQL
440-215585-1	SWFTS-MW06A-EM11-FD	07/11/18	SW-6010B	Dissolved	Cobalt	0.0051	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215585-1	SWFTS-MW06B-EM11	07/11/18	SW-6010B	Dissolved	Cobalt	0.0057	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215585-1	SWFTS-MW07B-EM11	07/11/18	SW-6010B	Dissolved	Iron	0.053	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-215585-1	SWFTS-MW05B-EM11	07/10/18	SW-6010B	Dissolved	Nickel	0.005	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215585-1	SWFTS-MW07B-EM11	07/11/18	SW-6010B	Dissolved	Nickel	0.0059	mg/L	J	0.005	0.01	J	sp	Detect < PQL

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
440-215585-1	SWFTS-MW10A-EM11	07/11/18	SW-6020A	Dissolved	Antimony	6.9	ug/L	J	5	20	J	sp	Detect < PQL
440-215585-1	PC-92-EM11	07/11/18	SW-6020A	Dissolved	Selenium	7.9	ug/L	J	5	20	J	sp	Detect < PQL
440-215585-1	SWFTS-MW10A-EM11	07/11/18	SW-6020A	Dissolved	Selenium	18	ug/L	J	5	20	J	sp	Detect < PQL
440-215585-1	SWFTS-MW10A-EM11	07/11/18	VFA-IC	Total	Pyruvic Acid	1.9	mg/L	UF1	1.9	7.5	UJ	m	MS Recovery
440-215585-2	SWFTS-MW05B-EM11	07/10/18	EPA 300.0	Total	Nitrate [as N]	0.66	mg/L	JH	0.55	1.1	J-	h	Holding Time
440-215585-2	SWFTS-MW05A-EM11	07/11/18	EPA 300.0	Total	Nitrate [as N]	28	mg/L	J	28	55	R	brr	Better result reported
440-215585-2	SWFTS-MW10A-EM11	07/11/18	EPA 300.0	Total	Nitrate [as N]	0.89	mg/L	J	0.55	1.1	J	sp	Detect < PQL
440-215585-2	SWFTS-MW10A-EM11	07/11/18	EPA 300.0	Total	Nitrate [as N]	28	mg/L	U	28	55	R	brr	Better result reported
440-215585-2	SWFTS-MW10A-EM11	07/11/18	EPA 300.0	Total	Nitrite [as N]	35	mg/L	U	35	75	R	brr	Better result reported
440-215585-2	SWFTS-MW10A-EM11	07/11/18	EPA 314.0	Total	Perchlorate	3000	ug/L	F1	95	400	J-	m	MS Recovery
440-215585-2	SWFTS-MW05A-EM11	07/11/18	SM5310B	Total	Total Organic Carbon	0.87	mg/L	J	0.65	1	J	sp	Detect < PQL
440-215717-1	SWFTS-MW11-EM11	07/12/18	EPA 300.0	Total	Sulfate	2400	mg/L	E	2.5	5	R	brr	Better result reported
440-215717-1	SWFTS-MW21-EM11	07/12/18	EPA 300.0	Total	Sulfate	3200	mg/L	E	5	10	R	brr	Better result reported
440-215717-1	SWFTS-MW09A-EM11	07/12/18	EPA 365.3	Total	Phosphorus, Total	0.025	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-215717-1	SWFTS-MW13-EM11	07/12/18	EPA 365.3	Total	Phosphorus, Total	0.027	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-215717-1	SWFTS-MW18-EM11	07/11/18	EPA 365.3	Total	Phosphorus, Total	0.045	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-215717-1	SWFTS-MW24-EM11	07/12/18	EPA 365.3	Total	Phosphorus, Total	0.043	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-215717-1	PC-58-EM11	07/11/18	EPA 365.3	Total	Phosphorus, Total	0.045	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-215717-1	SWFTS-MW13-EM11	07/12/18	SM5310B	Total	Total Organic Carbon	0.8	mg/L	J	0.65	1	J	sp	Detect < PQL
440-215717-1	SWFTS-MW12-EM11	07/12/18	SM5310B	Total	Total Organic Carbon	0.69	mg/L	J	0.65	1	J	sp	Detect < PQL
440-215717-1	SWFTS-MW09B-EM11	07/12/18	SW-6010B	Dissolved	Chromium	0.0029	mg/L	J	0.0025	0.005	J	sp	Detect < PQL
440-215717-1	SWFTS-MW09A-EM11	07/12/18	SW-6010B	Dissolved	Cobalt	0.0056	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215717-1	SWFTS-MW21-EM11	07/12/18	SW-6010B	Dissolved	Cobalt	0.0054	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215717-1	PC-88-EM11	07/12/18	SW-6010B	Dissolved	Nickel	0.0077	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215717-1	PC-88-EM11-FD	07/12/18	SW-6010B	Dissolved	Nickel	0.0069	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215717-1	SWFTS-MW02-EM11	07/11/18	SW-6010B	Dissolved	Nickel	0.0099	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215717-1	SWFTS-MW18-EM11	07/11/18	SW-6010B	Dissolved	Nickel	0.0053	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215717-1	SWFTS-MW21-EM11	07/12/18	SW-6010B	Dissolved	Nickel	0.0055	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215717-1	SWFTS-MW24-EM11	07/12/18	SW-6010B	Dissolved	Nickel	0.0088	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-215717-1	SWFTS-MW09A-EM11	07/12/18	SW-6020A	Dissolved	Selenium	8.2	ug/L	J	5	20	J	sp	Detect < PQL
440-215717-1	PC-88-EM11	07/12/18	SW-6020A	Dissolved	Selenium	11	ug/L	J	5	20	J	sp	Detect < PQL
440-215717-1	PC-88-EM11-FD	07/12/18	SW-6020A	Dissolved	Selenium	10	ug/L	J	5	20	J	sp	Detect < PQL
440-215717-1	SWFTS-MW02-EM11	07/11/18	SW-6020A	Dissolved	Selenium	7.4	ug/L	J	5	20	J	sp	Detect < PQL
440-215717-1	SWFTS-MW21-EM11	07/12/18	SW-6020A	Dissolved	Selenium	11	ug/L	J	5	20	J	sp	Detect < PQL
440-215717-1	SWFTS-MW24-EM11	07/12/18	SW-6020A	Dissolved	Selenium	18	ug/L	J	5	20	J	sp	Detect < PQL
440-215717-1	SWFTS-MW09B-EM11	07/12/18	SW-6020A	Dissolved	Selenium	15	ug/L	J	5	20	J	sp	Detect < PQL
440-215717-2	SWFTS-MW15-EM11	07/11/18	EPA 300.0	Total	Nitrate [as N]	12	mg/L	H	0.55	1.1	J-	h	Holding Time
440-215795-1	LVWPS-MW101A-EM11	07/12/18	SM5310B	Total	Total Organic Carbon	0.82	mg/L	J	0.65	1	J	sp	Detect < PQL
440-215795-1	LVWPS-MW107A-EM11	07/12/18	SM5310B	Total	Total Organic Carbon	0.9	mg/L	J	0.65	1	J	sp	Detect < PQL
440-216872-2	SWFTS-MW03-EM12	07/27/18	EPA 314.0	Total	Perchlorate	1900	ug/L	F1	95	400	J+	m	MS Recovery
440-218109-1	PC-91-EM-13	08/14/18	EPA 300.1B	Total	Chlorate	12	ug/L	J	2	20	J	sp	Detect < PQL
440-218109-1	SWFTS-20180814-FB	08/14/18	SW-6010B	Dissolved	Calcium	0.17	mg/L	B	0.05	0.1	J+	bl	Lab Blank
440-218109-1	SWFTS-MW14-EM13	08/14/18	SW-6010B	Dissolved	Iron	0.087	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-218109-1	SWFTS-MW10A-EM13	08/14/18	SW-6020A	Dissolved	Selenium	8	ug/L	J	5	20	J	sp	Detect < PQL
440-218109-1	SWFTS-MW14-EM13	08/14/18	SW-6020A	Dissolved	Selenium	180	ug/L	F1	5	20	J+	m	MS Recovery
440-218109-1	SWFTS-20180814-FB	08/14/18	VFA-IC	Total	Pyruvic Acid	0.37	mg/L	UF1	0.37	1.5	UJ	m	MS Recovery
440-218109-2	SWFTS-MW05A-EM13	08/14/18	EPA 300.0	Total	Nitrate [as N]	10	mg/L	F1	0.55	1.1	J+	m	MS Recovery
440-218109-2	SWFTS-MW14-EM13	08/14/18	EPA 314.0	Total	Perchlorate	8.2	ug/L	J	4.8	20	J	sp	Detect < PQL
440-218208-1	SWFTS-MW02-EM13	08/15/18	EPA 300.0	Total	Sulfate	1900	mg/L	E	2.5	5	R	brr	Better result reported
440-218208-1	SWFTS-MW03-EM13	08/15/18	EPA 300.1B	Total	Chlorate	280	ug/L	J	40	400	J	sp	Detect < PQL
440-218208-1	SWFTS-MW16-EM13	08/15/18	SW-6010B	Dissolved	Molybdenum	0.014	mg/L	J	0.01	0.02	J	sp	Detect < PQL
440-218208-1	SWFTS-MW03-EM13	08/15/18	SW-6010B	Dissolved	Vanadium	0.0074	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-218208-1	SWFTS-MW16-EM13	08/15/18	SW-6010B	Total	Manganese	2.4	mg/L	F1	0.015	0.02	J-	m	MS Recovery
440-218208-1	SWFTS-MW16-EM13	08/15/18	SW-6020A	Dissolved	Selenium	0.5	ug/L	UF1F2	0.5	2	UJ	m	MS Recovery

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
440-218208-1	SWFTS-MW25-EM13	08/15/18	SW-6020A	Dissolved	Thallium	0.51	ug/L	J	0.5	1	J	sp	Detect < PQL
440-218208-1	SWFTS-MW16-EM13	08/15/18	VFA-IC	Total	Pyruvic Acid	3.7	mg/L	UF1	3.7	15	UJ	m	MS Recovery
440-218208-2	SWFTS-MW16-EM13	08/15/18	EPA 300.0	Total	Nitrate [as N]	11	mg/L	U	11	22	R	brr	Better result reported
440-218208-2	SWFTS-MW02-EM13	08/15/18	EPA 300.0	Total	Nitrate [as N]	0.74	mg/L	J	0.55	1.1	J	sp	Detect < PQL
440-218208-2	SWFTS-MW16-EM13	08/15/18	EPA 300.0	Total	Nitrite [as N]	5	mg/L	U	5	30	R	brr	Better result reported
440-218296-1	SWFTS-MW04-EM13	08/16/18	EPA 300.0	Total	Nitrate [as N]	1.9	mg/L	J	0.28	0.55	J+	bf	FB
440-218296-1	COH-2B1-EM13	08/16/18	EPA 300.0	Total	Nitrate [as N]	0.53	mg/L	J	0.28	0.55	J	bf,sp	FB, Detect < PQL
440-218296-1	SWFTS-MW22-EM13	08/16/18	EPA 300.0	Total	Nitrate [as N]	0.95	mg/L	J	0.28	0.55	J+	bf	FB
440-218296-1	SWFTS-MW23-EM13	08/16/18	EPA 300.0	Total	Nitrate [as N]	0.055	mg/L	J	0.055	0.11	J	bf,sp	FB, Detect < PQL
440-218296-1	SWFTS-20180816-FB	08/16/18	EPA 300.0	Total	Nitrate [as N]	0.056	mg/L	J	0.055	0.11	J	sp	Detect < PQL
440-218296-1	PC-97-EM13	08/16/18	EPA 300.0	Total	Nitrate [as N]	0.38	mg/L	J	0.055	0.11	J+	bf	FB
440-218296-1	SWFTS-MW04-EM13	08/16/18	EPA 300.0	Total	Sulfate	900	mg/L	E	1.3	2.5	R	brr	Better result reported
440-218296-1	SWFTS-MW23-EM13	08/16/18	EPA 300.0	Total	Sulfate	1000	mg/L	E	0.25	0.5	R	brr	Better result reported
440-218296-1	SWFTS-MW17-EM13	08/16/18	EPA 300.0	Total	Sulfate	2800	mg/L	E	1.3	2.5	R	brr	Better result reported
440-218296-1	SWFTS-20180816-EB(2)	08/16/18	SW-6010B	Dissolved	Calcium	0.056	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-218296-1	SWFTS-20180816-FB	08/16/18	SW-6010B	Dissolved	Calcium	0.061	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-218296-1	SWFTS-20180816-EB	08/16/18	SW-6010B	Dissolved	Calcium	0.32	mg/L	B	0.05	0.1	J+	bl	Lab Blank
440-218296-1	SWFTS-20180816-EB	08/16/18	SW-6010B	Dissolved	Magnesium	0.013	mg/L	J	0.01	0.02	J	sp	Detect < PQL
440-218296-1	SWFTS-20180816-FB	08/16/18	SW-6010B	Dissolved	Sodium	0.28	mg/L	JB	0.26	0.5	J	bl,sp	Lab Blank, Detect < PQL
440-218296-1	SWFTS-20180816-EB	08/16/18	SW-6010B	Dissolved	Sodium	0.76	mg/L	B	0.26	0.5	J+	bl	Lab Blank
440-219797-1	SWFTS-MW01-EM14	09/10/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.1	mg/L	U	0.1	0.2	UJ	pH	Preservation
440-219797-1	SWFTS-MW02-EM14	09/10/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.1	mg/L	U	0.1	0.2	UJ	pH	Preservation
440-219797-1	SWFTS-MW10A-EM14	09/10/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.19	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-219797-1	SWFTS-20180910-EB	09/10/18	SW-6010B	Dissolved	Calcium	0.12	mg/L	B	0.05	0.1	J+	bl	Lab Blank
440-219797-1	SWFTS-20180910-FB	09/10/18	SW-6010B	Dissolved	Iron	0.093	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-219797-1	SWFTS-MW10A-EM14	09/10/18	SW-6010B	Dissolved	Silicon	37	mg/L	J	0.1	0.2	J+	bf	FB
440-219797-1	SWFTS-MW16-EM14	09/10/18	SW-6010B	Dissolved	Silicon	37	mg/L	J	0.1	0.2	J+	bf	FB
440-219797-1	SWFTS-20180910-EB	09/10/18	SW-6010B	Dissolved	Sodium	0.42	mg/L	J	0.26	0.5	J	sp	Detect < PQL
440-219797-1	SWFTS-20180910-FB	09/10/18	SW-6010B	Dissolved	Titanium	0.0047	mg/L	J	0.0025	0.005	J	sp	Detect < PQL
440-219797-1	SWFTS-MW10A-EM14	09/10/18	SW-6020A	Dissolved	Selenium	7.6	ug/L	J	5	20	J	sp	Detect < PQL
440-219797-1	SWFTS-MW16-EM14	09/10/18	VFA-IC	Total	Pyruvic Acid	3.7	mg/L	UF1	3.7	15	UJ	m	MS Recovery
440-219797-2	SWFTS-MW16-EM14	09/10/18	EPA 300.0	Total	Nitrate [as N]	0.42	mg/L	J	0.28	0.55	J	sp	Detect < PQL
440-219797-2	SWFTS-MW16-EM14	09/10/18	EPA 300.0	Total	Nitrate [as N]	11	mg/L	U	11	22	R	brr	Better result reported
440-219797-2	SWFTS-MW16-EM14	09/10/18	EPA 300.0	Total	Nitrite [as N]	5	mg/L	U	5	30	R	brr	Better result reported
440-219886-1	SWFTS-MW22-EM14	09/11/18	EPA 300.1B	Total	Chlorate	1600	ug/L	B	100	1000	J+	bl	Lab Blank
440-219886-1	PC-94-EM14	09/11/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.14	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-219886-1	SWFTS-MW03-EM14	09/11/18	EPA 365.3	Total	Phosphorus, Total	0.044	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-219886-1	SWFTS-MW03-EM14	09/11/18	SW-6010B	Dissolved	Aluminum	0.056	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-219886-1	SWFTS-MW14-EM14	09/11/18	SW-6010B	Dissolved	Aluminum	0.051	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-219886-1	PC-94-EM14	09/11/18	SW-6010B	Dissolved	Cobalt	0.0082	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-219886-1	SWFTS-MW14-EM14	09/11/18	SW-6010B	Dissolved	Nickel	0.006	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-219886-1	PC-94-EM14	09/11/18	SW-6010B	Dissolved	Nickel	0.0086	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-219886-1	SWFTS-MW03-EM14	09/11/18	SW-6010B	Dissolved	Vanadium	0.0056	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-219886-1	PC-94-EM14	09/11/18	SW-6010B	Total	Manganese	3.5	mg/L	F1	0.015	0.02	J	m,sd	MS Recovery, Serial Dilution
440-219886-1	PC-94-EM14	09/11/18	SW-6020A	Dissolved	Selenium	6	ug/L	J	5	20	J	sp	Detect < PQL
440-219886-2	SWFTS-MW20-EM14	09/11/18	EPA 300.0	Total	Nitrate [as N]	2.3	mg/L	J	0.55	1.1	J	fd	FD
440-219886-2	SWFTS-MW20-EM14-FD	09/11/18	EPA 300.0	Total	Nitrate [as N]	6.9	mg/L	J	0.55	1.1	J	fd	FD
440-219886-2	SWFTS-MW05A-EM14	09/11/18	EPA 300.0	Total	Nitrate [as N]	13	mg/L	J	11	22	R	brr	Better result reported
440-219886-2	PC-94-EM14	09/11/18	EPA 300.0	Total	Nitrite [as N]	0.41	mg/L	J	0.25	1.5	J	sp	Detect < PQL
440-219886-2	SWFTS-MW14-EM14	09/11/18	EPA 314.0	Total	Perchlorate	6.4	ug/L	J	4.8	20	J	sp	Detect < PQL
440-220031-1	SWFTS-MW12-EM14	09/12/18	EPA 300.0	Total	Sulfate	3100	mg/L	E	2.5	5	R	brr	Better result reported
440-220031-1	PC-92-EM14	09/12/18	EPA 300.0	Total	Sulfate	1200	mg/L	E	1.3	2.5	R	brr	Better result reported
440-220031-1	SWFTS-MW25-EM14	09/12/18	SW-6010B	Dissolved	Aluminum	0.074	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-220031-1	SWFTS-MW25-EM14	09/12/18	SW-6010B	Dissolved	Boron	2.4	mg/L	J	0.025	0.05	J	sd	Serial Dilution

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
440-220031-1	SWFTS-MW25-EM14	09/12/18	SW-6010B	Dissolved	Calcium	270	mg/L	B	0.05	0.1	J	sd	Serial Dilution
440-220031-1	SWFTS-MW25-EM14	09/12/18	SW-6010B	Dissolved	Magnesium	150	mg/L		0.01	0.02	J	sd	Serial Dilution
440-220031-1	SWFTS-MW25-EM14	09/12/18	SW-6010B	Dissolved	Manganese	3.7	mg/L		0.015	0.02	J	sd	Serial Dilution
440-220031-1	SWFTS-MW25-EM14	09/12/18	SW-6010B	Dissolved	Silicon	35	mg/L		0.1	0.2	J	sd	Serial Dilution
440-220031-1	SWFTS-MW25-EM14	09/12/18	SW-6010B	Dissolved	Sodium	780	mg/L	B	0.26	0.5	J	sd	Serial Dilution
440-220031-1	SWFTS-MW25-EM14	09/12/18	SW-6010B	Dissolved	Strontium	7.3	mg/L		0.01	0.02	J	sd	Serial Dilution
440-220031-1	SWFTS-MW25-EM14	09/12/18	SW-6020A	Dissolved	Selenium	7.5	ug/L	J	5	20	J	sp	Detect < PQL
440-220125-1	LVWPS-MW109-EM14	09/13/18	EPA 300.0	Total	Nitrate [as N]	6.7	mg/L		0.55	1.1	J+	bf	FB
440-220125-1	LVWPS-MW111A-EM14	09/13/18	EPA 300.0	Total	Nitrate [as N]	8.1	mg/L		0.55	1.1	J+	bf	FB
440-220125-1	SWFTS-20180913-FB	09/13/18	EPA 300.0	Total	Nitrate [as N]	0.082	mg/L	J	0.055	0.11	J	sp	Detect < PQL
440-220125-1	LVWPS-MW108A-EM14	09/13/18	EPA 300.0	Total	Nitrate [as N]	6.1	mg/L		0.55	1.1	J+	bf	FB
440-220125-1	LVWPS-MW109-EM14	09/13/18	EPA 300.0	Total	Sulfate	2400	mg/L	E	2.5	5	R	brr	Better result reported
440-220125-1	SWFTS-20180913-FB	09/13/18	EPA 300.0	Total	Sulfate	0.27	mg/L	J	0.25	0.5	J	sp	Detect < PQL
440-220125-1	LVWPS-MW108A-EM14	09/13/18	EPA 300.0	Total	Sulfate	1900	mg/L	E	2.5	5	R	brr	Better result reported
440-220125-1	SWFTS-20180913-EB	09/13/18	EPA 300.1B	Total	Chlorate	5.4	ug/L	J	2	20	J	sp	Detect < PQL
440-220125-1	SWFTS-20180913-FB	09/13/18	SW-6010B	Dissolved	Calcium	0.061	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-220125-1	SWFTS-20180913-EB	09/13/18	SW-6010B	Dissolved	Calcium	0.13	mg/L	B	0.05	0.1	J+	bl	Lab Blank
440-220125-1	SWFTS-20180913-FB	09/13/18	VFA-IC	Total	Acetic acid	0.29	mg/L	U ^A	0.29	1	UJ	c	Calibration
440-220125-1	SWFTS-20180913-EB	09/13/18	VFA-IC	Total	Acetic acid	0.29	mg/L	U ^A	0.29	1	UJ	c	Calibration
440-220125-1	SWFTS-20180913-FB	09/13/18	VFA-IC	Total	Formic-acid	0.26	mg/L	U ^A	0.26	1	UJ	c	Calibration
440-220125-1	SWFTS-20180913-EB	09/13/18	VFA-IC	Total	Formic-acid	0.26	mg/L	U ^A	0.26	1	UJ	c	Calibration
440-220125-1	SWFTS-20180913-FB	09/13/18	VFA-IC	Total	Lactic acid	0.31	mg/L	U ^A	0.31	1	UJ	c	Calibration
440-220125-1	SWFTS-20180913-EB	09/13/18	VFA-IC	Total	Lactic acid	0.31	mg/L	U ^A	0.31	1	UJ	c	Calibration
440-220125-1	SWFTS-20180913-FB	09/13/18	VFA-IC	Total	Propionic acid	0.35	mg/L	U ^A	0.35	1	UJ	c	Calibration
440-220125-1	SWFTS-20180913-EB	09/13/18	VFA-IC	Total	Propionic acid	0.35	mg/L	U ^A	0.35	1	UJ	c	Calibration
440-221855-1	SWFTS-MW19-EM15-FD	10/09/18	EPA 300.0	Total	Nitrate [as N]	0.4	mg/L	J	0.28	0.55	J	sp	Detect < PQL
440-221855-1	SWFTS-MW15-EM15	10/09/18	EPA 365.3	Total	Phosphorus, Total	0.049	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221855-1	SWFTS-MW01-EM15	10/09/18	EPA 365.3	Total	Phosphorus, Total	0.028	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221855-1	SWFTS-MW03-EM15	10/09/18	SW-6010B	Dissolved	Aluminum	0.49	mg/L	JB	0.25	0.5	J	bl,sp	Lab Blank, Detect < PQL
440-221855-1	SWFTS-MW19-EM15	10/09/18	SW-6010B	Dissolved	Aluminum	0.078	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-221855-1	SWFTS-MW19-EM15-FD	10/09/18	SW-6010B	Dissolved	Aluminum	0.07	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-221855-1	SWFTS-MW20-EM15	10/09/18	SW-6010B	Dissolved	Barium	0.039	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221855-1	SWFTS-MW01-EM15	10/09/18	SW-6010B	Dissolved	Barium	0.039	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221855-1	SWFTS-MW03-EM15	10/09/18	SW-6010B	Dissolved	Barium	0.034	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221855-1	SWFTS-MW05B-EM15	10/09/18	SW-6010B	Dissolved	Barium	0.038	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221855-1	SWFTS-MW21-EM15	10/09/18	SW-6010B	Dissolved	Barium	0.036	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221855-1	SWFTS-MW09A-EM15	10/09/18	SW-6010B	Dissolved	Barium	0.044	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221855-1	SWFTS-MW09B-EM15	10/09/18	SW-6010B	Dissolved	Barium	0.046	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221855-1	SWFTS-MW10A-EM15	10/09/18	SW-6010B	Dissolved	Barium	0.028	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221855-1	SWFTS-MW19-EM15	10/09/18	SW-6010B	Dissolved	Cobalt	0.0052	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-221855-1	SWFTS-MW19-EM15-FD	10/09/18	SW-6010B	Dissolved	Cobalt	0.0052	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-221855-1	SWFTS-MW15-EM15	10/09/18	SW-6010B	Dissolved	Iron	0.3	mg/L	J	0.25	0.5	J	sp	Detect < PQL
440-221855-1	SWFTS-MW03-EM15	10/09/18	SW-6010B	Dissolved	Iron	0.36	mg/L	J	0.25	0.5	J	sp	Detect < PQL
440-221855-1	SWFTS-MW10A-EM15	10/09/18	SW-6010B	Dissolved	Molybdenum	0.076	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-221855-1	SWFTS-MW03-EM15	10/09/18	SW-6010B	Dissolved	Nickel	0.037	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221855-1	SWFTS-MW10A-EM15	10/09/18	SW-6010B	Dissolved	Potassium	34	mg/L	F1	1.3	2.5	J+	m	MS Recovery
440-221855-1	SWFTS-MW20-EM15	10/09/18	SW-6010B	Dissolved	Vanadium	0.028	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221855-1	SWFTS-MW22-EM15	10/09/18	SW-6010B	Dissolved	Vanadium	0.04	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221855-1	SWFTS-MW19-EM15	10/09/18	SW-6020A	Dissolved	Selenium	4.9	ug/L	J	2.5	10	J	sp	Detect < PQL
440-221855-1	SWFTS-MW19-EM15-FD	10/09/18	SW-6020A	Dissolved	Selenium	6.6	ug/L	J	2.5	10	J	sp	Detect < PQL
440-221855-1	SWFTS-MW10A-EM15	10/09/18	SW-6020A	Dissolved	Selenium	4.5	ug/L	J	2.5	10	J	sp	Detect < PQL
440-221855-1	SWFTS-MW10A-EM15	10/09/18	VFA-IC	Total	Pyruvic Acid	3.7	mg/L	UF1	3.7	15	UJ	m	MS Recovery
440-221855-2	SWFTS-MW19-EM15	10/09/18	EPA 300.0	Total	Nitrate [as N]	0.41	mg/L	J	0.28	0.55	J	sp	Detect < PQL
440-221855-2	SWFTS-MW10A-EM15	10/09/18	EPA 300.0	Total	Nitrate [as N]	28	mg/L	U	28	55	R	brr	Better result reported

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
440-221855-2	SWFTS-MW10A-EM15	10/09/18	EPA 300.0	Total	Nitrite [as N]	13	mg/L	U	13	75	R	brr	Better result reported
440-221855-2	SWFTS-MW01-EM15	10/09/18	EPA 314.0	Total	Perchlorate	4700	ug/L		95	400	J	o	Other
440-221975-1	SWFTS-MW06B-EM15	10/10/18	EPA 300.0	Total	Nitrate [as N]	0.36	mg/L	J	0.28	0.55	J	sp	Detect < PQL
440-221975-1	SWFTS-MW06A-EM15	10/10/18	EPA 365.3	Total	Phosphorus, Total	0.037	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221975-1	SWFTS-MW06B-EM15	10/10/18	EPA 365.3	Total	Phosphorus, Total	0.027	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221975-1	SWFTS-MW06A-EM15-FD	10/10/18	SW-6010B	Dissolved	Aluminum	0.073	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-221975-1	SWFTS-MW05A-EM15	10/10/18	SW-6010B	Dissolved	Aluminum	0.4	mg/L	JB	0.25	0.5	J	bl,sp	Lab Blank, Detect < PQL
440-221975-1	SWFTS-MW02-EM15	10/10/18	SW-6010B	Dissolved	Aluminum	0.68	mg/L	B	0.25	0.5	J+	bl	Lab Blank
440-221975-1	SWFTS-MW24-EM15	10/10/18	SW-6010B	Dissolved	Aluminum	0.066	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-221975-1	SWFTS-MW06A-EM15	10/10/18	SW-6010B	Dissolved	Aluminum	0.074	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-221975-1	SWFTS-MW06B-EM15	10/10/18	SW-6010B	Dissolved	Aluminum	0.094	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-221975-1	SWFTS-MW08A-EM15	10/10/18	SW-6010B	Dissolved	Barium	0.026	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221975-1	SWFTS-MW05A-EM15	10/10/18	SW-6010B	Dissolved	Barium	0.032	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221975-1	SWFTS-MW02-EM15	10/10/18	SW-6010B	Dissolved	Barium	0.032	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221975-1	SWFTS-MW05A-EM15	10/10/18	SW-6010B	Dissolved	Boron	3.4	mg/L	F1	0.13	0.25	J+	m	MS Recovery
440-221975-1	SWFTS-MW06B-EM15	10/10/18	SW-6010B	Dissolved	Cobalt	0.0063	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-221975-1	SWFTS-MW06A-EM15-FD	10/10/18	SW-6010B	Dissolved	Iron	0.051	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-221975-1	SWFTS-MW02-EM15	10/10/18	SW-6010B	Dissolved	Iron	0.42	mg/L	J	0.25	0.5	J	sp	Detect < PQL
440-221975-1	SWFTS-MW06A-EM15-FD	10/10/18	SW-6010B	Dissolved	Molybdenum	0.018	mg/L	J	0.01	0.02	J	sp	Detect < PQL
440-221975-1	SWFTS-MW07B-EM15	10/10/18	SW-6010B	Dissolved	Molybdenum	0.091	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-221975-1	PC-91-EM15	10/10/18	SW-6010B	Dissolved	Molybdenum	0.066	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-221975-1	SWFTS-MW06A-EM15-FD	10/10/18	SW-6010B	Dissolved	Potassium	19	mg/L	F1	0.25	0.5	J+	m	MS Recovery
440-221975-1	SWFTS-MW06A-EM15	10/10/18	SW-6010B	Dissolved	Potassium	21	mg/L		0.25	0.5	J+	m	MS Recovery
440-221975-1	SWFTS-MW06A-EM15-FD	10/10/18	SW-6010B	Dissolved	Strontium	3.9	mg/L	F1	0.01	0.02	J+	m	MS Recovery
440-221975-1	SWFTS-MW06A-EM15	10/10/18	SW-6010B	Dissolved	Strontium	4.4	mg/L		0.01	0.02	J+	m	MS Recovery
440-221975-1	SWFTS-MW02-EM15	10/10/18	SW-6010B	Dissolved	Titanium	0.015	mg/L	J	0.013	0.025	J	sp	Detect < PQL
440-221975-1	SWFTS-MW07B-EM15	10/10/18	SW-6010B	Dissolved	Vanadium	0.04	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221975-1	SWFTS-MW08A-EM15	10/10/18	SW-6010B	Dissolved	Vanadium	0.032	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221975-1	SWFTS-MW02-EM15	10/10/18	SW-6010B	Dissolved	Vanadium	0.031	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221975-1	PC-91-EM15	10/10/18	SW-6010B	Dissolved	Vanadium	0.031	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-221975-1	SWFTS-MW06A-EM15-FD	10/10/18	SW-6020A	Dissolved	Selenium	9.2	ug/L	J	2.5	10	J	sp	Detect < PQL
440-221975-1	SWFTS-MW02-EM15	10/10/18	SW-6020A	Dissolved	Selenium	4	ug/L	J	2.5	10	J	sp	Detect < PQL
440-221975-1	SWFTS-MW06A-EM15	10/10/18	SW-6020A	Dissolved	Selenium	6.7	ug/L	J	2.5	10	J	sp	Detect < PQL
440-221975-2	SWFTS-MW05A-EM15	10/10/18	EPA 300.0	Total	Nitrate [as N]	28	mg/L	U	28	55	R	brr	Better result reported
440-222092-1	COH-2B1-EM15	10/11/18	EPA 300.0	Total	Nitrate [as N]	0.54	mg/L	J	0.28	0.55	J	sp	Detect < PQL
440-222092-1	PC-88-EM15	10/11/18	EPA 300.0	Total	Nitrate [as N]	6.3	mg/L	H	0.55	1.1	J-	h	Holding Time
440-222092-1	COH-2B1-EM15	10/11/18	EPA 300.0	Total	Sulfate	1200	mg/L	E	1.3	2.5	R	brr	Better result reported
440-222092-1	SWFTS-MW11-EM15	10/11/18	EPA 300.0	Total	Sulfate	2200	mg/L	E	5	10	R	brr	Better result reported
440-222092-1	SWFTS-MW13-EM15	10/11/18	EPA 300.0	Total	Sulfate	3300	mg/L	E	5	10	R	brr	Better result reported
440-222092-1	SWFTS-MW18-EM15	10/11/18	EPA 300.0	Total	Sulfate	1900	mg/L	E	2.5	5	R	brr	Better result reported
440-222092-1	SWFTS-MW23-EM15	10/11/18	EPA 300.1B	Total	Chlorate	95	ug/L	J	10	100	J	sp	Detect < PQL
440-222092-1	SWFTS-MW11-EM15-FD	10/11/18	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.19	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-222092-1	COH-2B1-EM15	10/11/18	EPA 365.3	Total	Phosphorus, Total	0.025	mg/L	UF1	0.025	0.05	R	m	MS Recovery
440-222092-1	PC-94-EM15	10/11/18	EPA 365.3	Total	Phosphorus, Total	0.045	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-222092-1	PC-97-EM15	10/11/18	SW-6010B	Dissolved	Aluminum	0.059	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-222092-1	PC-88-EM15	10/11/18	SW-6010B	Dissolved	Aluminum	0.088	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-222092-1	PC-88-EM15-FD	10/11/18	SW-6010B	Dissolved	Aluminum	0.059	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-222092-1	PC-92-EM15	10/11/18	SW-6010B	Dissolved	Aluminum	0.068	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-222092-1	PC-94-EM15	10/11/18	SW-6010B	Dissolved	Aluminum	0.076	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-222092-1	PC-58-EM15	10/11/18	SW-6010B	Dissolved	Aluminum	0.081	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-222092-1	SWFTS-MW16-EM15	10/11/18	SW-6010B	Dissolved	Aluminum	0.057	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-222092-1	SWFTS-MW18-EM15	10/11/18	SW-6010B	Dissolved	Aluminum	0.063	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-222092-1	SWFTS-MW25-EM15	10/11/18	SW-6010B	Dissolved	Aluminum	0.073	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-222092-1	SWFTS-MW23-EM15	10/11/18	SW-6010B	Dissolved	Aluminum	0.084	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
440-222092-1	SWFTS-MW04-EM15	10/11/18	SW-6010B	Dissolved	Aluminum	0.072	mg/L	JB	0.05	0.1	J	bl,sp	Lab Blank, Detect < PQL
440-222092-1	PC-97-EM15	10/11/18	SW-6010B	Dissolved	Cobalt	0.0065	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-222092-1	SWFTS-MW23-EM15	10/11/18	SW-6010B	Dissolved	Cobalt	0.0051	mg/L	J	0.005	0.01	J	sp	Detect < PQL
440-222092-1	SWFTS-MW16-EM15	10/11/18	SW-6010B	Dissolved	Nickel	0.0064	mg/L	J	0.005	0.01	J	bl,sp	Lab Blank, Detect < PQL
440-222092-1	COH-2B1-EM15	10/11/18	SW-6010B	Dissolved	Vanadium	0.035	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-222092-1	COH-2B1-EM15	10/11/18	SW-6020A	Dissolved	Selenium	6.9	ug/L	J	2.5	10	J	sp	Detect < PQL
440-222092-1	PC-88-EM15	10/11/18	SW-6020A	Dissolved	Selenium	7	ug/L	J	2.5	10	J	sp	Detect < PQL
440-222092-1	PC-88-EM15-FD	10/11/18	SW-6020A	Dissolved	Selenium	6	ug/L	J	2.5	10	J	sp	Detect < PQL
440-222092-1	PC-92-EM15	10/11/18	SW-6020A	Dissolved	Selenium	8.9	ug/L	J	2.5	10	J	sp	Detect < PQL
440-222092-1	SWFTS-MW04-EM15	10/11/18	SW-6020A	Dissolved	Selenium	4.6	ug/L	J	2.5	10	J	sp	Detect < PQL
440-222092-1	SWFTS-MW11-EM15	10/11/18	VFA-IC	Total	Pyruvic Acid	3.7	mg/L	UF1	3.7	15	UJ	m	MS Recovery
440-222092-2	SWFTS-MW16-EM15	10/11/18	EPA 300.0	Total	Nitrate [as N]	0.76	mg/L	J	0.55	1.1	J	sp	Detect < PQL

Table 7 Field Duplicate Exceedances

SDG	Method	Parameter	Total or Dissolved	Units	Parent Sample ID	Result*	FD Result	RPD (%)	Allowed RPD (%)	Difference >PQL
440-181045-1	SW-6010B	Aluminum	Dissolved	mg/L	SWFTS-MW03-BL01	0.1	0.34	---	N/A	0.24
440-181045-1	SW-6010B	Iron	Dissolved	mg/L	SWFTS-MW03-BL01	0.1	0.32	---	N/A	0.22
440-181045-1	SW-6010B	Titanium	Dissolved	mg/L	SWFTS-MW03-BL01	0.005	0.015	---	N/A	0.01
440-194202-1	EPA 365.3	Phosphorus, Total	Total	mg/L	SWFTS-MW20-EM04	0.044	0.11	---	N/A	0.066
440-194202-1	SW-6010B	Chromium	Dissolved	mg/L	SWFTS-MW20-EM04	0.018	0.005	---	N/A	0.013
440-194202-1	SW-6010B	Manganese	Total	mg/L	SWFTS-MW20-EM04	1.3	2.2	51	30	---
440-203841-2	Calculated	Total Nitrogen	Total	mg/L	SWFTS-MW10A-EM08	0.15	1.5	---	N/A	1.35
440-207137-1	SW-6010B	Nickel	Dissolved	mg/L	SWFTS-MW10A-EM09	0.011	0.027	---	N/A	0.016
440-219886-2	EPA 300.0	Nitrate [as N]	Total	mg/L	SWFTS-MW20-EM14	2.3	6.9	100	30	---

* For non-detects, the PQL was used.

Table 8 Calibration Exceedances

SDG	Method	Calibration	Calibration ID	Parameter	Outlier	Value	Allowed	Qualified Samples
440-207137-1	VFA-IC	Continuing	CCV 480-407803/13	Formic-acid	Percent Recovery	152%	80 - 120%	SWFTS-MW10A-EM09
440-207137-1	VFA-IC	Continuing	CCV 480-407803/13	Lactic acid	Percent Recovery	256%	80 - 120%	SWFTS-MW10A-EM09
440-220125-1	VFA-IC	Continuing	CCV 480-436031/25	Acetic acid	Percent Recovery	203%	80 - 120%	SWFTS-20180913-EB, SWFTS-20180913-FB
440-220125-1	VFA-IC	Continuing	CCV 480-436031/25	Formic-acid	Percent Recovery	212%	80 - 120%	SWFTS-20180913-EB, SWFTS-20180913-FB
440-220125-1	VFA-IC	Continuing	CCV 480-436031/25	Lactic acid	Percent Recovery	445%	80 - 120%	SWFTS-20180913-EB, SWFTS-20180913-FB
440-220125-1	VFA-IC	Continuing	CCV 480-436031/25	Propionic acid	Percent Recovery	146%	80 - 120%	SWFTS-20180913-EB, SWFTS-20180913-FB

Table 9 MS/MSD Recovery Exceedances

SDG	Spiked Sample	Lab Sample ID	Method	Total or Dissolved	Parameter	MS Recovery (%)	MSD Recovery (%)	Acceptance Range (%)
440-177682-1	SWFTS-BH02-SO-34	440-177682-1	EPA 314.0	Total	Perchlorate	123	109	80-120
440-178303-1	SWFTS-BH03-SO-24	440-178303-3	EPA 314.0	Total	Perchlorate	106	122	80-120
440-179673-1	SWFTS-MW09B-SO-39	440-179673-2	EPA 314.0	Total	Perchlorate	101	124	80-120
440-181045-1	SWFTS-MW08A-BL01	440-181045-9	EPA 365.3	Total	Phosphorus, Total	51	69	75-125
440-188244-1	SWFTS-MW11-BL02	440-188244-7	EPA 314.0	Total	Perchlorate	133	136	80-120
440-188244-1	SWFTS-MW11-BL02	440-188244-7	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	60	41	90-110
440-188244-1	SWFTS-MW11-BL02	440-188244-7	EPA 365.3	Total	Phosphorus, Total	44	47	75-125
440-188244-1	SWFTS-MW11-BL02	440-188244-7	VFA-IC	Total	Formic-acid	76	86	80-120
440-188244-1	SWFTS-MW11-BL02	440-188244-7	VFA-IC	Total	Pyruvic Acid	57	64	80-120
440-188324-1	SWFTS-MW22-BL02	440-188324-1	SW-6010B	Dissolved	Potassium	148	117	75-125
440-188324-1	SWFTS-MW22-BL02	440-188324-1	SW-6020A	Dissolved	Antimony	66	69	75-125
440-188324-1	SWFTS-MW25-BL02	440-188324-4	VFA-IC	Total	Pyruvic Acid	71	66	80-120
440-189933-1	COH-2B1-BL02	440-189933-1	SW-6010B	Dissolved	Strontium	119	135	75-125
440-193167-1	SWFTS-PC-88-EM02	440-193167-7	EPA 314.0	Total	Perchlorate	124	125	80-120
440-193989-1	SWFTS-MW05B-EM04	440-193989-1	SW-6020A	Dissolved	Selenium	17	54	75-125
440-193989-1	SWFTS-MW17-EM04	440-193989-3	VFA-IC	Total	Pyruvic Acid	72	66	80-120
440-194094-1	SWFTS-MW09A-EM04	440-194094-7	EPA 314.0	Total	Perchlorate	126	112	80-120
440-194094-1	SWFTS-MW11-EM04	440-194094-8	VFA-IC	Total	Pyruvic Acid	61	Not Analyzed	80-120
440-194204-1	SWFTS-MW02-EM04	440-194204-6	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	69	62	90-110
440-194204-1	SWFTS-MW02-EM04	440-194204-6	EPA 365.3	Total	Phosphorus, Total	29	31	75-125
440-194204-1	SWFTS-MW02-EM04	440-194204-6	VFA-IC	Total	Lactic acid	59	58	80-120
440-194204-1	SWFTS-MW02-EM04	440-194204-6	VFA-IC	Total	Propionic acid	75	78	80-120
440-194204-1	SWFTS-MW19-EM04	440-194204-1	EPA 300.1B	Total	Chlorate	127	111	75-125
440-196659-1	SWFTS-MW14-EM06	440-196659-3	EPA 365.3	Total	Phosphorus, Total	67	73	75-125
440-196659-1	SWFTS-MW14-EM06	440-196659-3	SW-6010B	Dissolved	Aluminum	126	128	75-125
440-196659-1	SWFTS-MW14-EM06	440-196659-3	SW-6010B	Total	Manganese	78	74	75-125
440-196659-1	SWFTS-MW14-EM06	440-196659-3	VFA-IC	Total	Pyruvic Acid	54	46	80-120
440-196659-2	SWFTS-MW14-EM06	440-196659-3	EPA 314.0	Total	Perchlorate	165	162	80-120
440-196786-1	SWFTS-PC-91-EM06	440-196786-8	EPA 300.0	Total	Nitrate [as N]	81	73	80-120
440-198508-1	SWFTS-MW21-EM07	440-198508-10	EPA 300.0	Total	Sulfate	82	79	80-120
440-198508-1	SWFTS-MW21-EM07	440-198508-10	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	88	84	90-110
440-198508-1	SWFTS-MW21-EM07	440-198508-10	SW-6020A	Dissolved	Selenium	135	139	75-125
440-198508-1	SWFTS-MW21-EM07	440-198508-10	VFA-IC	Total	Pyruvic Acid	40	38	80-120
440-203841-1	SWFTS-MW14-EM08	440-203841-11	EPA 300.1B	Total	Chlorite	0	0	75-125
440-203841-1	SWFTS-MW14-EM08	440-203841-11	SW-6020A	Dissolved	Selenium	22	20	75-125
440-203841-1	SWFTS-MW14-EM08	440-203841-11	VFA-IC	Total	Propionic acid	150	145	80-120
440-207137-1	SWFTS-MW13-EM09	440-207137-4	EPA 300.0	Total	Nitrate [as N]	117	146	80-120
440-207137-1	SWFTS-MW14-EM09	440-207137-9	SW-6010B	Dissolved	Boron	129	127	75-125
440-207137-1	SWFTS-MW14-EM09	440-207137-9	SW-6010B	Dissolved	Potassium	133	132	75-125

Table 9 MS/MSD Recovery Exceedances

SDG	Spiked Sample	Lab Sample ID	Method	Total or Dissolved	Parameter	MS Recovery (%)	MSD Recovery (%)	Acceptance Range (%)
440-207137-1	SWFTS-MW14-EM09	440-207137-9	SW-6020A	Dissolved	Antimony	60	62	75-125
440-207137-1	SWFTS-MW14-EM09	440-207137-9	SW-6020A	Dissolved	Selenium	-12	-35	75-125
440-207497-1	SWFTS-MW24-EM09	440-207497-12	EPA 300.0	Total	Sulfate	93	183	80-120
440-210173-2	SWFTS-MW14-EM10	440-210173-9	SW-6010B	Dissolved	Potassium	133	118	75-125
440-210284-1	PC-94-EM10	440-210284-14	SW-6010B	Dissolved	Boron	126	128	75-125
440-210284-2	PC-94-EM10	440-210284-14	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	86	87	90-110
440-210430-1	SWFTS-MW16-EM10	440-210430-13	SW-6020A	Dissolved	Thallium	74	74	75-125
440-210430-1	SWFTS-MW16-EM10	440-210430-13	VFA-IC	Total	Pyruvic Acid	59	Not Analyzed	80-120
440-210534-1	SWFTS-MW17-EM10	440-210534-3	EPA 314.0	Total	Perchlorate	74	69	80-120
440-215437-1	SWFTS-MW03-EM11	440-215437-5	SW-6010B	Dissolved	Boron	129	129	75-125
440-215437-1	SWFTS-MW03-EM11	440-215437-5	SW-6020A	Dissolved	Selenium	72	69	75-125
440-215585-1	SWFTS-MW10A-EM11	440-215585-9	VFA-IC	Total	Pyruvic Acid	68	65	80-120
440-215585-2	SWFTS-MW10A-EM11	440-215585-9	EPA 314.0	Total	Perchlorate	73	67	80-120
440-216872-2	SWFTS-MW03-EM12	440-216872-10	EPA 314.0	Total	Perchlorate	144	148	80-120
440-218109-1	SWFTS-20180814-FB	440-218109-7	VFA-IC	Total	Pyruvic Acid	80	78	80-120
440-218109-1	SWFTS-MW14-EM13	440-218109-11	SW-6020A	Dissolved	Selenium	53	3	75-125
440-218109-2	SWFTS-MW05A-EM13	440-218109-2	EPA 300.0	Total	Nitrate [as N]	116	124	80-120
440-218208-1	SWFTS-MW16-EM13	440-218208-13	SW-6010B	Total	Manganese	24	22	75-125
440-218208-1	SWFTS-MW16-EM13	440-218208-13	SW-6020A	Dissolved	Selenium	40	26	75-125
440-218208-1	SWFTS-MW16-EM13	440-218208-13	VFA-IC	Total	Pyruvic Acid	78	77	80-120
440-219797-1	SWFTS-MW16-EM14	440-219797-6	VFA-IC	Total	Pyruvic Acid	84	77	80-120
440-219886-1	PC-94-EM14	440-219886-9	SW-6010B	Total	Manganese	78	129	75-125
440-221855-1	SWFTS-MW10A-EM15	440-221855-9	SW-6010B	Dissolved	Potassium	128	121	75-125
440-221855-1	SWFTS-MW10A-EM15	440-221855-9	VFA-IC	Total	Pyruvic Acid	81	76	80-120
440-221975-1	SWFTS-MW05A-EM15	440-221975-14	SW-6010B	Dissolved	Boron	142	91	75-125
440-221975-1	SWFTS-MW06A-EM15-FD	440-221975-10	SW-6010B	Dissolved	Potassium	131	133	75-125
440-221975-1	SWFTS-MW06A-EM15-FD	440-221975-10	SW-6010B	Dissolved	Strontium	151	153	75-125
440-222092-1	COH-2B1-EM15	440-222092-1	EPA 365.3	Total	Phosphorus, Total	6	5	75-125
440-222092-1	SWFTS-MW11-EM15	440-222092-10	VFA-IC	Total	Pyruvic Acid	61	62	80-120

Table 10 Serial Dilution Exceedances

SDG	Sample ID	Total or Dissolved	Method	Parameter	Percent Difference	Allowed (%D)
440-188244-1	SWFTS-MW11-BL02	Dissolved	SW6010B	Sodium	21	10
440-188244-1	SWFTS-MW11-BL02	Dissolved	SW6010B	Strontium	23	10
440-219886-1	PC-94	Total	SW6010B	Manganese	13	10
440-220031-1	SWFTS-MW25-EM14	Dissolved	SW6010B	Boron	11	10
440-220031-1	SWFTS-MW25-EM14	Dissolved	SW6010B	Calcium	13	10
440-220031-1	SWFTS-MW25-EM14	Dissolved	SW6010B	Magnesium	17	10
440-220031-1	SWFTS-MW25-EM14	Dissolved	SW6010B	Manganese	17	10
440-220031-1	SWFTS-MW25-EM14	Dissolved	SW6010B	Silicon	13	10
440-220031-1	SWFTS-MW25-EM14	Dissolved	SW6010B	Sodium	15	10
440-220031-1	SWFTS-MW25-EM14	Dissolved	SW6010B	Strontium	11	10

Table 11 Better Results Reported

SDG	Sample ID	Method	Parameter	Result	Units	Lab Qualifier	Validator Qualifier	Reason for Use of Alternate Result
440-181045-1	SWFTS-MW08A-BL01	EPA 300.0	Nitrate [as N]	28	mg/L	J	R	According to lab, result was used for lab QC and does not reflect actual concentration.
440-188247-1	SWFTS-IW14-BL02	EPA 300.0	Nitrate [as N]	42	mg/L	J	R	According to lab, result was used for lab QC and does not reflect actual concentration.
440-188247-1	PC-91-BL02	EPA 300.0	Nitrate [as N]	11	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 10x dilution analysis.
440-189933-1	COH-2B1-BL02	EPA 300.0	Nitrate [as N]	5.5	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 2x dilution analysis.
440-192728-1	SWFTS-PC-92-EM01	EPA 300.0	Nitrate [as N]	11	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 5x dilution analysis.
440-192818-1	SWFTS-PC-88-EM01	EPA 300.0	Nitrate [as N]	11	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 10x dilution analysis.
440-193062-1	SWFTS-PC-92-EM02	EPA 300.0	Nitrate [as N]	11	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 5x dilution analysis.
440-193167-1	SWFTS-PC-88-EM02	EPA 300.0	Nitrate [as N]	11	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 10x dilution analysis.
440-193622-1	SWFTS-PC-88-EM03	EPA 300.0	Nitrate [as N]	11	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 5x dilution analysis.
440-193625-1	SWFTS-PC-92-EM03	EPA 300.0	Nitrate [as N]	11	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 5x dilution analysis.
440-194204-1	SWFTS-MW02-EM04	EPA 300.0	Nitrate [as N]	28	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 20x dilution analysis.
440-194204-1	SWFTS-MW02-EM04	EPA 300.0	Nitrite [as N]	35	mg/L	U	R	Dilution is too high. Result reported from 20x dilution analysis for lower PQL.
440-195026-1	SWFTS-PC-91-EM05	EPA 300.0	Nitrate [as N]	5.5	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 2x dilution analysis.
440-195026-1	SWFTS-PC-88-EM05	EPA 300.0	Nitrate [as N]	11	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 10x dilution analysis.
440-196659-1	SWFTS-MW14-EM06	EPA 300.0	Nitrate [as N]	28	mg/L	U	R	Dilution is too high. Result reported from 10x dilution analysis for lower PQL.
440-196659-1	SWFTS-MW14-EM06	EPA 300.0	Nitrite [as N]	35	mg/L	U	R	Dilution is too high. Result reported from 10x dilution analysis for lower PQL.
440-196665-1	SWFTS-MW01-EM06	EPA 300.0	Nitrate [as N]	11	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 10x dilution analysis.
440-198371-1	SWFTS-MW10A-EM07-FD	EPA 300.0	Nitrate [as N]	11	mg/L	U	R	Result reported from 5x dilution analysis for lower PQL.
440-198508-1	SWFTS-MW21-EM07	EPA 300.0	Nitrate [as N]	22	mg/L		R	According to lab, result was used for lab QC and does not reflect actual concentration.
440-198508-1	SWFTS-MW21-EM07	EPA 300.0	Nitrite [as N]	14	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 5x dilution analysis.
440-203841-2	SWFTS-MW14-EM08	EPA 300.0	Nitrate [as N]	28	mg/L	U	R	Dilution is too high. Result reported from 20x dilution analysis for lower PQL.
440-203841-2	SWFTS-MW14-EM08	EPA 300.0	Nitrite [as N]	35	mg/L	U	R	Dilution is too high. Result reported from 20x dilution analysis for lower PQL.
440-203937-1	SWFTS-MW11-EM08	EPA 300.0	Sulfate	2500	mg/L	E	R	Exceeds calibration range. Better result reported from 20x dilution analysis.
440-203937-1	SWFTS-MW24-EM08	EPA 300.0	Nitrate [as N]	28	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 20x dilution analysis.
440-204033-1	SWFTS-MW06A-EM08	EPA 300.0	Sulfate	1100	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-204033-1	SWFTS-MW18-EM08	EPA 300.0	Sulfate	2000	mg/L	E	R	Exceeds calibration range. Better result reported from 500x dilution analysis.
440-207137-1	PC-91-EM09	EPA 300.0	Sulfate	870	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-207137-1	SWFTS-MW13-EM09	EPA 300.0	Sulfate	3900	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-207137-2	SWFTS-MW14-EM09	EPA 300.0	Nitrate [as N]	11	mg/L	U	R	Better result reported from 5x dilution analysis.
440-207137-2	SWFTS-MW14-EM09	EPA 300.0	Nitrite [as N]	14	mg/L	U	R	Better result reported from 5x dilution analysis.
440-207137-2	SWFTS-MW14-EM09	EPA 351.2	Total Kjeldahl Nitrogen	2.5	mg/L	U	R	Analyte was detected in a different run with a lower PQL.
440-207268-1	SWFTS-MW02-EM09	EPA 300.0	Sulfate	1800	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-207497-2	SWFTS-MW24-EM09	EPA 300.0	Nitrate [as N]	28	mg/L	U	R	Analyte diluted out. Better result reported from 10x dilution analysis.
440-207586-1	SWFTS-MW08A-EM09	EPA 300.0	Sulfate	2000	mg/L	E	R	Exceeds calibration range. Better result reported from 500x dilution analysis.
440-210173-2	SWFTS-MW01-EM10	EPA 300.0	Sulfate	1900	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-210284-1	SWFTS-MW10A-EM10	EPA 300.0	Sulfate	1700	mg/L	E	R	Exceeds calibration range. Better result reported from 500x dilution analysis.
440-210284-2	PC-94-EM10	EPA 300.0	Nitrate [as N]	28	mg/L	U	R	Better result reported from 10x dilution analysis.
440-210284-2	PC-94-EM10	EPA 300.0	Nitrite [as N]	35	mg/L	U	R	Better result reported from 10x dilution analysis.
440-210367-1	SWFTS-MW11-EM10-FD	EPA 300.0	Sulfate	2300	mg/L	E	R	Exceeds calibration range. Better result reported from 500x dilution analysis.
440-210430-1	PC58-EM10	EPA 300.0	Sulfate	1700	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.

Table 11 Better Results Reported

SDG	Sample ID	Method	Parameter	Result	Units	Lab Qualifier	Validator Qualifier	Reason for Use of Alternate Result
440-210430-1	SWFTS-MW16-EM10	EPA 300.0	Sulfate	1600	mg/L	E	R	Exceeds calibration range. Better result reported from 50x dilution analysis.
440-210534-1	SWFTS-MW17-EM10	EPA 300.0	Sulfate	2100	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-215437-1	SWFTS-MW03-EM11	EPA 300.0	Sulfate	2500	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-215437-1	SWFTS-MW23-EM11	EPA 300.0	Sulfate	1000	mg/L	E	R	Exceeds calibration range. Better result reported from 50x dilution analysis.
440-215585-2	SWFTS-MW05A-EM11	EPA 300.0	Nitrate [as N]	28	mg/L	J	R	According to lab, result was used for lab QC and does not reflect actual concentration.
440-215585-2	SWFTS-MW10A-EM11	EPA 300.0	Nitrate [as N]	28	mg/L	U	R	Dilution too high. Detected result from 10x dilution analysis was used.
440-215585-2	SWFTS-MW10A-EM11	EPA 300.0	Nitrite [as N]	35	mg/L	U	R	Result reported from 10x dilution analysis for lower PQL.
440-215717-1	SWFTS-MW11-EM11	EPA 300.0	Sulfate	2400	mg/L	E	R	Exceeds calibration range. Better result reported from 500x dilution analysis.
440-215717-1	SWFTS-MW21-EM11	EPA 300.0	Sulfate	3200	mg/L	E	R	Exceeds calibration range. Better result reported from 500x dilution analysis.
440-218208-1	SWFTS-MW02-EM13	EPA 300.0	Sulfate	1900	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-218208-2	SWFTS-MW16-EM13	EPA 300.0	Nitrate [as N]	11	mg/L	U	R	Better result reported from 5x dilution analysis with a lower PQL.
440-218208-2	SWFTS-MW16-EM13	EPA 300.0	Nitrite [as N]	5	mg/L	U	R	Better result reported from 5x dilution analysis with a lower PQL.
440-218296-1	SWFTS-MW04-EM13	EPA 300.0	Sulfate	900	mg/L	E	R	Exceeds calibration range. Better result reported from 100x dilution analysis.
440-218296-1	SWFTS-MW23-EM13	EPA 300.0	Sulfate	1000	mg/L	E	R	Exceeds calibration range. Better result reported from 50x dilution analysis.
440-218296-1	SWFTS-MW17-EM13	EPA 300.0	Sulfate	2800	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-219797-2	SWFTS-MW16-EM14	EPA 300.0	Nitrate [as N]	11	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 5x dilution analysis.
440-219797-2	SWFTS-MW16-EM14	EPA 300.0	Nitrite [as N]	5	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 5x dilution analysis.
440-219886-2	SWFTS-MW05A-EM14	EPA 300.0	Nitrate [as N]	13	mg/L	J	R	According to lab, result was used for lab QC and does not reflect actual concentration.
440-220031-1	SWFTS-MW12-EM14	EPA 300.0	Sulfate	3100	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-220031-1	PC-92-EM14	EPA 300.0	Sulfate	1200	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-220125-1	LVWPS-MW109-EM14	EPA 300.0	Sulfate	2400	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-220125-1	LVWPS-MW108A-EM14	EPA 300.0	Sulfate	1900	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-221855-2	SWFTS-MW10A-EM15	EPA 300.0	Nitrate [as N]	28	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 10x dilution analysis.
440-221855-2	SWFTS-MW10A-EM15	EPA 300.0	Nitrite [as N]	13	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 10x dilution analysis.
440-221975-2	SWFTS-MW05A-EM15	EPA 300.0	Nitrate [as N]	28	mg/L	U	R	Dilution is too high. Analyte not detected. Result reported from 20x dilution analysis.
440-222092-1	COH-2B1-EM15	EPA 300.0	Sulfate	1200	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.
440-222092-1	SWFTS-MW11-EM15	EPA 300.0	Sulfate	2200	mg/L	E	R	Exceeds calibration range. Better result reported from 500x dilution analysis.
440-222092-1	SWFTS-MW13-EM15	EPA 300.0	Sulfate	3300	mg/L	E	R	Exceeds calibration range. Better result reported from 500x dilution analysis.
440-222092-1	SWFTS-MW18-EM15	EPA 300.0	Sulfate	1900	mg/L	E	R	Exceeds calibration range. Better result reported from 200x dilution analysis.

Table 12 Sample Preservation Infractions

SDG	Sample ID	Method	Parameter	Item	Outlier	Criteria
440-188324-1	SWFTS-MW21-BL02	VFA-IC	Volatile Fatty Acids	Temperature	7.1 degrees C	4 degrees C \pm 2 degrees
440-188324-1	SWFTS-MW22-BL02	VFA-IC	Volatile Fatty Acids	Temperature	7.1 degrees C	4 degrees C \pm 2 degrees
440-188324-1	SWFTS-MW24-BL02	VFA-IC	Volatile Fatty Acids	Temperature	7.1 degrees C	4 degrees C \pm 2 degrees
440-188324-1	SWFTS-MW25-BL02	VFA-IC	Volatile Fatty Acids	Temperature	7.1 degrees C	4 degrees C \pm 2 degrees
440-188325-1	SWFTS-FIELDQC-BL02-EB	VFA-IC	Volatile Fatty Acids	Temperature	6.7 degrees C	4 degrees C \pm 2 degrees
440-188325-1	SWFTS-FIELDQC-BL02-FB	VFA-IC	Volatile Fatty Acids	Temperature	6.7 degrees C	4 degrees C \pm 2 degrees
440-188325-1	SWFTS-MW15-BL02	VFA-IC	Volatile Fatty Acids	Temperature	6.7 degrees C	4 degrees C \pm 2 degrees
440-195136-1	SWFTS-MW24-EM05	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-196558-2	SWFTS-IW01A-EM06	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-196558-2	SWFTS-IW01A-EM06B	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-196558-2	SWFTS-IW01B-EM06B	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-196558-2	SWFTS-IW02A-EM06B	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-196558-2	SWFTS-IW02B-EM06B	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-196558-2	SWFTS-IW06A-EM06B	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-196558-2	SWFTS-IW06B-EM06B	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-196558-2	SWFTS-IW13A-EM06B	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-196558-2	SWFTS-IW13B-EM06B	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-196558-2	SWFTS-IW14-EM06B-FD	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-196558-2	SWFTS-IW17-EM06B	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-196558-2	SWFTS-IW20-EM06B	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-198276-1	SWFTS-IW03-EM07	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-198276-1	SWFTS-IW04-EM07	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-198276-1	SWFTS-IW05-EM07	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-198276-1	SWFTS-IW07-EM07	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2

Table 12 Sample Preservation Infractions

SDG	Sample ID	Method	Parameter	Item	Outlier	Criteria
440-198276-1	SWFTS-IW08-EM07	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-198276-1	SWFTS-IW09-EM07	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-198276-1	SWFTS-IW10-EM07	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-198276-1	SWFTS-IW11-EM07	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-198276-1	SWFTS-IW12-EM07	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-198276-1	SWFTS-IW15-EM07	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-198276-1	SWFTS-IW15-EM07-FD	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-198276-1	SWFTS-IW16A-EM07	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-198276-1	SWFTS-IW16B-EM07	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-198276-1	SWFTS-IW19-EM07	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-207137-1	SWFTS-MW10A-EM09-FD	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
440-210284-1	SWFTS-MW10A-EM10	VFA-IC	Volatile Fatty Acids	Temperature	14.6 degrees C	4 degrees C ± 2 degrees
440-219797-1	SWFTS-MW01-EM14	EPA 351.2	Total Kjeldahl Nitrogen [TKN]	Preservation	pH > 2	pH < 2
440-219797-1	SWFTS-MW02-EM14	EPA 351.2	Total Kjeldahl Nitrogen [TKN]	Preservation	pH > 2	pH < 2

Table 13 Holding Time Exceedances

SDG	Sample ID	Method	Total or Dissolved	Parameter	Time Limit	Time Elapsed
440-179673-1	SWFTS-MW09B-SO-19	SW-9045C-soluble	Total	pH	24 hours	75.5 hours
440-179673-1	SWFTS-SO1-EB	SM4500-H+	Total	pH	24 hours	44.9 hours
440-179673-1	SWFTS-SO1-FB	SM4500-H+	Total	pH	24 hours	44.7 hours
440-179802-1	SWFTS-SO2-EB	SM4500-H+	Total	pH	24 hours	47.6 hours
440-179802-1	SWFTS-SO2-FB	SM4500-H+	Total	pH	24 hours	47.5 hours
440-193622-1	SWFTS-MW06A-EM03	EPA 300.0	Total	Nitrate [as N]	48 hours	53.4 hours
440-193622-1	SWFTS-MW12-EM03	EPA 300.0	Total	Nitrate [as N]	48 hours	53 hours
440-193622-1	SWFTS-MW13-EM03	EPA 300.0	Total	Nitrate [as N]	48 hours	48.4 hours
440-193622-1	SWFTS-MW14-EM03	EPA 300.0	Total	Nitrate [as N]	48 hours	53.3 hours
440-195136-1	SWFTS-MW24-EM05	SM5310B	Total	Total Organic Carbon	4 hours	156.1 hours
440-195218-1	SWFTS-MW02-EM05	EPA 300.0	Total	Nitrate [as N]	48 hours	50.8 hours
440-196558-2	SWFTS-IW01A-EM06	SM5310B	Total	Total Organic Carbon	4 hours	195.2 hours
440-196558-2	SWFTS-IW01A-EM06B	SM5310B	Total	Total Organic Carbon	4 hours	197.7 hours
440-196558-2	SWFTS-IW01B-EM06B	SM5310B	Total	Total Organic Carbon	4 hours	196.3 hours
440-196558-2	SWFTS-IW02A-EM06B	SM5310B	Total	Total Organic Carbon	4 hours	236.4 hours
440-196558-2	SWFTS-IW02B-EM06B	SM5310B	Total	Total Organic Carbon	4 hours	236.9 hours
440-196558-2	SWFTS-IW06A-EM06B	SM5310B	Total	Total Organic Carbon	4 hours	195.5 hours
440-196558-2	SWFTS-IW06B-EM06B	SM5310B	Total	Total Organic Carbon	4 hours	196 hours
440-196558-2	SWFTS-IW13A-EM06B	SM5310B	Total	Total Organic Carbon	4 hours	236.1 hours
440-196558-2	SWFTS-IW13B-EM06B	SM5310B	Total	Total Organic Carbon	4 hours	196.7 hours
440-196558-2	SWFTS-IW14-EM06B-FD	SM5310B	Total	Total Organic Carbon	4 hours	236.5 hours
440-196558-2	SWFTS-IW17-EM06B	SM5310B	Total	Total Organic Carbon	4 hours	236.9 hours
440-196558-2	SWFTS-IW20-EM06B	SM5310B	Total	Total Organic Carbon	4 hours	236.1 hours
440-198276-1	SWFTS-IW03-EM07	SM5310B	Total	Total Organic Carbon	4 hours	48.9 hours
440-198276-1	SWFTS-IW04-EM07	SM5310B	Total	Total Organic Carbon	4 hours	44.5 hours
440-198276-1	SWFTS-IW05-EM07	SM5310B	Total	Total Organic Carbon	4 hours	44.8 hours
440-198276-1	SWFTS-IW07-EM07	SM5310B	Total	Total Organic Carbon	4 hours	50.8 hours
440-198276-1	SWFTS-IW08-EM07	SM5310B	Total	Total Organic Carbon	4 hours	51 hours
440-198276-1	SWFTS-IW09-EM07	SM5310B	Total	Total Organic Carbon	4 hours	51.2 hours
440-198276-1	SWFTS-IW10-EM07	SM5310B	Total	Total Organic Carbon	4 hours	58.8 hours
440-198276-1	SWFTS-IW11-EM07	SM5310B	Total	Total Organic Carbon	4 hours	50.3 hours
440-198276-1	SWFTS-IW12-EM07	SM5310B	Total	Total Organic Carbon	4 hours	61.4 hours
440-198276-1	SWFTS-IW15-EM07	SM5310B	Total	Total Organic Carbon	4 hours	58.6 hours
440-198276-1	SWFTS-IW15-EM07-FD	SM5310B	Total	Total Organic Carbon	4 hours	58.9 hours
440-198276-1	SWFTS-IW16A-EM07	SM5310B	Total	Total Organic Carbon	4 hours	59.6 hours
440-198276-1	SWFTS-IW16B-EM07	SM5310B	Total	Total Organic Carbon	4 hours	57.2 hours
440-198276-1	SWFTS-IW19-EM07	SM5310B	Total	Total Organic Carbon	4 hours	60.4 hours

Table 13 Holding Time Exceedances

SDG	Sample ID	Method	Total or Dissolved	Parameter	Time Limit	Time Elapsed
440-203841-1	SWFTS-MW14-EM08	RSK175	Total	Methane	7 days	9.3 days
440-203937-1	SWFTS-MW23-EM08	EPA 300.1B	Total	Chlorate	28 days	35.8 days
440-207137-1	SWFTS-MW10A-EM09-FD	SM5310B	Total	Total Organic Carbon	4 hours	51.1 hours
440-215585-2	SWFTS-MW05B-EM11	EPA 300.0	Total	Nitrate [as N]	48 hours	54.4 hours
440-215717-2	SWFTS-MW15-EM11	EPA 300.0	Total	Nitrate [as N]	48 hours	48.7 hours
440-222092-1	PC-88-EM15	EPA 300.0	Total	Nitrate [as N]	48 hours	156.5 hours

Table 14 Laboratory Blank Detections

SDG	Sample ID	Method	Parameter	Result	Units	Associated Samples with Qualification
440-196786-1	MB 440-442837/1-A	SW-6010B	Molybdenum	0.0105	mg/L	SWFTS-MW10A-EM06, SWFTS-MW16-EM06
440-203937-1	MB 440-461169/1-A	SW-6010B	Calcium	0.099	mg/L	SWFTS-20180221-EM08-EB
440-204033-1	MB 440-461501/1-A	SW-6010B	Calcium	0.0669	mg/L	SWFTS-20180222-EM08-FB
440-207137-1	MB 440-471007/1-A	SW-6010B	Aluminum	0.0685	mg/L	SWFTS-MW10A-EM09
440-207268-1	MB 440-469644/1-A	SW-6010B	Calcium	0.0885	mg/L	SWFTS-20180327-EM09-EB
440-207497-1	MB 440-468594/1-A	SW-6010B	Magnesium	0.0158	mg/L	SWFTS-20180328-EM09-FB
440-207497-1	MB 440-469644/1-A	SW-6010B	Calcium	0.0885	mg/L	SWFTS-20180328-EM09-FB
440-210284-1	MB 440-475372/1-A	SW-6010B	Sodium	0.363	mg/L	SWFTS-EM10-20180501-EB
440-210430-1	MB 440-475969/1-A	SW-6010B	Aluminum	0.0531	mg/L	SWFTS-MW03-EM10
440-218109-1	MB 440-494626/1-I	SW-6010B	Calcium	0.159	mg/L	SWFTS-20180814-FB
440-218296-1	MB 440-496880/1-A	SW-6010B	Calcium	0.0552	mg/L	SWFTS-20180816-EB, SWFTS-20180816-EB(2), SWFTS-20180816-FB
440-218296-1	MB 440-496880/1-A	SW-6010B	Sodium	0.328	mg/L	SWFTS-20180816-EB, SWFTS-20180816-FB
440-219797-1	MB 440-499701/1-A	SW-6010B	Calcium	0.0679	mg/L	SWFTS-20180910-EB
440-219886-1	MB 440-499203/46	EPA 300.1	Chlorate	4.14	ug/L	SWFTS-MW22-EM14
440-220125-1	MB 440-499701/1-A	SW-6010B	Calcium	0.0679	mg/L	SWFTS-20180913-EB, SWFTS-20180913-FB
440-221855-1	MB 440-505005/1-A	SW-6010B	Aluminum	0.0764	mg/L	SWFTS-MW03-EM15, SWFTS-MW19-EM15, SWFTS- MW19-EM15-FD
440-221975-1	MB 440-505005/1-A	SW-6010B	Aluminum	0.0764	mg/L	SWFTS-MW02-EM15, SWFTS-MW05A-EM15
440-221975-1	MB 440-505006/1-A	SW-6010B	Aluminum	0.0695	mg/L	SWFTS-MW06A-EM15, SWFTS-MW06A-EM15-FD, SWFTS-MW06B-EM15, SWFTS-MW24-EM15
440-222092-1	CCB 440-505628/39	SW-6010B	Nickel	0.0132	mg/L	SWFTS-MW16-EM15
440-222092-1	MB 440-505003/1-A	SW-6010B	Aluminum	0.0676	mg/L	PC-58-EM15, PC-88-EM15, PC-88-EM15-FD, PC-92- EM15, PC-94-EM15, PC-97-EM15, SWFTS-MW04- EM15, SWFTS-MW16-EM15, SWFTS-MW18-EM15, SWFTS-MW23-EM15, SWFTS-MW25-EM15

Table 15 Equipment Blank and Field Blank Detections

SDG*	Sample ID	Blank Type	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Associated Samples with Qualification
440-193989-1	SWFTS-EM04-20171010-EB	EB	10/10/17	SW-6010B	Dissolved	Aluminum	0.056	mg/L	SWFTS-PC-94-EM04
440-193989-1	SWFTS-EM04-20171010-EB	EB	10/10/17	SW-7199	Total	Chromium [VI]	0.27	ug/L	SWFTS-MW21-EM04
440-194202-1	SWFTS-EM04-20171012-EB	EB	10/12/17	RSK175	Total	Methane	0.00031	mg/L	SWFTS-MW16-EM04
440-194202-1	SWFTS-EM04-20171012-FB	FB	10/12/17	SW-6010B	Dissolved	Copper	1.2	mg/L	SWFTS-MW04-EM04, SWFTS-MW24-EM04, SWFTS-PC-92-EM04
440-203937-1	SWFTS-20180221-EM08-EB	EB	02/21/18	SW-6010B	Dissolved	Aluminum	0.17	mg/L	SWFTS-MW03-EM08, SWFTS-MW16-EM08
440-203937-1	SWFTS-20180221-EM08-EB	EB	02/21/18	SW-6010B	Dissolved	Iron	0.088	mg/L	SWFTS-MW03-EM08
440-203937-1	SWFTS-20180221-EM08-EB	EB	02/21/18	SW-6010B	Dissolved	Silicon	4.1	mg/L	SWFTS-MW03-EM08, SWFTS-MW16-EM08
440-203937-1	SWFTS-20180221-EM08-EB	EB	02/21/18	SW-6010B	Dissolved	Titanium	0.0041	mg/L	SWFTS-MW03-EM08, SWFTS-MW16-EM08
440-207268-1	SWFTS-20180327-EM09-EB	EB	03/27/18	SW-6010B	Dissolved	Aluminum	0.051	mg/L	SWFTS-MW03-EM09, SWFTS-MW16-EM09
440-207497-1	SWFTS-20180328-EM09-FB	FB	03/28/18	SW-6010B	Dissolved	Aluminum	0.059	mg/L	SWFTS-MW25-EM09
440-207497-1	SWFTS-20180328-EM09-FB	FB	03/28/18	SW-6020A	Dissolved	Selenium	8.7	ug/L	SWFTS-MW25-EM09
440-218296-1	SWFTS-20180816-FB	FB	08/16/18	EPA 300.0	Total	Nitrate [as N]	0.056	mg/L	COH-2B1-EM13, PC-97-EM13, SWFTS-MW04-EM13, SWFTS-MW22-EM13, SWFTS-MW23-EM13
440-219797-1	SWFTS-20180910-FB	FB	09/10/18	SW-6010B	Dissolved	Silicon	3.9	mg/L	SWFTS-MW10A-EM14, SWFTS-MW16-EM14
440-220125-1	SWFTS-20180913-FB	FB	09/13/18	EPA 300.0	Total	Nitrate [as N]	0.082	mg/L	LVWPS-MW108A-EM14, LVWPS-MW109-EM14, LVWPS-MW111A-EM14

* SDG of EB or FB, which may differ from associated samples.

Table 16 Completeness Summary

Method	Total Number of Validated Results	Number of Rejected Results	Percent Completeness
Calculated	119	0	100.00%
EPA 300.0	1629	0	100.00%
EPA 300.1B	784	1	99.87%
EPA 314.0	827	0	100.00%
EPA 351.2	126	0	100.00%
EPA 365.3	197	1	99.49%
RSK175	102	0	100.00%
SM2320B	1536	0	100.00%
SM2540C	137	0	100.00%
SM2540C-soluble	7	0	100.00%
SM4500-H+	4	0	100.00%
SM5310B	668	0	100.00%
SW-6010B	6712	0	100.00%
SW-6020A	996	0	100.00%
SW-7199	22	0	100.00%
SW-9045C-soluble	4	0	100.00%
SW-9060	68	0	100.00%
VFA-IC	534	0	100.00%

Appendix L.1

Validation Checklists

Appendix L.1

Validation Checklists

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 5 with MS/MSD

SDG/Report No.: 440-177629-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	---	---	---	---
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Compound Quantitation and Reporting Limits		X	No	None
9. Duplicates		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as reported.				
Usability: Results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-BH02-WG-26	440-177629-1	02/21/17	2.2 °C
SWFTS-BH02-WG-26-MS	440-177629-1 MS	02/21/17	2.2 °C
SWFTS-BH02-WG-26-MSD	440-177629-1 MSD	02/21/17	2.2 °C
SWFTS-BH02-WG-35	440-177629-2	02/21/17	2.2 °C
SWFTS-BH02-WG-35-FD	440-177629-3	02/21/17	2.2 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	N/A
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/Yes
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
9. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/11/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 1

SDG/Report No.: 440-177682-1
 Lab ID: Test America
 Matrix: Soil

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI	X		Yes	SWFTS-BH02-SO-34: Qualify perchlorate "J+".
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples		X	No	None
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	No	None
16. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2B_Validation_Manual			
Verification and Validation Label Code	S2BVM			
Overall Assessment: Acceptable as qualified. Usability: Sample results qualified estimated (J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-BH02-SO-34	440-177682-1	02/21/17	2.2 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A

Data Verification and Validation Summary

9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/No
314.0: Perchlorate recovery was high in the MS of SWFTS-BH02-SO-34.	

10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A

11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICESA samples non-detect for analytes not in the solution?	Yes/Yes/N/A

13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ± 30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	N/A

14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or $\leq 30\%$ (water) or 50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

16. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/18/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 1

SDG/Report No.: 440-177819-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	---	---	---	---
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Compound Quantitation and Reporting Limits		X	No	None
9. Duplicates		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as reported.				
Usability: Sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-BH07-WG-25	440-177819-1	02/22/17	1.3 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/N/A

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

9. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 12/14/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 3 with MS/MSD

SDG/Report No.: 440-177822-1
 Lab ID: Test America
 Matrix: Soil

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI	X		No	None
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples		X	No	None
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	No	None
16. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2B_Validation_Manual			
Verification and Validation Label Code	S2BVM			
Overall Assessment: Acceptable as reported.				
Usability: Sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-BH07-SO-14.5	440-177822-1	02/22/17	1.3 °C
SWFTS-BH07-SO-14.5-MS	440-177822-1MS	02/22/17	1.3 °C
SWFTS-BH07-SO-14.5-MSD	440-177822-1MSD	02/22/17	1.3 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A

Data Verification and Validation Summary

9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/No
314.0: Perchlorate recoveries were low in the MS/MSD of SWFTS-BH07-SO-14.5. Concentration in the parent sample was >4x the amount spiked. Recovery criteria do not apply. No qualification.	

10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A

11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	Yes/Yes/N/A

13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ±30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	N/A

14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water) or 50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

16. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/18/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 2

SDG/Report No.: 440-177995-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	---	---	---	---
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Compound Quantitation and Reporting Limits		X	No	None
9. Duplicates		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as reported.				
Usability: Sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-BH07-WG-35	440-177995-1	02/22/2017	3.1 °C
SWFTS-BH08-WG-22	440-177995-2	02/23/2017	3.1 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/N/A
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
9. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 12/14/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 1

SDG/Report No.: 440-177998-1
 Lab ID: Test America
 Matrix: Soil

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI		X	No	None
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples		X	No	None
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	No	None
16. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2B_Validation_Manual			
Verification and Validation Label Code	S2BVM			
Overall Assessment: Acceptable as reported.				
Usability: All results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-BH08-SO-14.5	440-177998-1	02/23/17	3.1 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A

Data Verification and Validation Summary

9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/Yes

10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A

11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	Yes/Yes/N/A

13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ± 30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	N/A

14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or $\leq 30\%$ (water) or 50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

16. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/18/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Project No.: M11
 No. of Samples: 4

SDG/Report No.: 440-178093-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Compound Quantitation and Reporting Limits		X	No	None
9. Duplicates		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as reported. Usability: Sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-BH08-WG-36	440-178093-1	02/23/17	2.6 °C
SWFTS-BH08-WG-46	440-178093-2	02/23/17	2.6 °C
SWFTS-BH10-WG-36	440-178093-3	02/23/17	2.6 °C
SWFTS-BH10-WG-21	440-178093-4	02/23/17	2.6 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/N/A

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

9. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 12/14/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 2

SDG/Report No.: 440-178098-1
 Lab ID: Test America
 Matrix: Soil

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI		X	No	None
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples		X	No	None
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	No	None
16. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2B_Validation_Manual			
Verification and Validation Label Code	S2BVM			
Overall Assessment: Acceptable as reported. Usability: Sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-BH08-SO-52.5	440-178098-1	02/24/17	2.6 °C
SWFTS-BH10-SO-12	440-178098-2	02/24/17	2.6 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A

Data Verification and Validation Summary

9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/Yes

10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A

11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICESA samples non-detect for analytes not in the solution?	Yes/Yes/N/A

13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ±30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	N/A

14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water) or 50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

16. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/18/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 7

SDG/Report No.: 440-178282-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	---	---	---	---
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Compound Quantitation and Reporting Limits		X	No	None
9. Duplicates	---	---	---	---
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as reported.				
Usability: Sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-BH03-WG-26	440-178282-1	2/25/2017	0.2 °C
SWFTS-BH03-WG-41	440-178282-2	2/25/2017	0.2 °C
SWFTS-BH01-WG-22	440-178282-3	2/26/2017	0.2 °C
SWFTS-BH01-WG-36	440-178282-4	2/26/2017	0.2 °C
SWFTS-BH04-WG-21	440-178282-5	2/26/2017	0.2 °C
SWFTS-BH04-WG-36	440-178282-6	2/26/2017	0.2 °C
SWFTS-BH09-WG-13.5	440-178282-7	2/27/2017	0.2 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/N/A
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
9. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	No/N/A/N/A
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 12/14/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 7

SDG/Report No.: 440-178303-1
 Lab ID: Test America
 Matrix: Soil

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks	X		No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI	X		Yes	SWFTS-BH03-SO-24: Qualify perchlorate "J+".
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples		X	No	None
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	No	None
16. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2B_Validation_Manual			
Verification and Validation Label Code	S2BVM			
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified estimated (J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-BH10-SO-51	440-178303-1	2/24/2017	0.2 °C
SWFTS-BH10-SO-51-FD	440-178303-2	2/24/2017	0.2 °C
SWFTS-BH03-SO-24	440-178303-3	2/25/2017	0.2 °C
SWFTS-BH01-SO-16	440-178303-4	2/26/2017	0.2 °C
SWFTS-BH04-SO-14	440-178303-5	2/26/2017	0.2 °C
SWFTS-BH09-SO-16	440-178303-6	2/27/2017	0.2 °C
SWFTS-BH09-SO-33	440-178303-7	2/27/2017	0.2 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/Yes
314.0: Perchlorate was detected in CCB 440-391256/69. It was associated with the MB and LCS only.	

Data Verification and Validation Summary

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A

9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/No
314.0: Perchlorate recovery was high in the MSD of SWFTS-BH03-SO-24.	

10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A

11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	Yes/Yes/N/A

13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ± 30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	N/A

14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or $\leq 30\%$ (water) or 50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

16. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/18/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 7

SDG/Report No.: 440-178410-1
 Lab ID: Test America
 Matrix: Soil

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI	X		No	None
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples		X	No	None
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	No	None
16. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2B_Validation_Manual			
Verification and Validation Label Code	S2BVM			
<p>Overall Assessment: Acceptable as reported. Usability: Sample results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW04-SO-25	440-178410-1	2/28/2017	3.6 °C
SWFTS-MW04-SO-15	440-178410-2	2/28/2017	3.6 °C
SWFTS-MW04-SO-1	440-178410-3	2/28/2017	3.6 °C
SWFTS-MW04-SO-5	440-178410-4	2/28/2017	3.6 °C
SWFTS-MW02-SO-6	440-178410-5	2/28/2017	3.6 °C
SWFTS-MW02-SO-6-FD	440-178410-6	2/28/2017	3.6 °C
SWFTS-MW02-SO-7	440-178410-7	2/28/2017	3.6 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No

Data Verification and Validation Summary

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A
9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/No
314.0: Perchlorate recoveries were outside limits in the MS/MSD of SWFTS-MW04-SO-1. The concentration in the parent sample was >4x the amount spiked. Recovery criteria do not apply. No qualification.	
10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A
11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	Yes/Yes/N/A
13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ± 30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	N/A
14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or $\leq 30\%$ (water) or 50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
16. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/18/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 3

SDG/Report No.: 440-178495-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	---	---	---	---
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as reported.				
Usability: Sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW03-WG-21	440-178495-1	3/1/2017	5.8 °C
SWFTS-MW03-WG-32	440-178495-2	3/1/2017	5.8 °C
SWFTS-MW03-WG-32-FD	440-178495-3	3/1/2017	5.8 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	N/A
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/N/A
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 12/14/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 5

SDG/Report No.: 440-178497-1
 Lab ID: Test America
 Matrix: Soil

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI		X	No	None
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples		X	No	None
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	No	None
16. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2B_Validation_Manual			
Verification and Validation Label Code	S2BVM			
<p>Overall Assessment: Acceptable as reported. Usability: Sample results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW02-SO-14	440-178497-1	2/28/2017	5.8 °C
SWFTS-MW02-SO-25	440-178497-2	2/28/2017	5.8 °C
SWFTS-MW03-SO-14	440-178497-3	3/1/2017	5.8 °C
SWFTS-MW03-SO-14-FD	440-178497-4	3/1/2017	5.8 °C
SWFTS-MW03-SO-46	440-178497-5	3/1/2017	5.8 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No

Data Verification and Validation Summary

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A
9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/Yes
10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A
11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	Yes/Yes/N/A
13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ± 30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	N/A
14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or $\leq 30\%$ (water) or 50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
16. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/18/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 2

SDG/Report No.: 440-178689-1
 Lab ID: Test America
 Matrix: Soil

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI		X	No	None
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples		X	No	None
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	No	None
16. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2B_Validation_Manual			
Verification and Validation Label Code	S2BVM			
Overall Assessment: Acceptable as reported.				
Usability: Sample results qualified are considered valid and useable for all purposes				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW03-SO-57	440-178689-1	3/1/2017	4.1 °C
SWFTS-MW03-SO-58	440-178689-2	3/1/2017	4.1 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A

Data Verification and Validation Summary

9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/Yes

10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A

11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	Yes/Yes/N/A

13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ± 30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	N/A

14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or $\leq 30\%$ (water) or 50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

16. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/18/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 4

SDG/Report No.: 440-179122-1
 Lab ID: Test America
 Matrix: Soil

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI	X		No	None
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples	X		Yes	SWFTS-MW01-SO-17: Qualify perchlorate "J-".
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	No	None
16. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2B_Validation_Manual			
Verification and Validation Label Code	S2BVM			
Overall Assessment: Acceptable as qualified.				
Usability: Sample results qualified estimated (J-) are useable for limited purposes. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW01-SO-17	440-179122-1	3/7/2017	1.3 °C
SWFTS-MW01-SO-21	440-179122-2	3/7/2017	1.3 °C
SWFTS-MW01-SO-30	440-179122-3	3/7/2017	1.3 °C
SWFTS-MW01-SO-40.5	440-179122-4	3/7/2017	1.3 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A

Data Verification and Validation Summary

9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/No
314.0: Perchlorate recovery was high in the MSD of SWFTS-MW01-SO-30. The concentration in the parent samples was >4x the amount spiked. Recovery criteria do not apply.	

10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A

11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	Yes/No/N/A
314.0: Perchlorate recoveries were low in INF 440-394907/4 and INF 440-395408/6.	

13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ± 30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	N/A

14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or $\leq 30\%$ (water) or 50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

16. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/18/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 3

SDG/Report No.: 440-179273-1
 Lab ID: Test America
 Matrix: Soil

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI		X	No	None
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples		X	No	None
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
16. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2B_Validation_Manual			
Verification and Validation Label Code	S2BVM			
Overall Assessment: Acceptable as qualified.				
Usability: Sample results qualified estimated (J) are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW06B-SO-12	440-179273-1	3/7/2017	5.8 °C
SWFTS-MW06B-SO-29.5	440-179273-2	3/7/2017	5.8 °C
SWFTS-MW06B-SO-36.5	440-179273-3	3/7/2017	5.8 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A

Data Verification and Validation Summary

9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/Yes

10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A

11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	Yes/Yes/N/A

13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ± 30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	N/A

14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or $\leq 30\%$ (water) or 50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/N/A/N/A

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

16. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/18/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 1

SDG/Report No.: 440-179384-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as reported.				
Usability: Sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW08C-WG-50	440-179384-1	3/9/2017	2.1 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	N/A

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/N/A

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 12/14/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 9

SDG/Report No.: 440-179386-1
 Lab ID: Test America
 Matrix: Soil

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI	X		No	None
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples	X		Yes	SWFTS-MW08C-SO-28, SWFTS-MW08C-SO-28-FD, SWFTS-MW08C-SO-49, SWFTS-MW08C-SO-51, SWFTS-MW08C-SO-55, and SWFTS-MW08C-SO-43: Qualify perchlorate "J". SWFTS-MW08C-SO-60 and SWFTS-MW08C-SO-65: Qualify perchlorate "UJ". SWFTS-MW08C-SO-69: Qualify perchlorate "J".
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MD/SQL and RL/PQL "J".
16. Calculations and Raw Data		X	No	None
17. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_4_Validation_Manual			
Verification and Validation Label Code	S4VM			
<p>Overall Assessment: Acceptable as qualified. Usability: Results qualified as estimated (J-, UJ, J) are useable for limited purposes. Other sample results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW08C-SO-28	440-179386-1	3/8/2017	2.1 °C
SWFTS-MW08C-SO-28-FD	440-179386-2	3/8/2017	2.1 °C
SWFTS-MW08C-SO-49	440-179386-3	3/9/2017	2.1 °C
SWFTS-MW08C-SO-51	440-179386-4	3/9/2017	2.1 °C
SWFTS-MW08C-SO-55	440-179386-5	3/9/2017	2.1 °C
SWFTS-MW08C-SO-43	440-179386-6	3/8/2017	2.1 °C
SWFTS-MW08C-SO-60	440-179386-7	3/9/2017	2.1 °C
SWFTS-MW08C-SO-65	440-179386-8	3/9/2017	2.1 °C
SWFTS-MW08C-SO-69	440-179386-9	3/9/2017	2.1 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/Yes

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/Yes

Data Verification and Validation Summary

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A

9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
314.0: Perchlorate recovery was low in the MSD of SWFTS-MW08C-SO-51. The concentration in the parent sample was >4x the amount spiked. Recovery criteria do not apply.	

10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A

11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	Yes/No/N/A
314.0: Perchlorate recoveries were low in INF 440-394907/4 (MB and LCS) and INF 440-395408/6 (all samples). Recoveries were 79%.	

13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ± 30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	Yes/Yes/Yes

14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or $\leq 30\%$ for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/No/N/A

Data Verification and Validation Summary

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RL/PQLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL/SQL but below the RL/PQL are estimated and qualified "J".	

16. Calculations and Raw Data	
Did calculated results and raw data match the reported data?	Yes

17. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/7/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 15 with MS/MSD

SDG/Report No.: 440-179551-1
 Lab ID: Test America
 Matrix: Soil

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI	X		No	None
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples	X		Yes	SWFTS-MW07B-SO-15: Qualify perchlorate "J".
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits	X		Yes	SWFTS-MW07B-SO-45 and SWFTS-MW10C-SO-51.5: Qualify TOC "J".
16. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2B_Validation_Manual			
Verification and Validation Label Code	S2BVM			
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified estimated (J-, J) are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW05B-SO-26.5	440-179551-1	3/10/2017	2.4 °C
SWFTS-MW05B-SO-36.5	440-179551-2	3/10/2017	2.4 °C
SWFTS-MW07B-SO-5	440-179551-3	3/11/2017	2.4 °C
SWFTS-MW07B-SO-8	440-179551-4	3/11/2017	2.4 °C
SWFTS-MW07B-SO-15	440-179551-5	3/11/2017	2.4 °C
SWFTS-MW07B-SO-28	440-179551-6	3/11/2017	2.4 °C
SWFTS-MW07B-SO-28-MS	440-179551-6 MS	3/11/2017	2.4 °C
SWFTS-MW07B-SO-28-MSD	440-179551-6 MSD	3/11/2017	2.4 °C
SWFTS-MW07B-SO-28-FD	440-179551-7	3/11/2017	2.4 °C
SWFTS-MW07B-SO-45	440-179551-8	3/11/2017	2.4 °C
SWFTS-MW07B-SO-45-FD	440-179551-9	3/11/2017	2.4 °C
SWFTS-MW07B-SO-53	440-179551-10	3/11/2017	2.4 °C
SWFTS-MW10C-SO-14	440-179551-11	3/12/2017	2.4 °C
SWFTS-MW10C-SO-31.5	440-179551-12	3/12/2017	2.4 °C
SWFTS-MW10C-SO-51.5	440-179551-13	3/13/2017	2.4 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A
5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A
6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

Data Verification and Validation Summary

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No
8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A
9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/Yes
314.0: Perchlorate recoveries were low in the MS/MSD of SWFTS-MW07B-SO-28. The concentration in the parent sample was >4x the amount spiked. Recovery criteria do not apply.	
10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A
11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	Yes/No/N/A
314.0: Perchlorate recovery was low in INF 440-396086/4 (79%). Limit is 80-120%.	
13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ±30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	N/A
14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water) or 50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
9060: TOC results exceeded the upper calibration limit in SWFTS-MW07B-SO-45 and SWFTS-MW10C-SO-51.5.	
16. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/19/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 2

SDG/Report No.: 440-179672-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	---	---	---	---
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as reported.				
Usability: Sample are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-WG1-FB	440-179672-1	3/14/2017	2.0 °C
SWFTS-WG1-EB	440-179672-2	3/14/2017	2.0 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	N/A
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 12/15/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 7 with MS/MSD

SDG/Report No.: 440-179673-1
 Lab ID: Test America
 Matrix: Soil/Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times	X		Yes	SWFTS-SO1-FB, SWFTS-SO1-EB, SWFTS-MW09B-SO-19: Qualify pH "J".
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI	X		Yes	SWFTS-MW09B-SO-39 and SWFTS-MW09B-SO-39-FD: Qualify perchlorate "J".
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples	X		Yes	SWFTS-MW09B-SO-39-FD: Qualify perchlorate "J".
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	No	None
16. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Soil: Stage_2B_Validation_Manual Water: Stage_2A_Validation_Manual			
Verification and Validation Label Code	Soil: S2BVM Water: S2AVM			
Overall Assessment: Acceptable as qualified. Usability: Sample results qualified as estimated (J) are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)	Validation Stage
SWFTS-MW09B-SO-19	440-179673-1	3/14/2017	2.0 °C	Stage 2B
SWFTS-MW09B-SO-39	440-179673-2	3/14/2017	2.0 °C	Stage 2B
SWFTS-MW09B-SO-39-MS	440-179673-2MS	3/14/2017	2.0 °C	Stage 2B
SWFTS-MW09B-SO-39-MSD	440-179673-2MSD	3/14/2017	2.0 °C	Stage 2B
SWFTS-MW09B-SO-39-FD	440-179673-3	3/14/2017	2.0 °C	Stage 2B
SWFTS-SO1-EB	440-179673-4	3/14/2017	2.0 °C	Stage 2A
SWFTS-SO1-FB	440-179673-5	3/14/2017	2.0 °C	Stage 2A

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/No
TOC was requested for SWFTS-SO1-EB (440-179673-4) and SWFTS-SO1-FB (440-179673-5), but no bottles were provided. TOC was not analyzed. 9045C (soil pH) was requested for waters. The lab analyzed by SM 4500H+B.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
SM 4500 H+ B/9045C: pH was not analyzed immediately.	

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No

Data Verification and Validation Summary

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A

9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/No
314.0: Perchlorate recovery was high in the MSD of SWFTS-MW09B-SO-39. If the sample is biased high, then it should be at a higher concentration than its FD. It is not. Based on the results of the parent (0.85) and its FD (1.2), qualify the results "J" using professional judgment.	

10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A

11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	Yes/No/N/A
314.0: Perchlorate recovery was low in INF 440-396086/4 (79%). Limit is 80-120%. SWFTS-MW09B-SO-39-FD is the only sample in the run. If the sample is biased low, then it would be at a lower concentration than its parent sample. It is not. Based on the results of the parent (0.85) and the FD (1.2), qualify the results "J" using professional judgment.	

13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ±30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	N/A

14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water) or 50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

16. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/19/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 9 with MS/MSD

SDG/Report No.: 440-179802-1
 Lab ID: Test America
 Matrix: Soil/Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times	X		Yes	SWFTS-SO2-FB and SWFTS-SO2-EB: Qualify pH "J".
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI		X	No	None
10. Serial Dilution	---	---	---	---
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples	X		Yes	SWFTS-BH05-SO-20.5, SWFTS-BH05-SO-31-FD, SWFTS-BH05-SO-36, and SWFTS-BH06-SO-14: Qualify perchlorate "J-".
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	No	None
16. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Soil: Stage_2B_Validation_Manual Water: Stage_2A_Validation_Manual			
Verification and Validation Label Code	Soil: S2BVM Water: S2AVM			
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified as estimated (J-, J) are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)	Validation Stage
SWFTS-BH05-SO-20.5	440-179802-1	3/15/2017	2.1 °C	Stage 2B
SWFTS-BH05-SO-31	440-179802-2	3/15/2017	2.1 °C	Stage 2B
SWFTS-BH05-SO-31-MS	440-179802-2 MS	3/15/2017	2.1 °C	Stage 2B
SWFTS-BH05-SO-31-MSD	440-179802-2 MSD	3/15/2017	2.1 °C	Stage 2B
SWFTS-BH05-SO-31-FD	440-179802-3	3/15/2017	2.1 °C	Stage 2B
SWFTS-BH05-SO-36	440-179802-4	3/15/2017	2.1 °C	Stage 2B
SWFTS-SO2-EB	440-179802-5	3/15/2017	2.1 °C	Stage 2A
SWFTS-SO2-FB	440-179802-6	3/15/2017	2.1 °C	Stage 2A
SWFTS-BH06-SO-14	440-179802-7	3/15/2017	2.1 °C	Stage 2B

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/No
TOC was requested for SWFTS-SO2-EB and SWFTS-SO2-FB, but no bottles were provided. TOC was not analyzed. 9045C (soil pH) was requested for waters. The lab analyzed by SM 4500H+B.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
SM 4500 H+ B: pH in water was not analyzed immediately.	

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No

Data Verification and Validation Summary

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A
9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/No
314.0: MS/MSD from a different SDG. No qualification in this SDG.	
10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	N/A
11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	Yes/No/N/A
314.0: Perchlorate recovery was low in INF 440-396086/4 (79%). Limit is 80-120%.	
13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ± 30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	N/A
14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or $\leq 30\%$ (water) or 50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
16. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/19/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 6

SDG/Report No.: 440-180820-1/2/3
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified.				
Usability: Sample results qualified "J", estimated, are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
PC-58-BL01	440-180820-1	3/28/2017	2.1 °C
PC-94-BL01	440-180820-2	3/28/2017	2.1 °C
SWFTS-MW08C-BL01	440-180820-3	3/28/2017	2.1 °C
SWFTS-MW10C-BL01	440-180820-4	3/28/2017	2.1 °C
SWFTS-FIELDQC-BL01-FB	440-180820-5	3/28/2017	2.1 °C
SWFTS-FIELDQC-BL01-EB	440-180820-6	3/28/2017	2.1 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
SWFTS-FIELDQC-BL01-EB has detections of boron (T), calcium (T&D), and magnesium (T). SWFTS-FIELDQC-BL01-FB has detections of boron (T), calcium (D), and sodium (T). Concentrations in the samples were >10x the amount in the blank or ND.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 12/27/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 7

SDG/Report No.: 440-180937-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified.				
Usability: Sample results qualified "J", estimated, are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
PC-91-BL01	440-180937-1	3/29/2017	3.3 °C/5.0 °C
PC-92-BL01	440-180937-2	3/29/2017	3.3 °C/5.0 °C
SWFTS-MW09A-BL01	440-180937-3	3/29/2017	3.3 °C/5.0 °C
SWFTS-MW09B-BL01	440-180937-4	3/29/2017	3.3 °C/5.0 °C
SWFTS-MW09B-BL01-FD	440-180937-5	3/29/2017	3.3 °C/5.0 °C
SWFTS-MW01-BL01	440-180937-6	3/29/2017	3.3 °C/5.0 °C
SWFTS-MW02-BL01	440-180937-7	3/29/2017	3.3 °C/5.0 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Calcium and magnesium were detected in MB 440-398539/1-A. The concentrations in the samples were >10x the amount in the blank. No qualification is needed.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were outside limits in the MS/MSD of PC-91-BL01. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
6010B: Calcium, magnesium, silicon, and sodium recoveries were outside limits in the MS/MSD of PC-91-BL01. The concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 12/27/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Project No.: M11
 No. of Samples: 11 with MS/MSD

SDG/Report No.: 440-181045-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW08A-BL01: Qualify phosphorus "UJ".
7. Laboratory Control Samples		X	No	None
8. Duplicates	X		Yes	SWFTS-MW03-BL01 and SWFTS-MW03-BL01-FD: Qualify aluminum, iron, and titanium "J" for detects and "UJ" for non-detects.
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW08A-BL01: Qualify unused results "R".

Multiple results: SWFTS-MW08A-BL01 was analyzed twice for nitrate at 20x and 500x dilutions. Nitrate concentration in the 20x dilution analysis was used. According to lab, the result obtained from the 500x dilution was used for lab QC and does not reflect the actual concentration. The result was magnified due to the dilution.

Verification and Validation Label	Stage_2A_Validation_Manual
-----------------------------------	----------------------------

Verification and Validation Label Code	S2AVM
--	-------

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified estimated (UJ, J) are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW06A-BL01	440-181045-1	3/30/2017	1.5 °C/2.0 °C
SWFTS-MW06B-BL01	440-181045-2	3/30/2017	1.5 °C/2.0 °C
SWFTS-MW07A-BL01	440-181045-3	3/30/2017	1.5 °C/2.0 °C
SWFTS-MW07B-BL01	440-181045-4	3/30/2017	1.5 °C/2.0 °C
SWFTS-MW03-BL01	440-181045-5	3/30/2017	1.5 °C/2.0 °C
SWFTS-MW03-BL01-FD	440-181045-6	3/30/2017	1.5 °C/2.0 °C
SWFTS-MW05A-BL01	440-181045-7	3/30/2017	1.5 °C/2.0 °C
SWFTS-MW05B-BL01	440-181045-8	3/30/2017	1.5 °C/2.0 °C
SWFTS-MW08A-BL01	440-181045-9	3/30/2017	1.5 °C/2.0 °C
SWFTS-MW08A-BL01-MS	440-181045-9 MS	3/30/2017	1.5 °C/2.0 °C
SWFTS-MW08A-BL01-MSD	440-181045-9 MSD	3/30/2017	1.5 °C/2.0 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

Data Verification and Validation Summary

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were outside limits in the MS/MSD of SWFTS-MW08A-BL01. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
365.3: Phosphorus recoveries were low in the MS/MSD of SWFTS-MW08A-BL01. RPD was high, but sample is ND.	
6010B: MS/MSD recoveries for calcium, chlorate, magnesium, potassium, silicon, sodium, and strontium were outside limits. The concentrations in the parent sample SWFTS-MW08A-BL01 were >4x the amount spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/No

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 12/27/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 2

SDG/Report No.: 440-181122-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as reported.				
Usability: Sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW04-BL01	440-181122-1	3/31/2017	1.4 °C
SWFTS-MW10A-BL01	440-181122-2	3/31/2017	1.4 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 12/27/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 9 with MS/MSD

SDG/Report No.: 440-186188-1
 Lab ID: Test America
 Matrix: Soil/Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Instrument Performance	---	---	---	---
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	---	---	---	---
9. Matrix Spike/Matrix Spike Duplicate/MSI	X		No	None
10. Serial Dilution		X	No	None
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples		X	No	None
13. Internal Standards	---	---	---	---
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
16. Calculations and Raw Data		X	No	None
17. Data Package/EDD comparison (10%)		X	No	None

Verification and Validation Label	Soil: Stage_4_Validation_Manual Water: Stage_2A_Validation_Manual
Verification and Validation Label Code	Soil: S4VM Water: S2AVM

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified "J", estimated, are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature	Validation Stage
SWFTS-IW05-SO-28	440-186188-1	6/9/2017	3.9 °C	Stage 4
SWFTS-IW10-SO-39	440-186188-2	5/26/2017	3.9 °C	Stage 4
SWFTS-IW10-SO-39-FD	440-186188-3	5/26/2017	3.9 °C	Stage 4
SWFTS-IW12-SO-31	440-186188-4	6/8/2017	3.9 °C	Stage 4
SWFTS-IW12-SO-31-MS	440-186188-4 MS	6/8/2017	3.9 °C	Stage 4
SWFTS-IW12-SO-31-MSD	440-186188-4 MSD	6/8/2017	3.9 °C	Stage 4
SWFTS-IW17-SO-33.5	440-186188-5	5/31/2017	3.9 °C	Stage 4
SWFTS-FIELDQC-IW-FB	440-186188-6	6/9/2017	3.9 °C	Stage 2A
SWFTS-FIELDQC-IW-EB	440-186188-7	6/9/2017	3.9 °C	Stage 2A

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The client requested that Manganese be added to all samples.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met?	N/A

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte? Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average RRFs ≥ method or NFG requirements?	Yes/Yes/N/A

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations compared to the correct initial calibrations? Were Percent Differences (%D) ≤ method or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	Yes/Yes/Yes/N/A

Data Verification and Validation Summary

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?	Yes/Yes/Yes/No

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	N/A

9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
6010B: MS/MSD recoveries for phosphorus were outside limits. The concentration in the parent sample SWFTS-IW12-SO-31 was >4x the amount spiked, so recovery criteria do not apply.	

10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within acceptable limits of the true value?	Yes/Yes

11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	Yes/Yes/Yes

13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts or Percent Relative Intensities within the acceptance range for the method? If applicable, was the Retention Time of the IS within ± 30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	Yes/Yes/Yes

14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or $\leq 30\%$ for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/No/N/A

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

Data Verification and Validation Summary

16. Calculations and Raw Data	
Did calculated results and raw data match the reported data?	Yes
Slight differences due to rounding.	

17. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/8/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 19 with MS/MSD

SDG/Report No.: 440-188133-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified "J", estimated, are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-IW13A-BL02	440-188133-1	7/11/2017	4.8 °C
SWFTS-IW02B-BL02	440-188133-2	7/11/2017	4.8 °C
SWFTS-IW01A-BL02	440-188133-3	7/11/2017	4.8 °C
SWFTS-IW01A-BL02-MS	440-188133-3 MS	7/11/2017	4.8 °C
SWFTS-IW01A-BL02-MSD	440-188133-3 MSD	7/11/2017	4.8 °C
SWFTS-IW03-BL02	440-188133-4	7/11/2017	4.8 °C
SWFTS-IW03-BL02-FD	440-188133-5	7/11/2017	4.8 °C
SWFTS-IW06B-BL02	440-188133-6	7/11/2017	4.8 °C
SWFTS-IW07-BL02	440-188133-7	7/11/2017	4.8 °C
SWFTS-IW16B-BL02	440-188133-8	7/11/2017	4.8 °C
SWFTS-IW16A-BL02	440-188133-9	7/11/2017	4.8 °C
SWFTS-IW06A-BL02	440-188133-10	7/11/2017	4.8 °C
SWFTS-IW04-BL02	440-188133-11	7/11/2017	4.8 °C
SWFTS-IW04-BL02-FD	440-188133-12	7/11/2017	4.8 °C
SWFTS-IW01B-BL02	440-188133-13	7/11/2017	4.8 °C
SWFTS-IW02A-BL02	440-188133-14	7/11/2017	4.8 °C
SWFTS-IW13B-BL02	440-188133-15	7/11/2017	4.8 °C
SWFTS-IW05-BL02	440-188133-16	7/11/2017	4.8 °C
SWFTS-MW18-BL02	440-188133-17	7/11/2017	4.2 °C/4.8 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
There were several errors on the COC. See case narrative.	
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Chromium was detected in MB 440-417908/1-A. Concentration in associated sample is >10x the amount in the blank. No qualification.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were high in the MS/MSD of SWFTS-IW01A-BL02. Recovery was low in the MSD of SWFTS-IW13B-BL02. Concentrations in the parent samples were >4x the amount spiked. No qualification. Chlorite was not recovered in the MS/MSD of SWFTS-IW01A-BL02 because of dilution.	
6010B: Several metals' recoveries were outside limits in the MS/MSD of SWFTS-MW18-BL02. Recovery was low in the MSD of SWFTS-IW13B-BL02. Concentrations in the parent sample were >4x the amount spiked. No qualification.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 02/28/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 11 with MS/MSD

SDG/Report No.: 440-188244-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW11-BL02: Qualify the following: perchlorate "J+", TKN, formic acid, pyruvic acid "UJ", phosphorous "J-".
7. Laboratory Control Samples		X	No	None
8. Duplicates	X		No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Other (Serial Dilution)	X		Yes	SWFTS-MW11-BL02: Qualify sodium and strontium "J".
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified.				
Usability: Sample results qualified as estimated (UJ, J-, J, J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW17-BL02	440-188244-1	7/12/2017	4.5 °C/4.6 °C/5.1 °C
SWFTS-MW19-BL02	440-188244-2	7/12/2017	3.9 °C/4.5 °C/4.6 °C/5.1 °C
SWFTS-IW09-BL02-FD	440-188244-3	7/12/2017	4.5 °C/4.6 °C/5.1 °C
PC-91-BL02-FD	440-188244-4	7/12/2017	4.5 °C/4.6 °C/5.1 °C
SWFTS-MW20-BL02	440-188244-5	7/12/2017	4.5 °C/4.6 °C/5.1 °C
SWFTS-MW13-BL02	440-188244-6	7/12/2017	3.9 °C/4.5 °C/4.6 °C/5.1 °C
SWFTS-MW11-BL02	440-188244-7	7/12/2017	3.9 °C/4.5 °C/4.6 °C/5.1 °C
SWFTS-MW11-BL02-MS	440-188244-7 MS	7/12/2017	3.9 °C/4.5 °C/4.6 °C/5.1 °C
SWFTS-MW11-BL02-MSD	440-188244-7 MSD	7/12/2017	3.9 °C/4.5 °C/4.6 °C/5.1 °C
SWFTS-MW14-BL02	440-188244-8	7/12/2017	3.9 °C/4.5 °C/4.6 °C/5.1 °C
SWFTS-MW14-BL02-FD	440-188244-9	7/12/2017	3.9 °C/4.5 °C/4.6 °C/5.1 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
A sample ID on the COC did not match the labels.	
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were high in the MS/MSD of SWFTS-MW11-BL02. Concentration in the parent sample was >4x the amount spiked. No qualification. Chlorite was not recovered in the MS/MSD of SWFTS-MW11-BL02 because of dilution.	
314.0: Perchlorate recoveries were high in the MS/MSD of SWFTS-MW11-BL02.	
351.2: Total Kjeldahl nitrogen recoveries were low in the MS/MSD of SWFTS-MW11-BL02. RPD was high, but it was not detected in the parent. No qualification needed for RPD.	
365.3: Total phosphorus recoveries were low in the MS/MSD of SWFTS-MW11-BL02.	
6010B: Several metals' recoveries were outside limits in the MS/MSD of SWFTS-MW11-BL02. Concentrations in the parent sample were >4x the amount spiked. No qualification.	
VFA: Pyruvic acid recoveries were low in the MS/MSD of SWFTS-MW11-BL02. Formic acid recovery was low in the MSD only.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

Data Verification and Validation Summary

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

11. Other (Serial Dilution)	
6010B: Sodium and strontium %D > 10% in the serial dilution of SWFTS-MW11-BL02. 21% and 23%, respectively.	

Validated by: Maureen McMyler 02/28/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Project No.: M11
 No. of Samples: 10

SDG/Report No.: 440-188247-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-IW14-BL02 and PC-91-BL02: Qualify unused results "R".
<p>Multiple results: SWFTS-IW14-BL02 was analyzed twice for nitrate at 20x and 500x dilutions. Nitrate concentration in the 20x dilution analysis was used. According to the lab, the result obtained from the 500x dilution was used for lab QC and does not reflect the actual concentration. The result was magnified due to the dilution.</p> <p>PC-91-BL02 was analyzed twice for nitrate at 10x and 200x dilutions. Nitrate was not detected in the 200x dilution. 10x analysis was used because nitrate was detected.</p>				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
<p>Overall Assessment: Acceptable as qualified.</p> <p>Usability: Sample results qualified "R" should not be used. Sample results qualified "J", estimated, are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-IW14-BL02	440-188247-1	7/12/2017	4.5 °C/4.6 °C/5.1 °C
SWFTS-IW20-BL02	440-188247-10	7/12/2017	4.5 °C/4.6 °C/5.1 °C
SWFTS-IW15-BL02	440-188247-2	7/12/2017	4.5 °C/4.6 °C/5.1 °C
SWFTS-IW11-BL02	440-188247-3	7/12/2017	4.5 °C/4.6 °C/5.1 °C
SWFTS-IW12-BL02	440-188247-4	7/12/2017	4.5 °C/4.6 °C/5.1 °C
PC-91-BL02	440-188247-5	7/12/2017	4.5 °C/4.6 °C/5.1 °C
PC-92-BL02	440-188247-6	7/12/2017	4.5 °C/4.6 °C/5.1 °C
SWFTS-IW08-BL02	440-188247-7	7/12/2017	4.5 °C/4.6 °C/5.1 °C
SWFTS-IW09-BL02	440-188247-8	7/12/2017	4.5 °C/4.6 °C/5.1 °C
SWFTS-IW10-BL02	440-188247-9	7/12/2017	4.5 °C/4.6 °C/5.1 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport

Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
---	-------------

2. Chain-of-Custody (COC)

Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
Two sample IDs on the COC did not match the labels.	

3. Holding Times

Were samples analyzed within acceptable holding times?	Yes
--	-----

4. Blanks

Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Magnesium was detected in MB 440-419032/1-A. Concentrations in the associated samples were >10x the amount in the blank.	

5. Surrogates/Monitoring Compounds

Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
---	-------------

6. Matrix Spike/Matrix Spike Duplicate

Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were low in the MS/MSD of SWFTS-IW12-BL02. Concentration in the parent sample was >4x the amount spiked. No qualification. Chlorite was not recovered in the MS/MSD of SWFTS-IW12-BL02 or SWFTS-PC-91-BL02 because of dilution.	
6010B: Several metals' recoveries were outside limits in the MS/MSD of SWFTS-PC-92-BL02. Concentrations in the parent sample were >4x the amount spiked. No qualification.	

Data Verification and Validation Summary

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 02/28/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 6

SDG/Report No.: 440-188324-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	SWFTS-MW22-BL02, SWFTS-MW24-BL02, SWFTS-MW25-BL02, SWFTS-MW21-BL02: Qualify all VFAs "UJ"
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	X		Yes	SWFTS-MW25-BL02: Qualify chlorite "UJ".
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW25-BL02: Qualify antimony and pyruvic acid "UJ" and potassium "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified.				
Usability: Sample results qualified estimated (UJ, J, J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW22-BL02	440-188324-1	7/13/2017	3.9 °C/4.9 °C/7.1 °C
SWFTS-MW24-BL02	440-188324-2	7/13/2017	3.9 °C/4.9 °C/7.1 °C
PC-58-BL02	440-188324-3	7/13/2017	3.9 °C/4.9 °C
SWFTS-MW25-BL02	440-188324-4	7/13/2017	3.9 °C/4.9 °C/7.1 °C
SWFTS-MW21-BL02	440-188324-5	7/13/2017	3.9 °C/4.9 °C/7.1 °C
SWFTS-MW12-BL02	440-188324-6	7/13/2017	3.9 °C/4.9 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
VFA: The cooler shipped to TestAmerica-Buffalo was received at 7.1 °C.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/No
300.1B: Dichloroacetic acid recovery was low in SWFTS-MW25-BL02.	

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	No/Yes/No
6010B: Several metals' recoveries were outside limits in the MS/MSD of SWFTS-MW25-BL02. Concentrations in the parent sample were >4x the amount spiked for most of them. Potassium recovery was high in the MS and will be qualified.	
6020: Antimony recoveries were low in the MS/MSD of SWFTS-MW25-BL02.	
VFA: Pyruvic acid recoveries were low in the MS/MSD of SWFTS-MW25-BL02.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 02/28/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 10

SDG/Report No.: 440-188325-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	SWFTS-MW15-BL02, SWFTS-FIELDQC-EB-BL02, SWFTS-FIELDQC-FB-BL02: Qualify all VFAs "UJ".
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified.				
Usability: Sample results qualified estimated (UJ, J) are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
PC-94-BL02	440-188325-1	7/13/2017	3.7 °C/4.9 °C
SWFTS-MW16-BL02	440-188325-2	7/13/2017	3.7 °C/4.9 °C
SWFTS-MW15-BL02	440-188325-3	7/13/2017	3.7 °C/4.9 °C/6.7 °C
SWFTS-IW18-BL02	440-188325-4	7/13/2017	3.7 °C/4.9 °C
SWFTS-IW19-BL02	440-188325-5	7/13/2017	3.7 °C/4.9 °C
SWFTS-IW17-BL02	440-188325-6	7/13/2017	3.7 °C/4.9 °C
SWFTS-MW23-BL02	440-188325-7	7/13/2017	3.7 °C/4.9 °C
PC-97-BL02	440-188325-8	7/13/2017	3.7 °C/4.9 °C
SWFTS-FIELDQC-BL02-EB	440-188325-9	7/13/2017	3.7 °C/4.9 °C/6.7 °C
SWFTS-FIELDQC-BL02-FB	440-188325-10	7/13/2017	3.7 °C/4.9 °C/6.7 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
VFA: The cooler shipped to TestAmerica-Buffalo was received at 6.7 °C.	
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Chromium was detected in MB 440-417908/1-A. Associated samples were ND.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 03/12/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 1

SDG/Report No.: 440-189933-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-COH-2B1 -BL02: Qualify strontium "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		---	---	---
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-COH-2B1 -BL02: Qualify unused result "R".

Multiple results:

SWFTS-COH-2B1 -BL02 was analyzed twice for nitrate at 2x and 100x dilutions. Nitrate was not detected in the 100x dilution. 2x analysis was used because nitrate was detected.

Verification and Validation Label	Stage_2A_Validation_Manual
-----------------------------------	----------------------------

Verification and Validation Label Code	S2AVM
--	-------

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified estimated (J, J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
COH-2B1-BL02	440-189933-1	8/9/2017	2.1 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: The following metals were detected in MB 440-423256/1-A: aluminum and calcium. Aluminum was not detected in the sample. Calcium concentration in the sample was >10x the amount in the blank.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
6010B: Calcium, magnesium, and strontium results were outside limits in the MS and/or /MSD of SWFTS-COH-2B1 - BL02. Calcium and magnesium concentrations were > 4x the amount spiked.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	N/A
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 03/12/2018

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 14

SDG/Report No.: 440-192627-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable Usability: Sample results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW01-EM01	440-192627-1	9/19/2017	2.1 °C/2.5 °C/3.0 °C
SWFTS-MW12-EM01	440-192627-2	9/19/2017	2.1 °C/2.5 °C/3.0 °C
SWFTS-MW17-EM01	440-192627-3	9/19/2017	2.1 °C/2.5 °C/3.0 °C
SWFTS-MW17-EM01-FD	440-192627-4	9/19/2017	2.1 °C/2.5 °C/3.0 °C
SWFTS-MW04-EM01	440-192627-5	9/20/2017	2.1 °C/2.5 °C/3.0 °C
SWFTS-MW04-EM01-FD	440-192627-6	9/20/2017	2.1 °C/2.5 °C/3.0 °C
SWFTS-MW07A-EM01	440-192627-7	9/20/2017	2.1 °C/2.5 °C/3.0 °C
SWFTS-MW07B-EM01	440-192627-8	9/20/2017	2.1 °C/2.5 °C/3.0 °C
SWFTS-MW08A-EM01	440-192627-9	9/20/2017	2.1 °C/2.5 °C/3.0 °C
SWFTS-MW08A-EM01-FD	440-192627-10	9/20/2017	2.1 °C/2.5 °C/3.0 °C
SWFTS-MW11-EM01	440-192627-11	9/20/2017	2.1 °C/2.5 °C/3.0 °C
SWFTS-MW13-EM01	440-192627-12	9/20/2017	2.1 °C/2.5 °C/3.0 °C
SWFTS-EM01-20170920-EB	440-192627-13	9/20/2017	2.1 °C/2.5 °C/3.0 °C
SWFTS-EM01-20170920-FB	440-192627-14	9/20/2017	2.1 °C/2.5 °C/3.0 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
COC requested chlorite. Client notified lab not to analyze chlorite.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes

Data Verification and Validation Summary

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 3/12/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 15 with MS/MSD

SDG/Report No.: 440-192728-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/MDL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-PC-92-EM01: Qualify unused result "R".

Multiple results:

SWFTS-PC-92-EM01 was analyzed twice for nitrate at 5x and 200x dilutions. Nitrate was not detected in the 200x dilution. 5x analysis was used because nitrate was detected.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified "J", estimated, are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW14-EM01	440-192728-1	9/20/2017	1.5 °C/4.5 °C
SWFTS-MW15-EM01	440-192728-2	9/20/2017	1.5 °C/4.5 °C
SWFTS-MW05A-EM01	440-192728-3	9/20/2017	1.5 °C/4.5 °C
SWFTS-MW22-EM01	440-192728-4	9/20/2017	1.5 °C/4.5 °C
SWFTS-PC-94-EM01	440-192728-5	9/21/2017	1.5 °C/4.5 °C
SWFTS-PC-91-EM01	440-192728-6	9/21/2017	1.5 °C/4.5 °C
SWFTS-PC-92-EM01	440-192728-7	9/21/2017	1.5 °C/4.5 °C
SWFTS-PC-92-EM01-MS	440-192728-7MS	9/21/2017	1.5 °C/4.5 °C
SWFTS-PC-92-EM01-MSD	440-192728-7MSD	9/21/2017	1.5 °C/4.5 °C
SWFTS-MW18-EM01	440-192728-8	9/21/2017	1.5 °C/4.5 °C
SWFTS-MW06B-EM01	440-192728-9	9/21/2017	1.5 °C/4.5 °C
SWFTS-MW19-EM01	440-192728-10	9/21/2017	1.5 °C/4.5 °C
SWFTS-MW21-EM01	440-192728-11	9/21/2017	1.5 °C/4.5 °C
SWFTS-MW03-EM01	440-192728-12	9/21/2017	1.5 °C/4.5 °C
SWFTS-MW09B-EM01	440-192728-13	9/21/2017	1.5 °C/4.5 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
Chlorite was requested on COC. Client notified lab not to analyze chlorite.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

Data Verification and Validation Summary

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were outside limits in the MS/MSD of SWFTS-PC-92-EM01. The concentration in the parent sample was >4x the amount spiked. No qualification.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 03/12/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 18 with MS/MSD

SDG/Report No.: 440-192818-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-PC-88-EM01: Qualify unused result "R".
<p>Multiple results: SWFTS-PC-88-EM01 was analyzed twice for nitrate at 10x and 200x dilutions. Nitrate was not detected in the 200x dilution. Result from the 10x analysis was used because nitrate was detected.</p>				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified "R" should not be used. Sample results qualified "J", estimated, are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW09A-EM01	440-192818-1	9/21/2017	1.9 °C/5.0 °C
SWFTS-MW06A-EM01	440-192818-2	9/21/2017	1.9 °C/5.0 °C
SWFTS-MW20-EM01	440-192818-3	9/21/2017	1.9 °C/5.0 °C
SWFTS-MW02-EM01	440-192818-4	9/21/2017	1.9 °C/5.0 °C
SWFTS-MW10A-EM01	440-192818-5	9/21/2017	1.9 °C/5.0 °C
SWFTS-EM01-20170922-EB	440-192818-6	9/22/2017	1.9 °C/5.0 °C
SWFTS-MW16-EM01	440-192818-7	9/22/2017	1.9 °C/5.0 °C
SWFTS-MW05B-EM01	440-192818-8	9/22/2017	1.9 °C/5.0 °C
SWFTS-MW24-EM01	440-192818-9	9/22/2017	1.9 °C/5.0 °C
SWFTS-PC-88-EM01	440-192818-10	9/22/2017	1.9 °C/5.0 °C
SWFTS-PC-88-EM01-MS	440-192818-10MS	9/22/2017	1.9 °C/5.0 °C
SWFTS-PC-88-EM01-MSD	440-192818-10MSD	9/22/2017	1.9 °C/5.0 °C
SWFTS-EM01-20170922-FB	440-192818-11	9/22/2017	1.9 °C/5.0 °C
SWFTS-PC-97-EM01-FD	440-192818-12	9/22/2017	1.9 °C/5.0 °C
SWFTS-PC-97-EM01	440-192818-13	9/22/2017	1.9 °C/5.0 °C
SWFTS-MW25-EM01	440-192818-14	9/22/2017	1.9 °C/5.0 °C
SWFTS-MW23-EM01	440-192818-15	9/22/2017	1.9 °C/5.0 °C
SWFTS-COH-2B1 -EM01	440-192818-16	9/22/2017	1.9 °C/5.0 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport

Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
---	------------

2. Chain-of-Custody (COC)

Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/No
--	--------

The COC did not match the container labels for one sample. The sample ID listed on the container was SWFTS-MW06A-EM01. The COC had SWFTS-MW07A-EM01. The client was notified and confirmed the container ID was correct. COC requested chlorite. Client notified lab not to analyze for chlorite.

3. Holding Times

Were samples analyzed within acceptable holding times?	Yes
--	-----

Data Verification and Validation Summary

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were outside limits in the MS/MSD of SWFTS-PC-88-EM01. The concentration in the parent sample was >4x the amount spiked. No qualification.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 03/12/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 10

SDG/Report No.: 440-192973-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as reported.				
Usability: Sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW07A-EM02	440-192973-1	9/26/2017	1.1 °C/3.2 °C
SWFTS-MW07B-EM02	440-192973-2	9/26/2017	1.1 °C/3.2 °C
SWFTS-MW11-EM02	440-192973-3	9/26/2017	1.1 °C/3.2 °C
SWFTS-MW08A-EM02	440-192973-4	9/26/2017	1.1 °C/3.2 °C
SWFTS-MW08A-EM02-FD	440-192973-5	9/26/2017	1.1 °C/3.2 °C
SWFTS-MW16-EM02	440-192973-6	9/26/2017	1.1 °C/3.2 °C
SWFTS-MW17-EM02	440-192973-7	9/26/2017	1.1 °C/3.2 °C
SWFTS-MW17-EM02-FD	440-192973-8	9/26/2017	1.1 °C/3.2 °C
SWFTS-MW13-EM02	440-192973-9	9/26/2017	1.1 °C/3.2 °C
SWFTS-MW12-EM02	440-192973-10	9/26/2017	1.1 °C/3.2 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 03/12/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 18 with MS/MSD

SDG/Report No.: 440-193062-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-PC-92-EM02: Qualify unused result "R".

Multiple results:

SWFTS-PC-92-EM02 was analyzed twice for nitrate at 5x and 200x dilutions. Nitrate was not detected in the 200x dilution. Result from the 5x analysis was used because nitrate was detected.

Verification and Validation Label

Stage_2A_Validation_Manual

Verification and Validation Label Code

S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified "J", estimated, are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW20-EM02	440-193062-1	9/26/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-MW01-EM02	440-193062-2	9/26/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-MW04-EM02	440-193062-3	9/27/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-MW04-EM02-FD	440-193062-4	9/27/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-MW10A-EM02	440-193062-5	9/27/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-EM02-20170927-FB	440-193062-6	9/27/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-EM02-20170927-EB	440-193062-7	9/27/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-PC-92-EM02	440-193062-8	9/27/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-PC-92-EM02-MS	440-193062-8 MS	9/27/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-PC-92-EM02-MSD	440-193062-8 MSD	9/27/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-MW05A-EM02	440-193062-9	9/27/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-MW05B-EM02	440-193062-10	9/27/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-MW02-EM02	440-193062-11	9/27/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-MW21-EM02	440-193062-12	9/27/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-MW15-EM02	440-193062-13	9/26/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-PC-94-EM02	440-193062-14	9/26/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-MW14-EM02	440-193062-15	9/26/2017	1.9 °C/2.3 °C/3.8 °C
SWFTS-PC-91-EM02	440-193062-16	9/26/2017	1.9 °C/2.3 °C/3.8 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were outside limits in the MS/SMD of SWFTS-PC-92-EM02. The concentration in the parent sample was >4x the amount spiked. No qualification.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 03/12/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 17 with MS/MSD

SDG/Report No.: 440-193167-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-PC-88-EM02: Qualify perchlorate "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-PC-88-EM02: Qualify unused result "R".
<p>Multiple results: SWFTS-PC-88-EM02 was analyzed twice for nitrate at 10x and 200x dilutions. Nitrate was not detected in the 200x dilution. Result from the 10x analysis was used because nitrate was detected.</p>				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW03-EM02	440-193167-1	9/27/2017	0.8 °C/3.9 °C
SWFTS-MW22-EM02	440-193167-2	9/27/2017	0.8 °C/3.9 °C
SWFTS-MW06A-EM02	440-193167-3	9/27/2017	0.8 °C/3.9 °C
SWFTS-MW06B-EM02	440-193167-4	9/27/2017	0.8 °C/3.9 °C
SWFTS-MW18-EM02	440-193167-5	9/27/2017	0.8 °C/3.9 °C
SWFTS-MW19-EM02	440-193167-6	9/28/2017	0.8 °C/3.9 °C
SWFTS-PC-88-EM02	440-193167-7	9/28/2017	0.8 °C/3.9 °C
SWFTS-PC-88-EM02-MS	440-193167-7MS	9/28/2017	0.8 °C/3.9 °C
SWFTS-PC-88-EM02-MSD	440-193167-7MSD	9/28/2017	0.8 °C/3.9 °C
SWFTS-EM02-20170928-EB	440-193167-8	9/28/2017	0.8 °C/3.9 °C
SWFTS-PC-97-EM02	440-193167-9	9/28/2017	0.8 °C/3.9 °C
SWFTS-PC-97-EM02-FD	440-193167-10	9/28/2017	0.8 °C/3.9 °C
SWFTS-MW25-EM02	440-193167-11	9/28/2017	0.8 °C/3.9 °C
SWFTS-MW24-EM02	440-193167-12	9/28/2017	0.8 °C/3.9 °C
SWFTS-MW23-EM02	440-193167-13	9/28/2017	0.8 °C/3.9 °C
SWFTS-MW09A-EM02	440-193167-14	9/28/2017	0.8 °C/3.9 °C
SWFTS-MW09B-EM02	440-193167-15	9/28/2017	0.8 °C/3.9 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were low in the MS/MSD of SWFTS-PC-88-EM02. The concentration in the parent sample was >4x the amount spiked. No qualification.	
314.0: Perchlorate recoveries were high in the MS/MSD of SWFTS-PC-88-EM02.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 03/13/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 9

SDG/Report No.: 440-193472-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified.				
Usability: Sample results qualified "J", estimated, are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW11-EM03	440-193472-1	10/03/17	1.6 °C
SWFTS-MW18-EM03	440-193472-2	10/03/17	1.6 °C
SWFTS-MW16-EM03	440-193472-3	10/03/17	1.6 °C
SWFTS-MW05A-EM03	440-193472-4	10/03/17	1.6 °C
SWFTS-MW05B-EM03	440-193472-5	10/03/17	1.6 °C
SWFTS-MW07A-EM03	440-193472-6	10/03/17	1.6 °C
SWFTS-MW07B-EM03	440-193472-7	10/03/17	1.6 °C
SWFTS-MW17-EM03	440-193472-8	10/03/17	1.6 °C
SWFTS-MW17-EM03-FD	440-193472-9	10/03/17	1.6 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The COC requested chlorate/chlorite. The bottle labels requested chlorate only. Only chlorate was needed.	
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/28/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 8

SDG/Report No.: 440-193622-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times	X		Yes	SWFTS-MW13-EM03, SWFTS-MW12-EM03, SWFTS-MW06A-EM03: Qualify nitrate "J-". SWFTS-MW14-EM03: Qualify nitrate "UJ".
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-PC-88-EM03: Qualify unused result "R".

Multiple results:

SWFTS-PC-88-EM03 was analyzed twice for nitrate at 5x and 200x dilutions. Nitrate was not detected in the 200x dilution. Result from the 5x analysis was used because nitrate was detected.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (UJ, J-, J) are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW13-EM03	440-193622-1	10/03/17	0.6 °C
SWFTS-MW12-EM03	440-193622-2	10/03/17	0.6 °C
SWFTS-MW14-EM03	440-193622-3	10/03/17	0.6 °C
SWFTS-MW06A-EM03	440-193622-4	10/03/17	0.6 °C
SWFTS-MW06B-EM03	440-193622-5	10/03/17	0.6 °C
SWFTS-PC-88-EM03	440-193622-6	10/04/17	0.6 °C
SWFTS-EM03-20171004-EB	440-193622-7	10/04/17	0.6 °C
SWFTS-PC-97-EM03	440-193622-8	10/04/17	0.6 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	No/Yes
The COC requested chlorate/chlorite. The bottle labels requested chlorate only. Only chlorate was needed. The sampling times on the label and COC did not match for SWFTS-MW14-EM03. COC was incorrect. Sample number SWFTS-EM03-20170917-EB was changed to SWFTS-EM03-20171004-EB.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
300.0: Nitrate analysis on 4 samples was performed outside holding time.	

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

Data Verification and Validation Summary

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs for project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries in the MS/MSD of SWFTS-PC-88-EM03 were low. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply. No qualification is needed.	
SM5310B: TOC recoveries in the MS/MSD of SWFTS-PC-88-EM03 were within limits, but the lab qualified the parent sample.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
The parent sample of SWFTS-PC-97-EM03-FD is in this work order. The FD is in work order 440-193625-1.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/28/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 7

SDG/Report No.: 440-193625-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-PC-92-EM03: Qualify unused result "R".
Multiple results: SWFTS-PC-92-EM03 was analyzed twice for nitrate at 5x and 200x dilutions. Nitrate was not detected in the 200x dilution. Result from the 5x analysis was used because nitrate was detected.				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
Overall Assessment: Acceptable Usability: Sample results qualified "R" should not be used. Other sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-PC-97-EM03-FD	440-193625-1	10/04/17	0.6 °C
SWFTS-PC-91-EM03	440-193625-2	10/04/17	0.6 °C
SWFTS-PC-92-EM03	440-193625-3	10/04/17	0.6 °C
SWFTS-MW-15-EM03	440-193625-4	10/04/17	0.6 °C
SWFTS-MW10A-EM03	440-193625-5	10/04/17	0.6 °C
SWFTS-MW01-EM03	440-193625-6	10/04/17	0.6 °C
SWFTS-EM03-20171004-FB	440-193625-7	10/04/17	0.6 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	No/Yes
The COC requested chlorate/chlorite. The bottle labels requested chlorate only. Only chlorate was needed. The sampler's name was not shown on the COC. Only TOC bottles were provided for sample SWFTS-EM03-20171004-FB. Sample number SWFTS-EM03-20170919-FB was changed to SWFTS-EM03-20171004-FB.	
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries in the MS/MSD of SWFTS-PC-92-EM03 were low. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply. No qualification is needed.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
The parent sample of SWFTS-PC-97-EM03-FD is in work order 440-193622-1	
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/28/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 18

SDG/Report No.: 440-193712-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified "J", estimated, are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW04-EM03	440-193712-1	10/04/17	2.4 °C/3.2 °C
SWFTS-MW04-EM03-FD	440-193712-2	10/04/17	2.4 °C/3.2 °C
SWFTS-MW02-EM03	440-193712-3	10/04/17	2.4 °C/3.2 °C
SWFTS-MW20-EM03	440-193712-4	10/04/17	2.4 °C/3.2 °C
SWFTS-MW09A-EM03	440-193712-5	10/04/17	2.4 °C/3.2 °C
SWFTS-MW09B-EM03	440-193712-6	10/04/17	2.4 °C/3.2 °C
SWFTS-MW03-EM03	440-193712-7	10/04/17	2.4 °C/3.2 °C
SWFTS-MW03-20171005-EB	440-193712-8	10/05/17	2.4 °C/3.2 °C
SWFTS-MW25-EM03	440-193712-9	10/05/17	2.4 °C/3.2 °C
SWFTS-COH-2B1-EM03	440-193712-10	10/05/17	2.4 °C/3.2 °C
SWFTS-MW23-EM03	440-193712-11	10/05/17	2.4 °C/3.2 °C
SWFTS-MW24-EM03	440-193712-12	10/05/17	2.4 °C/3.2 °C
SWFTS-MW19-EM03	440-193712-13	10/05/17	2.4 °C/3.2 °C
SWFTS-MW22-EM03	440-193712-14	10/05/17	2.4 °C/3.2 °C
SWFTS-MW08A-EM03-FD	440-193712-15	10/05/17	2.4 °C/3.2 °C
SWFTS-MW08A-EM03	440-193712-16	10/05/17	2.4 °C/3.2 °C
SWFTS-MW21-EM03	440-193712-17	10/05/17	2.4 °C/3.2 °C
SWFTS-PC-94-EM03	440-193712-18	10/05/17	2.4 °C/3.2 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The COC requested chlorate/chlorite. The bottle labels requested chlorate only. Only chlorate was needed. The sampler's name was not shown on the COC.	
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
314.0: Perchlorate was detected in the EB. The concentrations in the samples were >10x the amount in the EB or ND.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
Outliers were samples from different work orders.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/28/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 6

SDG/Report No.: 440-193989-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW05B-EM04: Qualify selenium "UJ" SWFTS-MW17-EM04: Qualify pyruvic acid "UJ"
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified "UJ" or "J" are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW05B-EM04	440-193989-1	10/10/17	1.6 °C/3.0 °C
SWFTS-MW05A-EM04	440-193989-2	10/10/17	1.6 °C/3.0 °C
SWFTS-MW17-EM04	440-193989-3	10/10/17	1.6 °C/3.0 °C/3.9 °C
SWFTS-MW13-EM04	440-193989-4	10/10/17	1.6 °C/3.0 °C
SWFTS-EM04-20171010-FB	440-193989-5	10/10/17	1.6 °C/3.0 °C/3.9 °C
SWFTS-EM04-20171010-EB	440-193989-6	10/10/17	1.6 °C/3.0 °C/3.9 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The COC requested chlorate/chlorite. The bottle labels requested chlorate only. Only chlorate was needed. No custody seals were present on the coolers. Field crew hand-delivered samples to lab personnel.	
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Aluminum, calcium, magnesium, silicon, and sodium were detected in the EB. Magnesium and sodium were detected in the FB. The concentrations in the samples were >10x the amount in the EB and FB or ND.	
7199: Hexavalent chromium was detected in the EB. The concentrations in the samples were >10x the amount or ND.	
RSK-175: Methane was detected in the EB, but not detected in the samples.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
6010B: Calcium, magnesium, manganese, silicon, sodium, and strontium recoveries were outside limits. The concentrations in the parent sample (SWFTS-MW05B-EM04) were >4x the amount spiked. Criteria do not apply.	
6020: Selenium recoveries and RPDs were outside limits in the MS/MSD of SWFTS-MW05B-EM04. RPD criteria do not apply because the parent is ND.	
VFA-IC: Pyruvic acid recoveries were low in the MS/MSD of SWFTS-MW17-EM04.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/21/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 8

SDG/Report No.: 440-194090-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-PC-94-EM04: Qualify aluminum "J+". SWFTS-MW21-EM04: Qualify hexavalent chromium "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified. Usability: Sample results qualified "J" or "J+" are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW12-EM04	440-194090-1	10/11/17	3.3 °C/3.9 °C
SWFTS-PC-88-EM04	440-194090-2	10/11/17	3.3 °C
SWFTS-PC-88-EM04-FD	440-194090-3	10/11/17	3.3 °C
SWFTS-MW6A-EM04	440-194090-4	10/11/17	3.3 °C
SWFTS-MW6B-EM04	440-194090-5	10/11/17	3.3 °C
SWFTS-PC-94-EM04	440-194090-6	10/11/17	3.3 °C/3.9 °C
SWFTS-MW23-EM04	440-194090-7	10/11/17	3.3 °C/3.9 °C
SWFTS-MW21-EM04	440-194090-8	10/11/17	3.3 °C/3.9 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The COC requested chlorate/chlorite. The bottle labels requested chlorate only. Only chlorate was needed.	
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Aluminum, calcium, magnesium, silicon, and sodium were detected in SWFTS-EM04-20171010-EB. Magnesium and sodium were detected in SWFTS-EM04-20171010-FB. The EB and FB are in job 440-193989-1.	
7199: Hexavalent chromium was detected in SWFTS-EM04-20171010-EB.	
RSK-175: Methane was detected in the EB. Methane was not detected in the samples.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were outside limits. The concentration in the parent sample (SWFTS-MW12-EM04) was >4x the amount spiked. Recovery criteria do not apply.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/21/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 8

SDG/Report No.: 440-194094-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW09A-EM04: Qualify perchlorate "J+". SWFTS-MW11-EM04: Qualify pyruvic acid "UJ".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified as estimated (UJ, J, J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW15-EM04	440-194094-1	10/10/17	1.7 °C/1.9 °C/2.2 °C/2.3 °C/3.1 °C/3.9 °C
SWFTS-MW01-EM04	440-194094-2	10/10/17	1.7 °C/1.9 °C/2.2 °C/2.3 °C/3.1 °C/3.9 °C
SWFTS-MW18-EM04	440-194094-3	10/10/17	1.7 °C/1.9 °C/2.2 °C/2.3 °C/3.1 °C
SWFTS-MW08A-EM04	440-194094-4	10/10/17	1.7 °C/1.9 °C/2.2 °C/2.3 °C/3.1 °C
SWFTS-MW09B-EM04	440-194094-5	10/11/17	1.7 °C/1.9 °C/2.2 °C/2.3 °C/3.1 °C
SWFTS-PC-58-EM04	440-194094-6	10/11/17	1.7 °C/1.9 °C/2.2 °C/2.3 °C/3.1 °C
SWFTS-MW09A-EM04	440-194094-7	10/11/17	1.7 °C/1.9 °C/2.2 °C/2.3 °C/3.1 °C
SWFTS-MW11-EM04	440-194094-8	10/11/17	1.7 °C/1.9 °C/2.2 °C/2.3 °C/3.1 °C/3.9 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The COC requested chlorate/chlorite. The bottle labels requested chlorate only. Only chlorate was needed. No custody seals were present on the bottles. Field crew hand-delivered samples to lab personnel.	
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Aluminum, calcium, magnesium, silicon, and sodium were detected in SWFTS-EM04-20171010-EB. Magnesium and sodium were detected in SWFTS-EM04-20171010-FB. The EB and FB are in job 440-193989-1. Concentrations in the samples were >10x the amounts in the blank or ND.	
7199: Hexavalent chromium was detected in SWFTS-EM04-20171010-EB. Concentrations in the samples were >10x the amount in the blank or ND.	
RSK-175: Methane was detected in the EB. Methane was not detected in the samples.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were outside limits. The concentration in the parent sample (SWFTS-MW15-EM04) was >4x the amount spiked. Recovery criteria do not apply.	
314.0: Perchlorate recovery was high in the MS of SWFTS-MW09A-EM04.	
6010B: Calcium, magnesium, manganese, potassium, silicon, sodium, and strontium recoveries were outside limits. The concentrations in the parent sample (SWFTS-MW09A-EM04) were >4x the amount spiked. Criteria do not apply.	
VFA-IC: Pyruvic acid recovery was low in the MS of SWFTS-MW11-EM04.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

Data Verification and Validation Summary

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/21/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 4

SDG/Report No.: 440-194202-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates	X		Yes	SWFTS-MW20-EM04 and SWFTS-MW20-EM04-FD: Qualify total phosphorus, dissolved chromium, and total manganese "J" for detects and "UJ" for non-detects.
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified "UJ" or "J" are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW20-EM04	440-194202-1	10/12/17	1.4 °C/1.7 °C/3.4 °C/4.3 °C
SWFTS-MW20-EM04-FD	440-194202-2	10/12/17	1.4 °C/1.7 °C/3.4 °C/4.3 °C
SWFTS-EM04-20171012-FB	440-194202-3	10/12/17	1.4 °C/1.7 °C/3.4 °C/4.3 °C
SWFTS-EM04-20171012-EB	440-194202-4	10/12/17	1.4 °C/1.7 °C/3.4 °C/4.3 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The COC requested chlorate/chlorite. The bottle labels requested chlorate only. Only chlorate was needed. No custody seals were present on the bottles or coolers. Field crew hand-delivered samples to lab personnel.	
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Copper, lead, magnesium, and zinc were detected in the FB. Calcium, silicon, sodium, and zinc were detected in the EB. The concentrations in the samples were >10x the amount in the EB and FB or ND.	
RSK-175: Methane was detected in the EB, but not detected in the samples.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/No/No
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/21/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 8

SDG/Report No.: 440-194204-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-PC-92-EM04: Qualify copper "J". SWFTS-MW16-EM04: Qualify methane "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW19-EM04: Qualify chlorate "J+". SWFTS-MW02-EM04: Qualify TKN, total phosphorus, lactic acid, and propionic acid "UJ".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW02-EM04: Qualify unused results "R".

Multiple results:

SWFTS-MW02-EM04 was analyzed twice for nitrate and nitrite at 20x and 500x dilutions. Nitrate and nitrite were not detected in the 500x dilution. Results from the 20x analysis were used because nitrate was detected and nitrite, though not detected, had a lower PQL.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (UJ, J, J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW19-EM04	440-194204-1	10/12/17	1.4 °C/1.7 °C/1.8 °C/2.7 °C/3.4 °C
SWFTS-COH-2B1-EM04	440-194204-2	10/12/17	1.4 °C/1.7 °C/1.8 °C/2.7 °C/3.4 °C
SWFTS-PC-91-EM04	440-194204-3	10/12/17	1.4 °C/1.7 °C/1.8 °C/2.7 °C/3.4 °C
SWFTS-PC-92-EM04	440-194204-4	10/12/17	1.4 °C/1.7 °C/1.8 °C/2.7 °C/3.4 °C/4.3 °C
SWFTS-PC-92-EM04-FD	440-194204-5	10/12/17	1.4 °C/1.7 °C/1.8 °C/2.7 °C/3.4 °C/4.3 °C
SWFTS-MW02-EM04	440-194204-6	10/12/17	1.4 °C/1.7 °C/1.8 °C/2.7 °C/3.4 °C/4.3 °C
SWFTS-MW16-EM04	440-194204-7	10/12/17	1.4 °C/1.7 °C/1.8 °C/2.7 °C/3.4 °C/4.3 °C
SWFTS-MW03-EM04	440-194204-8	10/12/17	1.4 °C/1.7 °C/1.8 °C/2.7 °C/3.4 °C/4.3 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The COC requested chlorate/chlorite. The bottle labels requested chlorate only. Only chlorate was needed.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Copper, lead, magnesium, and zinc were detected in SWFTS-EM04-20171012-FB. Calcium, silicon, sodium, and zinc were detected in SWFTS-EM04-20171012-EB. EB and FB are in 440-194202-1. Chromium and sodium were detected in method blank MB 440-436033/1-A. The concentrations in the samples were >10x the amount in the blanks or ND.	
RSK-175: Methane was detected in SWFTS-EM04-20171012-EB.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

Data Verification and Validation Summary

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recovery was high in the MS of SWFTS-MW19-EM04. Recoveries were high in the MS/MSD of SWFTS-MW02-EM04, but the concentration in SWFTS-MW02-EM04 was >4x the amount spiked.	
351.2: Total Kjeldahl Nitrogen recoveries were low in the MS/MSD of SWFTS-MW02-EM04.	
365.3: Phosphorus, Total recoveries were low in the MS/MSD of SWFTS-MW02-EM04.	
6010B: Several recoveries were outside limits in the MS/MSD of SWFTS-MW02-EM04, but the concentrations in SWFTS-MW02-EM04 were >4x the amount spiked. No qualification is needed.	
VFA_IC: Lactic acid and Propionic acid recoveries were low in the MS/MSD of SWFTS-MW02-EM04.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/22/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 10

SDG/Report No.: 440-194242-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-MW04-EM04: Qualify copper "J". SWFTS-MW24-EM04: Qualify copper "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
Overall Assessment: Acceptable as qualified.				
Usability: Sample results qualified "J" or "J+" are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW25-EM04	440-194242-1	10/11/17	2.7 °C/3.6 °C
SWFTS-MW24-EM04	440-194242-2	10/11/17	2.7 °C/3.6 °C
SWFTS-MW07A-EM04	440-194242-3	10/11/17	2.7 °C/3.6 °C
SWFTS-MW07B-EM04	440-194242-4	10/11/17	2.7 °C/3.6 °C
SWFTS-PC-97-EM04	440-194242-5	10/11/17	2.7 °C/3.6 °C
SWFTS-PC-97-EM04-FD	440-194242-6	10/11/17	2.7 °C/3.6 °C
SWFTS-MW04-EM04	440-194242-7	10/11/17	2.7 °C/3.6 °C/4.3 °C
SWFTS-MW14-EM04	440-194242-8	10/11/17	2.7 °C/3.6 °C/4.3 °C
SWFTS-MW22-EM04	440-194242-9	10/12/17	2.7 °C/3.6 °C
SWFTS-MW10A-EM04	440-194242-10	10/12/17	2.7 °C/3.6 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The COC requested chlorate/chlorite. The bottle labels requested chlorate only. Only chlorate was needed.	
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Copper, lead, magnesium, and zinc were detected in SWFTS-EM04-20171012-FB. Calcium, silicon, sodium, and zinc were detected in SWFTS-EM04-20171012-EB. EB and FB are in 440-194202-1. In most cases the concentrations in the samples were >10x the amount in the blanks or ND.	
RSK-175: Methane was detected in SWFTS-EM04-20171012-EB. The concentrations in the sample was >10x the amount in the blank.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/28/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 7

SDG/Report No.: 440-194846-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Compound Quantitation and Reporting Limits		X	No	None
9. Duplicates		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable as reported. Usability: Results are considered valid and useable for all purposes.</p>				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW08A-EM05	440-194846-1	10/23/17	1.6 °C
SWFTS-MW08A-EM05-FD	440-194846-2	10/23/17	1.6 °C
SWFTS-MW18A-EM05	440-194846-3	10/23/17	1.6 °C
SWFTS-MW05A-EM05	440-194846-4	10/23/17	1.6 °C
SWFTS-MW05B-EM05	440-194846-5	10/23/17	1.6 °C
SWFTS-MW06B-EM05	440-194846-6	10/23/17	1.6 °C
SWFTS-MW06A-EM05	440-194846-7	10/23/17	1.6 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
9. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values ≤ RL.	Yes/Yes/Yes
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/20/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 11

SDG/Report No.: 440-194947-1
 Lab ID: Test America – Irvine
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Compound Quantitation and Reporting Limits		X	No	None
9. Duplicates		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable as reported. Usability: Results are considered valid and useable for all purposes.</p>				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW17-EM05	440-194947-1	10/24/17	1.6 °C
SWFTS-MW16-EM05	440-194947-2	10/24/17	1.6 °C
SWFTS-MW07B-EM05	440-194947-3	10/24/17	1.6 °C
SWFTS-MW07A-EM05	440-194947-4	10/24/17	1.6 °C
SWFTS-MW17-EM05-FD	440-194947-5	10/24/17	1.6 °C
SWFTS-MW04-EM05	440-194947-6	10/24/17	1.6 °C
SWFTS-MW04-EM05-FD	440-194947-7	10/24/17	1.6 °C
SWFTS-MW10A-EM05	440-194947-8	10/24/17	1.6 °C
SWFTS-MW11-EM05	440-194947-9	10/24/17	1.6 °C
SWFTS-MW12-EM05	440-194947-10	10/24/17	1.6 °C
SWFTS-MW13-EM05	440-194947-11	10/24/17	1.6 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
9. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values ≤ RL.	Yes/Yes/Yes
Total Organic Carbon results in SWFTS-MW17-EM05 and SWFTS-MW17-EM05-FD were < 5x the RL. The difference between them was 1, the value of the RL. No qualification is needed.	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/20/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 13 with MS/MSDs

SDG/Report No.: 440-195026-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Compound Quantitation and Reporting Limits		X	No	None
9. Duplicates		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-PC-91-EM05 and SWFTS-PC-88-EM05: Qualify unused results "R".
<p>Multiple results: SWFTS-PC-91-EM05 was analyzed twice for nitrate at 2x and 100x dilutions. Nitrate was not detected in the 100x dilution. Result from the 2x analysis was used because nitrate was detected. SWFTS-PC-88-EM05 was analyzed twice for nitrate at 10x and 200x dilutions. Nitrate was not detected in the 200x dilution. Result from the 10x analysis was used because nitrate was detected.</p>				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
<p>Overall Assessment: Acceptable. Usability: Sample results qualified "R" should not be used. Other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW09B-EM05	440-195026-1	10/25/17	3.5 °C
SWFTS-MW09A-EM05	440-195026-2	10/25/17	3.5 °C
SWFTS-PC-92-EM05	440-195026-3	10/25/17	3.5 °C
SWFTS-PC-91-EM05	440-195026-4	10/25/17	3.5 °C
SWFTS-PC-91-EM05-MS	440-195026-4 MS	10/25/17	3.5 °C
SWFTS-PC-91-EM05-MSD	440-195026-4 MSD	10/25/17	3.5 °C
SWFTS-MW20-EM05	440-195026-5	10/25/17	3.5 °C
SWFTS-PC-97-EM05	440-195026-6	10/25/17	3.5 °C
SWFTS-PC-97-EM05-FD	440-195026-7	10/25/17	3.5 °C
SWFTS-MW01-EM05	440-195026-8	10/25/17	3.5 °C
SWFTS-PC-88-EM05	440-195026-9	10/25/17	3.5 °C
SWFTS-PC-88-EM05-MS	440-195026-9 MS	10/25/17	3.5 °C
SWFTS-PC-88-EM05-MSD	440-195026-9 MSD	10/25/17	3.5 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

Data Verification and Validation Summary

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries in the MS/MSD of SWFTS-PC-88-EM05 were outside limits. Chlorate concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

9. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values \leq RL.	Yes/Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/20/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 11

SDG/Report No.: 440-195136-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	SWFTS-MW24-EM05: Qualify TOC "J".
2. Chain-of-Custody	X		No	None
3. Holding Times	X		Yes	SWFTS-MW24-EM05: Qualify TOC "J".
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL and RL "J".
9. Duplicates		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable as qualified. Usability: Estimated (J-, J) results are considered useable for limited purposes. All other results are considered valid and useable for all purposes.</p>				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-PC-94-EM05	440-195136-1	10/26/17	2.0 °C
SWFTS-MW25-EM05	440-195136-2	10/26/17	2.0 °C
SWFTS-MW24-EM05	440-195136-3	10/26/17	2.0 °C
SWFTS-COH-2B1-EM05	440-195136-4	10/26/17	2.0 °C
SWFTS-MW03-EM05	440-195136-5	10/26/17	2.0 °C
SWFTS-EM05-20171025-FB	440-195136-6	10/26/17	2.0 °C
SWFTS-EM05-20171026-EB	440-195136-7	10/26/17	2.0 °C
SWFTS-EM05-20171025-EB	440-195136-8	10/26/17	2.0 °C
SWFTS-EM05-20171026-FB	440-195136-9	10/26/17	2.0 °C
SWFTS-MW22-EM05	440-195136-10	10/26/17	2.0 °C
SWFTS-MW23-EM05	440-195136-11	10/26/17	2.0 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	No/Yes/Yes
SM 5310B: SWFTS-MW24-EM05 was received with pH > 2. The lab adjusted the pH to < 2 prior to analysis.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	No/Yes
SWFTS-MW23-EM05 was not recorded on the COC.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
SM5310B: The analysis time for unpreserved samples is 4 hours. SWFTS-MW24-EM05 was not preserved to pH < 2 and the holding time was grossly exceeded.	

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

9. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values ≤ RL.	No/N/A/N/A

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/20/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 5

SDG/Report No.: 440-195218-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times	X		Yes	SWFTS-MW02-EM05: Qualify nitrate "J-".
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Compound Quantitation and Reporting Limits		X	No	None
9. Duplicates		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified.				
Usability: Sample results qualified estimated "J-" are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW02-EM05	440-195218-2	10/26/17	2.9 °C
SWFTS-MW15-EM05	440-195218-3	10/27/17	2.9 °C
SWFTS-MW14-EM05	440-195218-4	10/27/17	2.9 °C
SWFTS-MW19-EM05	440-195218-5	10/27/17	2.9 °C
SWFTS-MW21-EM05	440-195218-6	10/27/17	2.9 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
SWFTS-MW23-EM05 was recorded on the COC, but was not in the cooler. It was shipped the day before.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	No

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

9. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values ≤ RL.	No/N/A/N/A

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/20/17

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 19

SDG/Report No.: 440-196558-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	Samples 6-14, 16,17,19: Qualify TOC "J-".
2. Chain-of-Custody		X	No	None
3. Holding Times	X		Yes	Samples 6-14, 16,17,19: Qualify TOC "J-".
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify detections between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified (J-, J) as estimated are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW05A-EM06	440-196558-1	11/14/2017	4.4 °C
SWFTS-MW05B-EM06	440-196558-2	11/14/2017	4.4 °C
SWFTS-MW02-EM06	440-196558-3	11/14/2017	4.4 °C
SWFTS-MW15-EM06	440-196558-4	11/14/2017	4.4 °C
SWFTS-MW12-EM06	440-196558-5	11/14/2017	4.4 °C
SWFTS-IW01A-EM06	440-196558-6	11/14/2017	4.4 °C
SWFTS-IW01A-EM06B	440-196558-7	11/14/2017	4.4 °C
SWFTS-IW01B-EM06B	440-196558-8	11/14/2017	4.4 °C
SWFTS-IW02A-EM06B	440-196558-9	11/14/2017	4.4 °C
SWFTS-IW02B-EM06B	440-196558-10	11/14/2017	4.4 °C
SWFTS-IW06A-EM06B	440-196558-11	11/14/2017	4.4 °C
SWFTS-IW06B-EM06B	440-196558-12	11/14/2017	4.4 °C
SWFTS-IW13A-EM06B	440-196558-13	11/14/2017	4.4 °C
SWFTS-IW13B-EM06B	440-196558-14	11/14/2017	4.4 °C
SWFTS-IW14-EM06B	440-196558-15	11/14/2017	4.4 °C
SWFTS-IW14-EM06B-FD	440-196558-16	11/14/2017	4.4 °C
SWFTS-IW17-EM06B	440-196558-17	11/14/2017	4.4 °C
SWFTS-IW18-EM06B	440-196558-18	11/14/2017	4.4 °C
SWFTS-IW20-EM06B	440-196558-19	11/14/2017	4.4 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	No/Yes/Yes
SM5310B: Several samples were not preserved to pH < 2. They were adjusted prior to analysis at the lab.	
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
Sample custody sea	
3. Holding Times	
Were samples analyzed within acceptable holding times?	No
SM5310B: Several samples were not preserved to pH < 2. The holding time for unpreserved samples is 4 hours. The holding time was grossly exceeded for these samples.	
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	No/Yes/No
SM5310: TOC recoveries were low in the MS/MSD of SWFTS-IW17-EM06B. The concentration in the parent sample was >4x the amount spiked. No qualification.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 06/07/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 10 with MS/MSD

SDG/Report No.: 440-196659-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW14-EM06: Qualify manganese and total phosphorus "J-", pyruvic acid "UJ", and aluminum and perchlorate "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW14-EM06: Qualify unused results "R".
<p>Multiple results: SWFTS-MW14-EM06 was analyzed twice for nitrate and nitrite at 10x and 500x dilutions. Nitrate and nitrite were not detected in either dilution analysis. Results from the 10x analysis were used because nitrate and nitrite had lower RLs/PQLs.</p>				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (UJ, J-, J, J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW13-EM06	440-196659-1	11/15/2017	3.6 °C/4.7 °C
SWFTS-MW04-EM06	440-196659-2	11/15/2017	3.6 °C/4.7 °C
SWFTS-MW14-EM06	440-196659-3	11/15/2017	3.2 °C/3.6 °C/4.7 °C
SWFTS-MW14-EM06-MS	440-196659-3 MS	11/15/2017	3.2 °C/3.6 °C/4.7 °C
SWFTS-MW14-EM06-MSD	440-196659-3 MSD	11/15/2017	3.2 °C/3.6 °C/4.7 °C
SWFTS-MW08A-EM06	440-196659-4	11/15/2017	3.6 °C/4.7 °C
SWFTS-MW17-EM06	440-196659-5	11/15/2017	3.6 °C/4.7 °C
SWFTS-MW17-EM06-FD	440-196659-6	11/15/2017	3.6 °C/4.7 °C
SWFTS-MW07A-EM06	440-196659-7	11/15/2017	3.6 °C/4.7 °C
SWFTS-MW07B-EM06	440-196659-8	11/15/2017	3.6 °C/4.7 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes
314.0: Perchlorate recoveries were high in the MS/MSD of SWFTS-MW14-EM06.	
365.3: Phosphorus recoveries were low in the MS/MSD of SWFTS-MW14-EM06.	
6010B: The following recoveries were outside limits in the MS and/or /MSD of SWFTS-MW14-EM06: aluminum, calcium, manganese, silicon, and sodium. Calcium, silicon, and sodium concentrations in the parent sample were >4x the amount spiked.	
VFA-IC: Pyruvic acid recoveries were low in the MS/MSD of SWFTS-MW14-EM06.	

Data Verification and Validation Summary

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 03/15/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 7 with MS/MSD

SDG/Report No.: 440-196665-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW01-EM06: Qualify unused results "R".

Multiple results:

SWFTS-MW01-EM06 was analyzed twice for nitrate at 10x and 200x dilutions. Nitrate was not detected in the 200x dilution. Result from the 10x analysis was used because nitrate was detected.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable

Usability: Sample results qualified "R" should not be used. Sample results qualified "J", estimated, are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW24-EM06	440-196665-1	11/15/2017	4.7 °C
SWFTS-MW25-EM06	440-196665-2	11/15/2017	4.7 °C
SWFTS-MW23-EM06	440-196665-3	11/15/2017	4.7 °C
SWFTS-MW01-EM06	440-196665-4	11/15/2017	4.7 °C
SWFTS-MW01-EM06-MS	440-196665-4 MS	11/15/2017	4.7 °C
SWFTS-MW01-EM06-MSD	440-196665-4 MSD	11/15/2017	4.7 °C
SWFTS-MW21-EM06	440-196665-5	11/15/2017	4.7 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
Several fields were not filled out.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes
300.1B: Chlorate recoveries were high in the MS/MSD of SWFTS-MW01-EM06. Concentration in the parent sample was >4x the amount spiked.	
314.0: Perchlorate recoveries were high in the MS/MSD of SWFTS-MW25-EM06. Concentration in the parent sample was >4x the amount spiked.	

Data Verification and Validation Summary

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 03/20/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 11

SDG/Report No.: 440-196690-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified.				
Usability: Sample results qualified "J", estimated, are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-EM06-20171114-FB	440-196690-1	11/14/2017	3.2 °C/3.6 °C/4.7 °C
SWFTS-EM06-20171114-EB	440-196690-2	11/14/2017	3.2 °C/3.6 °C/4.7 °C
SWFTS-EM06-20171115-FB	440-196690-3	11/15/2017	3.6 °C/4.7 °C
SWFTS-EM06-20171115-EB	440-196690-4	11/15/2017	3.6 °C/4.7 °C
SWFTS-IW01B-EM06	440-196690-5	11/15/2017	3.6 °C/4.7 °C
SWFTS-IW06A-EM06	440-196690-6	11/15/2017	3.6 °C/4.7 °C
SWFTS-IW06B-EM06	440-196690-7	11/15/2017	3.6 °C/4.7 °C
SWFTS-IW17-EM06	440-196690-8	11/15/2017	3.6 °C/4.7 °C
PC-88-EM06	440-196690-9	11/15/2017	3.6 °C/4.7 °C
PC-88-EM06-FD	440-196690-10	11/15/2017	3.6 °C/4.7 °C
SWFTS-MW18-EM06	440-196690-11	11/15/2017	3.6 °C/4.7 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
SWFTS-EM06-20171114-FB had detections of calcium, magnesium, silicon, and sodium. No detections in samples.	
SWFTS-EM06-20171114-EB had detections of calcium, silicon, and sodium. No detections in samples.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 04/03/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 20

SDG/Report No.: 440-196786-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-MW10A-EM06: Qualify molybdenum "J". SWFTS-MW16-EM06: Qualify molybdenum "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-PC-91-EM06: Qualify nitrate "J-".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified estimated (J-, J, J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-EM06-20171116-EB	440-196786-1	11/16/2017	5.3 °C/5.4 °C
SWFTS-EM06-20171116-FB	440-196786-2	11/16/2017	5.3 °C/5.4 °C
SWFTS-MW11-EM06	440-196786-3	11/16/2017	5.3 °C/5.4 °C
SWFTS-MW16-EM06	440-196786-4	11/16/2017	4.1 °C/5.3 °C/5.4 °C
SWFTS-MW10A-EM06	440-196786-5	11/16/2017	4.1 °C/5.3 °C/5.4 °C
SWFTS-MW10A-EM06-FD	440-196786-6	11/16/2017	4.1 °C/5.3 °C/5.4 °C
SWFTS-MW20-EM06	440-196786-7	11/16/2017	5.3 °C/5.4 °C
SWFTS-PC-91-EM06	440-196786-8	11/16/2017	5.3 °C/5.4 °C
SWFTS-PC-92-EM06	440-196786-9	11/16/2017	5.3 °C/5.4 °C
SWFTS-PC-92-EM06-FD	440-196786-10	11/16/2017	5.3 °C/5.4 °C
SWFTS-PC-58-EM06	440-196786-11	11/16/2017	5.3 °C/5.4 °C
SWFTS-MW-19-EM06	440-196786-12	11/16/2017	5.3 °C/5.4 °C
SWFTS-PC-97-EM06	440-196786-13	11/16/2017	5.3 °C/5.4 °C
SWFTS-MW09A-EM06	440-196786-14	11/16/2017	5.3 °C/5.4 °C
SWFTS-MW09B-EM06	440-196786-15	11/16/2017	5.3 °C/5.4 °C
SWFTS-MW03-EM06	440-196786-16	11/16/2017	5.3 °C/5.4 °C
PC-94-EM06	440-196786-17	11/16/2017	5.3 °C/5.4 °C
SWFTS-MW22-EM06	440-196786-18	11/16/2017	5.3 °C/5.4 °C
SWFTS-MW06A-EM06	440-196786-19	11/16/2017	5.3 °C/5.4 °C
SWFTS-MW06B-EM06	440-196786-20	11/16/2017	5.3 °C/5.4 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
SWFTS-EM06-20171114-FB (440-196690-1) had detections of calcium, magnesium, silicon, and sodium. Concentrations in associated samples are >10x the amount in the EB.	
SWFTS-EM06-20171114-EB (440-196690-1) had detections of calcium, silicon, and sodium. Concentrations in associated samples are >10x the amount in the FB.	
6010B: Molybdenum was detected in MB 440-442837/1-A.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Nitrite recoveries were low in the MS/MSD of SWFTS-PC-91-EM06. Nitrate recovery was low in the MSD of SWFTS-PC-91-EM06.	
300.1B: Chlorate recoveries were outside limits in the MS/MSDs of SWFTS-MW11-EM06 and SWFTS-MW20-EM06. The concentrations in the parent samples were >4x the amount spiked, so recovery criteria do not apply. No qualification.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

Data Verification and Validation Summary

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 04/03/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 18 with MS/MSD

SDG/Report No.: 440-198276-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	Samples 1-14: Qualify TOC “J-”.
2. Chain-of-Custody		X	No	None
3. Holding Times	X		Yes	Samples 1-14: Qualify TOC “J-”.
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	---	---	---	---
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Compound Quantitation and Reporting Limits		X	No	None
9. Duplicates		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable as qualified.</p> <p>Usability: Estimated (J-) results are considered useable for limited purposes. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-IW03-EM07	440-198276-1	12/11/2017	5.0 °C
SWFTS-IW04-EM07	440-198276-2	12/11/2017	5.0 °C
SWFTS-IW05-EM07	440-198276-3	12/11/2017	5.0 °C
SWFTS-IW07-EM07	440-198276-4	12/11/2017	5.0 °C
SWFTS-IW08-EM07	440-198276-5	12/11/2017	5.0 °C
SWFTS-IW09-EM07	440-198276-6	12/11/2017	5.0 °C
SWFTS-IW11-EM07	440-198276-7	12/11/2017	5.0 °C
SWFTS-IW10-EM07	440-198276-8	12/11/2017	5.0 °C
SWFTS-IW12-EM07	440-198276-9	12/11/2017	5.0 °C
SWFTS-IW12-EM07-MS	440-198276-9MS	12/11/2017	5.0 °C
SWFTS-IW12-EM07-MSD	440-198276-9MSD	12/11/2017	5.0 °C
SWFTS-IW15-EM07	440-198276-10	12/11/2017	5.0 °C
SWFTS-IW15-EM07-FD	440-198276-11	12/11/2017	5.0 °C
SWFTS-IW16A-EM07	440-198276-12	12/11/2017	5.0 °C
SWFTS-IW16B-EM07	440-198276-13	12/11/2017	5.0 °C
SWFTS-IW19-EM07	440-198276-14	12/11/2017	5.0 °C
SWFTS-EM07-20171211-EB	440-198276-15	12/11/2017	5.0 °C
SWFTS-EM07-20171211-FB	440-198276-16	12/11/2017	5.0 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	No/Yes/Yes
SM5310B: Most of the samples were not preserved to pH <2 as required by the method. The samples were adjusted by the lab prior to analysis.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
SM5310B: The analysis time for unpreserved samples is 4 hours. Most of the samples were not preserved to pH <2 and the holding time was grossly exceeded.	

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	N/A

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
SM5310B: TOC recoveries were high in the MS/MSD of SWFTS-IW12-EM07. The concentration of the parent sample was <4x the amount spiked. No qualification is needed.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

9. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values ≤ RL.	Yes/Yes/N/A

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 04/03/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 16 with MS/MSD

SDG/Report No.: 440-198371-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW10A-EM07-FD: Qualify unused result "R".
Multiple results: SWFTS-MW10A-EM07-FD was analyzed twice for nitrate at 5x and 200x dilutions. Nitrate was not detected at either dilution. Result from the 5x analysis was used because nitrate had a lower RL/PQL.				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
Overall Assessment: Acceptable. Usability: Sample result qualified "R" should not be used. Sample results qualified "J", estimated, are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW25-EM07	440-198371-1	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW23-EM07	440-198371-2	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW20-EM07	440-198371-3	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW16-EM07	440-198371-4	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW24-EM07	440-198371-5	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW09A-EM07	440-198371-6	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW09B-EM07	440-198371-7	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW19-EM07	440-198371-8	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW10C-EM07	440-198371-9	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW10A-EM07	440-198371-10	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW10A-EM07-FD	440-198371-11	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW14-EM07	440-198371-12	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW14-EM07-MS	440-198371-12 MS	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW14-EM07-MSD	440-198371-12 MSD	12/12/2017	4.0 °C/4.8 °C
SWFTS-MW03-EM07	440-198371-13	12/12/2017	4.0 °C/4.8 °C
PC-94-EM07	440-198371-14	12/12/2017	4.0 °C/4.8 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
Multiple errors on the COC.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: MB 440-447312/1-A had detections of calcium, magnesium, and sodium. The concentrations in the associated sample are >10x the amount in the blank.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recovery was high in the MS of SWFTS-MW14-EM07. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply. No qualification.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 04/03/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 17 with MS/MSD

SDG/Report No.: 440-198508-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW21-EM07: Qualify sulfate "J-", TKN and pyruvic acid "UJ", selenium "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Other (Serial Dilution)	X		Yes	SWFTS-MW21-EM07: Qualify selenium "J".
12. Multiple Results (see below)	---	---	Yes	SWFTS-MW21-EM07: Qualify unused results "R".

Multiple results: SWFTS-MW21-EM07 was analyzed twice for nitrate and nitrite at 5x and 200x dilutions. Nitrate concentration in the 5x dilution analysis was used. According to the lab, the result obtained from the 200x dilution was used for lab QC and does not reflect the actual concentration. The result was magnified due to the dilution. Nitrite was not detected in the 200x dilution. Result from the 5x analysis was used because nitrite was detected.

Verification and Validation Label

Stage_2A_Validation_Manual

Verification and Validation Label Code

S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (J-, UJ, J, J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW06A-EM07	440-198508-1	12/13/2017	1.9 °C/2.1 °C/2.9 °C
SWFTS-MW06B-EM07	440-198508-2	12/13/2017	1.9 °C/2.1 °C/2.9 °C
SWFTS-MW05A-EM07	440-198508-3	12/13/2017	1.9 °C/2.1 °C/2.9 °C
SWFTS-MW05B-EM07	440-198508-4	12/13/2017	1.9 °C/2.1 °C/2.9 °C
SWFTS-MW18-EM07	440-198508-5	12/13/2017	1.9 °C/2.1 °C/2.9 °C/2.9 °C
SWFTS-MW17-EM07	440-198508-6	12/13/2017	1.9 °C/2.1 °C/2.9 °C
SWFTS-MW17-EM07-FD	440-198508-7	12/13/2017	1.9 °C/2.1 °C/2.9 °C
SWFTS-MW02-EM07	440-198508-8	12/13/2017	1.9 °C/2.1 °C/2.9 °C
PC-91-EM07	440-198508-9	12/13/2017	1.9 °C/2.1 °C/2.9 °C
SWFTS-MW21-EM07	440-198508-10	12/13/2017	1.9 °C/2.1 °C/2.9 °C/2.9 °C
SWFTS-MW21-EM07-MS	440-198508-10 MS	12/13/2017	1.9 °C/2.1 °C/2.9 °C/2.9 °C
SWFTS-MW21-EM07-MSD	440-198508-10 MSD	12/13/2017	1.9 °C/2.1 °C/2.9 °C/2.9 °C
PC-97-EM07	440-198508-11	12/13/2017	1.9 °C/2.1 °C/2.9 °C
PC-97-EM07-FD	440-198508-12	12/13/2017	1.9 °C/2.1 °C/2.9 °C
SWFTS-MW15-EM07	440-198508-13	12/13/2017	1.9 °C/2.1 °C/2.9 °C
SWFTS-EM07-20171213-EB	440-198508-14	12/13/2017	1.9 °C/2.1 °C/2.9 °C/2.9 °C
SWFTS-EM07-20171213-FB	440-198508-15	12/13/2017	1.9 °C/2.1 °C/2.9 °C/2.9 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
300.0: Sulfate was detected in SWFTS-EM07-20171213-EB. The concentrations in the associated samples are >10x the amount in the blank.	
6010B: MB 440-447312/1-A had detections of calcium, magnesium, and sodium. The concentrations in the associated sample are >10x the amount in the blank.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	No/Yes/No
300.0: Sulfate recovery was low in the MSD of SWFTS-MW21-EM07.	
300.1B: Chlorate recoveries were outside limits in the MS/MSD of SWFTS-MW21-EM07. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply. No qualification.	
351.2: Total Kjeldahl Nitrogen recovery was low in the MSD of SWFTS-MW21-EM07.	
6010B: The following recoveries were outside limits in the MS and/or MSD of SWFTS-MW21-EM07: calcium, magnesium, potassium, silicon, sodium, and strontium. The concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply. No qualification. Zinc MS recovery and RPD were high for SWFTS-MW21-EM07, but it was ND, so there can be no high bias or imprecision.	
6020: Selenium recoveries were high in the MS/MSD of SWFTS-MW21-EM07.	
VFA-IC: Pyruvic Acid recoveries were low in the MS/MSD SWFTS-MW21-EM07.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

Data Verification and Validation Summary

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 04/04/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 17

SDG/Report No.: 440-198571-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified. Usability: Sample results qualified as estimated (J) are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW08A-EM07	440-198571-1	12/14/2017	2.1 °C/2.9 °C
SWFTS-MW08C-EM07	440-198571-2	12/14/2017	2.1 °C/2.9 °C
SWFTS-MW07A-EM07	440-198571-3	12/14/2017	2.1 °C/2.9 °C
SWFTS-MW07B-EM07	440-198571-4	12/14/2017	2.1 °C/2.9 °C
COH-2B1 -EM07	440-198571-5	12/14/2017	2.1 °C/2.9 °C
SWFTS-EM07-20171214-EB	440-198571-6	12/14/2017	2.1 °C/2.9 °C
PC-92-EM07	440-198571-7	12/14/2017	2.1 °C/2.9 °C/2.9 °C
PC-92-EM07-FD	440-198571-8	12/14/2017	2.1 °C/2.9 °C/2.9 °C
PC-58-EM07	440-198571-9	12/14/2017	2.1 °C/2.9 °C
SWFTS-MW01-EM07	440-198571-10	12/14/2017	2.1 °C/2.9 °C
PC-88-EM07	440-198571-11	12/14/2017	2.1 °C/2.9 °C
SWFTS-MW04-EM07	440-198571-12	12/14/2017	2.1 °C/2.9 °C
SWFTS-MW11-EM07	440-198571-13	12/14/2017	2.1 °C/2.9 °C
SWFTS-MW13-EM07	440-198571-14	12/14/2017	2.1 °C/2.9 °C
SWFTS-MW12-EM07	440-198571-15	12/14/2017	2.1 °C/2.9 °C
SWFTS-MW07-20171214-FB	440-198571-16	12/14/2017	2.1 °C/2.9 °C
SWFTS-MW22-EM07	440-198571-17	12/14/2017	2.1 °C/2.9 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: MB 440-447312/1-A had detections of calcium, magnesium, and sodium. The concentrations in the associated samples are >10x the amount in the blank.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	No/Yes/Yes
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 04/05/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 5

SDG/Report No.: 440-203775-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label				
		Stage_2A_Validation_Manual		
Verification and Validation Label Code				
		S2AVM		
Overall Assessment: Acceptable as reported.				
Usability: Sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW02-EM08	440-203775-1	2/19/2018	2.6 °C
SWFTS-MW07B-EM08	440-203775-2	2/19/2018	2.6 °C
SWFTS-MW07A-EM08	440-203775-3	2/19/2018	2.6 °C
SWFTS-MW15-EM08	440-203775-4	2/19/2018	2.6 °C
SWFTS-MW20-EM08	440-203775-5	2/19/2018	2.6 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/N/A
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
Lab duplicates from different work orders.	
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/07/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 16 with MS/MSD

SDG/Report No.: 440-203841-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times	X		Yes	SWFTS-MW14-EM08: Qualify methane "J-".
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW14-EM08: Qualify selenium "J-", propionic acid "J+" and chlorite "R".
7. Laboratory Control Samples		X	No	None
8. Duplicates	X		Yes	SWFTS-MW21-EM08 and SWFTS-MW21-EM08-FD: Qualify Total Nitrogen "J".
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW14-EM08: Qualify unused results "R".

Multiple results:

SWFTS-MW14-EM08 was analyzed twice for nitrate and nitrite at 20x and 500x dilutions. Nitrate and nitrite were not detected in either dilution analysis. Results from the 20x analysis were used because nitrate and nitrite had lower RLs/PQLs.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable, unless rejected.

Usability: Sample results qualified "R" are not useable. Sample results qualified "DNR" should not be used. Results qualified as estimated (J-, J, J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
PC-91-EM08	440-203841-1	2/20/2018	1.5 °C /2.0 °C
PC-92-EM08	440-203841-2	2/20/2018	1.5 °C /2.0 °C
PC-92-EM08-FD	440-203841-3	2/20/2018	1.5 °C /2.0 °C
SWFTS-MW10A-EM08	440-203841-4	2/20/2018	1.5 °C /2.0 °C/3.4 °C
SWFTS-MW10A-EM08-FD	440-203841-5	2/20/2018	1.5 °C /2.0 °C/3.4 °C
SWFTS-MW19-EM08	440-203841-6	2/20/2018	1.5 °C /2.0 °C
SWFTS-MW05A-EM08	440-203841-7	2/20/2018	1.5 °C /2.0 °C
SWFTS-MW05B-EM08	440-203841-8	2/20/2018	1.5 °C /2.0 °C
SWFTS-MW21-EM08	440-203841-9	2/20/2018	1.5 °C /2.0 °C
SWFTS-MW21-EM08-FD	440-203841-10	2/20/2018	1.5 °C /2.0 °C
SWFTS-MW14-EM08	440-203841-11	2/20/2018	1.5 °C /2.0 °C/3.4 °C
SWFTS-MW14-EM08-MS	440-203841-11 MS	2/20/2018	1.5 °C /2.0 °C/3.4 °C
SWFTS-MW14-EM08-MSD	440-203841-11 MSD	2/20/2018	1.5 °C /2.0 °C/3.4 °C
SWFTS-MW01-EM08	440-203841-12	2/20/2018	1.5 °C /2.0 °C
SWFTS-MW09B-EM08	440-203841-13	2/20/2018	1.5 °C /2.0 °C
SWFTS-MW09A-EM08	440-203841-14	2/20/2018	1.5 °C /2.0 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	No/No/Yes
RSK-175: SWFTS-MW14-EM08 was received at pH = 6, not pH<2. Unpreserved samples are allowed per the lab's SOP.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
RSK-175: SWFTS-MW14-EM08 was received at pH = 6, not pH<2. The holding time for unpreserved samples is 7 days. The sample was analyzed on day 9.	

Data Verification and Validation Summary

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Calcium was detected in MB 440-461501/1-A (0.0945 mg/L). The concentrations in the associated samples are >10x the amount in the blank.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorite recoveries were zero in the MS/MSD of SWFTS-MW14-EM08. Per inorganic NFG, the result is rejected.	
6010B: Calcium, manganese, and sodium recoveries were outside limits in the MS and/or MSD of SWFTS-MW14-EM08. The concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply.	
6020: Selenium recoveries were low in the MS/MSD of SWFTS-MW14-EM08.	
SM5310B: TOC recoveries were outside limits in the MS/MSD of SWFTS-MW14-EM08. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
VFA: Propionic acid recoveries were high in the MS/MSD of SWFTS-MW14-EM08. Butyric acid recovery was high in the MS only and was ND in the parent sample. Only propionic acid will be qualified.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/No
Total Nitrogen was qualified for imprecision in SWFTS-MW10A-EM08 and SWFTS-MW10A-EM08-FD. The concentration in the parent sample was <5x the RL, so RPD criteria does not apply. The difference between the parent and FD results was > the RL.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/07/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 16 with MS/MSD

SDG/Report No.: 440-203937-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times	X		Yes	SWFTS-MW23-EM08: Qualify chlorate "J-".
4. Blanks	X		Yes	SWFTS-20180221-EM08-EB: Qualify dissolved calcium "J+". SWFTS-MW03-EM08: Qualify dissolved aluminum, iron, silicon, and titanium "J+". SWFTS-MW16-EM08: Qualify dissolved aluminum, silicon, and titanium "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW11-EM08 and SWFTS-MW24-EM08 Qualify unused results "R".

Multiple results:

SWFTS-MW11-EM08 was analyzed twice for sulfate at 20x and 500x dilutions. Sulfate exceeded the calibration range in the 20x dilution and was not used. Sulfate result from the 500x dilution analysis was used because it was within the calibration range.

SWFTS-MW24-EM08 was analyzed twice for nitrate at 20x and 500x dilutions. Nitrate was not detected in the 500x dilution. Result from the 20x analysis was used because nitrate was detected.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable.

Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (J-, J, J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW22-EM08	440-203937-1	2/21/2018	3.0 °C
SWFTS-MW04-EM08	440-203937-2	2/21/2018	3.0 °C
SWFTS-20180221-EM08-EB	440-203937-3	2/21/2018	2.0 °C/3.0 °C
PC-97-EM08	440-203937-4	2/21/2018	3.0 °C
SWFTS-MW03-EM08	440-203937-5	2/21/2018	3.0 °C
SWFTS-MW16-EM08	440-203937-6	2/21/2018	2.0 °C/3.0 °C
SWFTS-MW25-EM08	440-203937-7	2/21/2018	3.0 °C
SWFTS-MW24-EM08	440-203937-8	2/21/2018	3.0 °C
SWFTS-MW24-EM08-MS	440-203937-8 MS	2/21/2018	3.0 °C
SWFTS-MW24-EM08-MSD	440-203937-8 MSD	2/21/2018	3.0 °C
SWFTS-20180221-FB	440-203937-9	2/21/2018	3.0 °C
SWFTS-MW11-EM08	440-203937-10	2/21/2018	3.0 °C
SWFTS-MW11-EM08-FD	440-203937-11	2/21/2018	3.0 °C
PC-94-EM08	440-203937-12	2/21/2018	3.0 °C
PC-58-EM08	440-203937-13	2/21/2018	3.0 °C
SWFTS-MW23-EM08	440-203937-14	2/21/2018	3.0 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
300.1B: Chlorate was reanalyzed outside of holding time because the initial result did not reflect previous results.	

Data Verification and Validation Summary

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Calcium was detected in MB 440-461169/1-A (0.0990 mg/L). The concentrations in the associated field samples are >10x the amount in the blank. SWFTS-20180221-EM08-EB may be biased high. The following dissolved metals were detected in SWFTS-20180221-EM08-EB: aluminum, calcium, iron, magnesium, silicon, sodium, and titanium.	
SM 2320B: Alkalinity and bicarbonate alkalinity were detected in SWFTS-20180221-EM08-EB. The concentrations in the associated field samples are >10x the amount in the EB.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were low in the MS/MSD of SWFTS-MW24-EM08. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/08/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 11

SDG/Report No.: 440-204033-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-20180222-EM08-FB: Qualify dissolved calcium "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW06A-EM08 and SWFTS-MW18-EM08 Qualify unused results "R".

Multiple results:

SWFTS-MW06A-EM08 was analyzed twice for sulfate at 5x and 200x dilutions. Sulfate exceeded the calibration range in the 5x dilution and was not used. Sulfate result from the 200x dilution analysis was used because it was within the calibration range.

SWFTS-MW18-EM08 was analyzed twice for sulfate at 20x and 500x dilutions. Sulfate exceeded the calibration range in the 20x dilution and was not used. Sulfate result from the 500x dilution analysis was used because it was within the calibration range.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated "J" are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW06A-EM08	440-204033-1	2/22/2018	1.5 °C/2.6 °C
SWFTS-MW12-EM08	440-204033-2	2/22/2018	1.5 °C/2.6 °C
SWFTS-20180222-EM08-EB	440-204033-3	2/22/2018	1.5 °C/2.6 °C
SWFTS-MW18-EM08	440-204033-4	2/22/2018	1.5 °C/2.6 °C
SWFTS-MW06B-EM08	440-204033-5	2/22/2018	1.5 °C/2.6 °C
COH-2B1 -EM08	440-204033-6	2/22/2018	1.5 °C/2.6 °C
SWFTS-MW13-EM08	440-204033-7	2/22/2018	1.5 °C/2.6 °C
SWFTS-MW08A-EM08	440-204033-8	2/22/2018	1.5 °C/2.6 °C
SWFTS-20180222-EM08-FB	440-204033-9	2/22/2018	1.5 °C/2.6 °C/3.7 °C
PC-88-EM08	440-204033-10	2/22/2018	1.5 °C/2.6 °C
SWFTS-MW17-EM08	440-204033-11	2/22/2018	1.5 °C/2.6 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Calcium and lead were detected in MB 440-461501/1-A at 0.0669 mg/L and 0.0630 mg/L, respectively. The blank was associated with a FB not field samples. The following dissolved metals were detected in SWFTS-20180222-EM08-FB: calcium, sodium, and zinc.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

Data Verification and Validation Summary

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Sulfate recoveries were low in the MS/MSD of SWFTS-MW06A-EM08 and high in the MS/MSD of SWFTS-MW18-EM08. The concentrations in the parent samples were >4x the amount spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
Lab DUPs only.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/11/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 12 with MS/MSD

SDG/Report No.: 440-207137-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	SWFTS-MW10A-EM09-FD: Qualify TOC "J-".
2. Chain-of-Custody		X	No	None
3. Holding Times	X		Yes	SWFTS-MW10A-EM09-FD: Qualify TOC "J-".
4. Blanks	X		Yes	SWFTS-MW10A-EM09: Qualify dissolved aluminum "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW13-EM09: Qualify nitrate "J+"; SWFTS-MW14-EM09: Qualify boron and potassium "J+"; antimony "UJ", and selenium "J-".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	Yes	SWFTS-MW10A-EM09 and SWFTS-MW10A-EM09-FD: Qualify nickel "J".
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Other (Calibration)	X		Yes	SWFTS-MW10A-EM09: Qualify lactic acid and formic acid "UJ".
12. Multiple Results (see below)	---	---	Yes	PC-91-EM09, SWFTS-MW13-EM09, SWFTS-MW14-EM09, and SWFTS-MW14-EM09: Qualify unused results "R".

Multiple results:

PC-91-EM09 and SWFTS-MW13-EM09 were each analyzed twice for sulfate at 5x and 200x dilutions. Sulfate results exceeded the calibration range in the 5x dilutions and were not used. Sulfate results from the 200x dilution analysis were used because they were within the calibration range.

SWFTS-MW14-EM09 was analyzed twice for nitrate and nitrite at 5x and 200x dilutions. They were not detected at either dilution. Results from the 5x dilution were used because of the lower RL/PQL.

SWFTS-MW14-EM09 was analyzed twice for Total Kjeldahl Nitrogen. TKN was detected once. The detected result was used.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified (J, J-, J+, or UJ) are useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
PC-91-EM09	440-207137-1	3/26/2018	2.3 °C
PC-92-EM09	440-207137-2	3/26/2018	2.3 °C
PC-92-EM09-FD	440-207137-3	3/26/2018	2.3 °C
SWFTS-MW13-EM09	440-207137-4	3/26/2018	2.3 °C
SWFTS-MW05A-EM09	440-207137-5	3/26/2018	2.3 °C
SWFTS-MW05B-EM09	440-207137-6	3/26/2018	2.3 °C
SWFTS-MW10A-EM09	440-207137-7	3/26/2018	2.3 °C/3.1 °C
SWFTS-MW10A-EM09-FD	440-207137-8	3/26/2018	2.3 °C/3.1 °C
SWFTS-MW14-EM09	440-207137-9	3/26/2018	2.3 °C/3.1 °C
SWFTS-MW14-EM09-MS	440-207137-9 MS	3/26/2018	2.3 °C/3.1 °C
SWFTS-MW14-EM09-MSD	440-207137-9 MSD	3/26/2018	2.3 °C/3.1 °C
SWFTS-MW15-EM09	440-207137-10	3/26/2018	2.3 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	No/No/Yes
SM5310B: The TOC aliquot of SWFTS-MW10A-EM09-FD was not preserved to pH < 2.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
SM5310B: The TOC aliquot of SWFTS-MW10A-EM09-FD was not preserved to pH < 2 and not analyzed within 4 hours. Holding time was grossly exceeded.	

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: MB 440-468594/1-A had detections of aluminum, boron, calcium, and magnesium. MB 440-471007/1-A had detections of aluminum and calcium.	

Data Verification and Validation Summary

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Nitrate recoveries were high in the MS/MSD of SWFTS-MW13-EM09. Sulfate recoveries were low. The sulfate concentration in the parent sample was >4x the amount spiked, so recovery criteria for sulfate does not apply.	
6010B: Several metals had high or low recoveries in the MS/MSD of SWFTS-MW10A-EM09 and SWFTS-MW14-EM09. The concentrations in the parent samples were >4x the amount spiked, so recovery criteria do not apply. Boron, phosphorus, and potassium recoveries were high in the MS/MSD of SWFTS-MW14-EM09. Phosphorus was non-detect, so there can be no high bias.	
6020: Antimony and selenium recoveries were low in the MS/MSD of SWFTS-MW14-EM09.	
VFA-IC: Propionic acid recoveries were high in the MS/MSD of SWFTS-MW14-EM09. It was non-detect in the parent, so there can be no high bias.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/No
SWFTS-MW10A-EM09 and SWFTS-MW10A-EM09-FD: Nickel results are < 5x the RL. Difference between parent and FD results is 0.16, which is >RL (0.01). Qualification needed.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

11. Other (Calibration)	
This was mentioned in the case narrative and verified by the validator.	
VFA-IC: According to the case narrative, the lactic acid and formic acid recoveries were high in the CCV associated with SWFTS-MW10A-EM09. Formic acid %R = 152%. Lactic acid %R = 256%. Acceptance range is 80-120%.	

Validated by: Maureen McMyler 05/16/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 16

SDG/Report No.: 440-207268-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-20180327-EM09-EB: Qualify calcium "J+". SWFTS-MW03-EM09 and SWFTS-MW16-EM09: Qualify dissolved aluminum "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW02-EM09: Qualify unused result "R".

Multiple Results:

SWFTS-MW02-EM09 was analyzed twice for sulfate at 5x and 200x dilutions. Sulfate result exceeded the calibration range in the 5x dilution and was not used. Sulfate result from the 200x dilution analysis was used because it was within the calibration range.

Verification and Validation Label

Stage_2A_Validation_Manual

Verification and Validation Label Code

S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample result qualified "R" should not be used. Sample results qualified "J" or "J+" are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW02-EM09	440-207268-1	3/27/2018	1.2 °C/1.4 °C/2.7 °C
SWFTS-20180327-EM09-EB	440-207268-2	3/27/2018	1.2 °C/1.4 °C/2.7 °C/3.1 °C
SWFTS-MW19-EM09	440-207268-3	3/27/2018	1.2 °C/1.4 °C/2.7 °C
PC-97-EM09	440-207268-4	3/27/2018	1.2 °C/1.4 °C/2.7 °C
SWFTS-MW04-EM09	440-207268-5	3/27/2018	1.2 °C/1.4 °C/2.7 °C
SWFTS-MW09B-EM09	440-207268-6	3/27/2018	1.2 °C/1.4 °C/2.7 °C
SWFTS-MW09A-EM09	440-207268-7	3/27/2018	1.2 °C/1.4 °C/2.7 °C
PC-94-EM09	440-207268-8	3/27/2018	1.2 °C/1.4 °C/2.7 °C
SWFTS-MW20-EM09	440-207268-9	3/27/2018	1.2 °C/1.4 °C/2.7 °C
SWFTS-MW01-EM09	440-207268-10	3/27/2018	1.2 °C/1.4 °C/2.7 °C
SWFTS-MW18-EM09	440-207268-11	3/27/2018	1.2 °C/1.4 °C/2.7 °C
SWFTS-MW18-EM09-FD	440-207268-12	3/27/2018	1.2 °C/1.4 °C/2.7 °C
SWFTS-MW16-EM09	440-207268-13	3/27/2018	1.2 °C/1.4 °C/2.7 °C/3.1 °C
SWFTS-MW21-EM09	440-207268-14	3/27/2018	1.2 °C/1.4 °C/2.7 °C
SWFTS-MW03-EM09	440-207268-15	3/27/2018	1.2 °C/1.4 °C/2.7 °C
SWFTS-20180327-EM09-FB	440-207268-16	3/27/2018	1.2 °C/1.4 °C/2.7 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Calcium and sodium were detected in MB 440-468434/1-A. Calcium was detected in MB 440-469644/1-A. The concentrations in the associated field samples were >10x the amount spiked. EB will be qualified. Aluminum, calcium, and magnesium were detected in the SWFTS-20180327-EM09-EB.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Sulfate recoveries were low in the MS/MSD of SWFTS-MW02-EM09. The sulfate concentration in the parent sample was >4x the amount spiked, so recovery criteria for sulfate does not apply.	
6010B: Aluminum, calcium, iron, magnesium, silicon, and sodium recoveries were outside limits in the MS and/or MSD of PC-94-EM09. The concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/22/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 17 with MS/MSD

SDG/Report No.: 440-207497-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-20180328-EM09-FB: Qualify calcium "J+" and magnesium "J". SWFTS-MW25-EM09: Qualify dissolved aluminum "J" and selenium "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW24-EM09: Qualify sulfate "J".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW24-EM09: Qualify unused result "R".
<p>Multiple Results: SWFTS-MW24-EM09 was analyzed twice for nitrate at 10x and 500x dilutions. Nitrate was not detected in the 500x dilution and was not used. Nitrate result from the 10x dilution analysis was used because it was detected and at a lower RL/PQL.</p>				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
<p>Overall Assessment: Acceptable as qualified. Usability: Sample result qualified "R" should not be used. Sample results qualified "J" or "J+" are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW22-EM09	440-207497-1	3/28/2018	2.1 °C/3.3 °C
SWFTS-MW06B-EM09	440-207497-2	3/28/2018	2.1 °C/3.3 °C
SWFTS-MW06A-EM09	440-207497-3	3/28/2018	2.1 °C/3.3 °C
SWFTS-MW07A-EM09	440-207497-4	3/28/2018	2.1 °C/3.3 °C
SWFTS-MW12-EM09	440-207497-5	3/28/2018	2.1 °C/3.3 °C
PC-58-EM09	440-207497-6	3/28/2018	2.1 °C/3.3 °C
SWFTS-MW11-EM09	440-207497-7	3/28/2018	2.1 °C/3.3 °C
SWFTS-MW11-EM09-FD	440-207497-8	3/28/2018	2.1 °C/3.3 °C
SWFTS-MW23-EM09	440-207497-9	3/28/2018	2.1 °C/3.3 °C
SWFTS-MW07B-EM09	440-207497-10	3/28/2018	2.1 °C/3.3 °C
SWFTS-MW17-EM09	440-207497-11	3/28/2018	2.1 °C/3.3 °C
SWFTS-MW24-EM09	440-207497-12	3/28/2018	2.1 °C/3.3 °C
SWFTS-MW24-EM09-MS	440-207497-12 MS	3/28/2018	2.1 °C/3.3 °C
SWFTS-MW24-EM09-MSD	440-207497-12 MSD	3/28/2018	2.1 °C/3.3 °C
SWFTS-MW25-EM09	440-207497-13	3/28/2018	2.1 °C/3.3 °C
SWFTS-0180328-EM09-FB	440-207497-14	3/28/2018	2.1 °C/2.8 °C/3.3 °C
SWFTS-0180328-EM09-EB	440-207497-15	3/28/2018	2.1 °C/3.3 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Aluminum, boron, calcium, and magnesium were detected in MB 440-468594/1-A. Calcium was detected in MB 440-469644/1-A. FB will be qualified.	
SWFTS-20180328-EM09-FB: Detected analytes include TKN (351.2); Total Nitrogen (Calc); Dissolved aluminum, calcium, magnesium, sodium (6010B); Dissolved arsenic and selenium (6020).	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Sulfate recovery was low in the MSD of SWFTS-MW24-EM09. The RPD was high.	
300.1B: Chlorate recoveries were low in the MS/MSD of SWFTS-MW24-EM09. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
6010B: Calcium recoveries were low in the MS/MSD of SWFTS-MW24-EM09. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/22/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 3

SDG/Report No.: 440-207586-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW08A-EM09: Qualify unused result "R".
<p>Multiple Results: SWFTS-MW08A-EM09 was analyzed twice for sulfate at 10x and 500x dilutions. Sulfate result exceeded the calibration range in the 10x dilution and was not used. Sulfate result from the 500x dilution analysis was used because it was within the calibration range.</p>				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
<p>Overall Assessment: Acceptable. Usability: Results qualified "R" should not be used. All other results are considered valid and useable for all purposes.</p>				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW08A-EM09	440-207586-1	3/29/2018	4.8 °C
COH-2B1 -EM09	440-207586-2	3/29/2018	4.8 °C
PC-88-EM09	440-207586-3	3/29/2018	4.8 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/22/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 11

SDG/Report No.: 440-210173-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	SWFTS-MW05A-EM10: Qualify perchlorate "J".
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW14-EM10: Qualify potassium "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW01-EM10: Qualify unused result "R".
<p>Multiple results: SWFTS-MW01-EM10 was analyzed twice for sulfate at 10x and 200x dilutions. Sulfate from the 200x dilution analysis was used because the result obtained was within the calibration range. The 10x dilution analysis result was outside the calibration range.</p>				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
<p>Overall Assessment: Acceptable as qualified. Usability: Sample result qualified "R" should not be used. Sample results qualified "J" or "J+" are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW01-EM10	440-210173-1	4/30/2018	4.2 °C/4.8 °C
SWFTS-MW05B-EM10	440-210173-2	4/30/2018	4.2 °C/4.8 °C
SWFTS-MW02-EM10	440-210173-3	4/30/2018	4.2 °C/4.8 °C
SWFTS-MW19-EM10	440-210173-4	4/30/2018	4.2 °C/4.8 °C
SWFTS-MW19-EM10-FD	440-210173-5	4/30/2018	4.2 °C/4.8 °C
SWFTS-MW22-EM10	440-210173-6	4/30/2018	4.2 °C/4.8 °C
SWFTS-MW21-EM10	440-210173-7	4/30/2018	4.2 °C/4.8 °C
SWFTS-MW05A-EM10	440-210173-8	4/30/2018	4.2 °C/4.8 °C
SWFTS-MW14-EM10	440-210173-9	4/30/2018	2.4 °C/4.2 °C/4.8 °C
SWFTS-MW20-EM10	440-210173-10	4/30/2018	4.2 °C/4.8 °C
SWFTS-MW09B-EM10	440-210173-11	4/30/2018	4.2 °C/4.8 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	No/Yes/No
314.0: The sterile container for SWFTS-MW05A-EM10 was received empty. For analysis, the lab used an aliquot from an unpreserved, non-sterile sample container.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Aluminum and calcium were detected in MB 440-475352/1-A. Aluminum was not detected in the associated sample. Calcium concentration in the sample was >10x the amount in the blank.	

Data Verification and Validation Summary

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
6010B: Calcium, magnesium, phosphorus, potassium, silicon, sodium, and strontium recoveries were outside limits in the MS and/or MSD of SWFTS-MW14-EM10. The concentrations in the parent sample were >4x the amount spiked for calcium, magnesium, silicon, sodium, and strontium, so recovery criteria do not apply for them. Phosphorus recoveries were high, but the parent sample was ND, so there can be no high bias.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 09/04/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 17 with MS/MSD

SDG/Report No.: 440-210284-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	SWFTS-MW06A-EM10: Qualify perchlorate "J". SWFTS-MW10A-EM10: Qualify VFAs "UJ".
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-EM10-20180501-EB: Qualify sodium "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	PC-94-EM10: Qualify boron "J+" and TKN "UJ".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW10A-EM10 and PC-94-EM10: Qualify unused results "R".
<p>Multiple results: SWFTS-MW10A-EM10 was analyzed twice for sulfate at 10x and 500x dilutions. Sulfate from the 500x dilution analysis was used because the result obtained was within the calibration range. The 10x dilution analysis result was outside the calibration range. PC-94-EM10 was analyzed twice for nitrate and nitrite at 10x and 500x dilutions. At the 500x dilution, the analytes were not detected. The results from the 10x dilution were used because nitrate was detected. Both nitrate and nitrite had lower RLs/PQLs.</p>				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified "R" should not be used. Sample results qualified "UJ", "J", or "J+" are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID*	Date Collected	Cooler Temperatures
SWFTS-MW10A-EM10	440-210284-1	5/01/2018	4.8 °C/5.0 °C/14.6 °C
SWFTS-EM10-20180501-FB	440-210284-2	5/01/2018	4.8 °C/5.0 °C
PC-91-EM10	440-210284-3	5/01/2018	4.8 °C/5.0 °C
PC-92-EM10	440-210284-4	5/01/2018	4.8 °C/5.0 °C
SWFTS-MW04-EM10	440-210284-5	5/01/2018	4.8 °C/5.0 °C
SWFTS-MW18-EM10	440-210284-6	5/01/2018	4.8 °C/5.0 °C
PC-97-EM10	440-210284-7	5/01/2018	4.8 °C/5.0 °C
SWFTS-MW06B-EM10	440-210284-8	5/01/2018	4.8 °C/5.0 °C
SWFTS-MW06A-EM10	440-210284-9	5/01/2018	4.8 °C/5.0 °C
SWFTS-MW06A-EM10-FD	440-210284-10	5/01/2018	4.8 °C/5.0 °C
SWFTS-MW11-EM10	440-210284-11	5/01/2018	4.8 °C/5.0 °C
SWFTS-MW09A-EM10	440-210284-13	5/01/2018	4.8 °C/5.0 °C
PC-94-EM10	440-210284-14	5/01/2018	4.8 °C/5.0 °C
PC-94-EM10-MS	440-210284-14 MS	5/01/2018	4.8 °C/5.0 °C
PC-94-EM10-MSD	440-210284-14 MSD	5/01/2018	4.8 °C/5.0 °C
SWFTS-EM10-20180501-EB	440-210284-15	5/01/2018	4.8 °C/5.0 °C
*440-210284-12 sample number was assigned, but sample was not in the cooler			

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	No/No/No
314.0: The sterile container for SWFTS-MW06A-EM10 was received empty. For analysis, the lab pulled an aliquot from an unpreserved, non-sterile sample container.	
VFA-IC: SWFTS-MW10A-EM10 was received at TestAmerica-Buffalo at 14.6 °C.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
Cooler custody seals were not present. No evidence of tampering. SWFT-MW11-EM10-FD was listed on the COC, but the sample was not in the cooler.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

Data Verification and Validation Summary

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Sodium was detected in MB 440-475372/1-A. Calcium and sodium were detected in SWFTS-EM10-20180501-EB. Calcium and magnesium were detected in SWFTS-EM10-20180501-FB.	
6020: Selenium was detected in SWFTS-EM10-20180501-FB.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Sulfate recoveries were low in the MS/MSD of SWFTS-MW10A-EM10. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
300.1B: Chlorate recoveries were low in the MS/MSD of PC-94-EM10. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
351.2: TKN recoveries were low in the MS/MSD of PC-94-EM10.	
6010B: Calcium, magnesium, potassium, silicon, sodium, and strontium recoveries were outside limits in the MS/MSD of PC-94-EM10. The concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply. Boron recoveries were high in the MS/MSD of PC-94-EM10.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/22/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 1

SDG/Report No.: 440-210367-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW11-EM10-FD: Qualify unused result "R".
<p>Multiple results: SWFTS-MW11-EM10-FD was analyzed twice for sulfate at 20x and 500x dilutions. Sulfate from the 500x dilution analysis was used because the result obtained was within the calibration range. The 20x dilution analysis result was outside the calibration range.</p>				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
<p>Overall Assessment: Acceptable as qualified. Usability: Sample result qualified "R" should not be used. All other results are considered valid and useable for all purposes.</p>				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW11-EM10-FD	440-210367-1	5/01/2018	1.5 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Sulfate recovery was high in the MSD of SWFTS-MW11-EM10-FD. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
Parent sample SWFTS-MW11-EM10 is found in 440-210284-1.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/22/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 13

SDG/Report No.: 440-210430-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-MW03-EM10: Qualify aluminum "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW16-EM10: Qualify thallium and pyruvic acid "UJ".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	PC58-EM10 and SWFTS-MW16-EM10: Qualify unused results "R".

Multiple results:

PC58-EM10 was analyzed twice for sulfate at 10x and 200x dilutions. Sulfate from the 200x dilution analysis was used because the result obtained was within the calibration range. The 10x dilution analysis result was outside the calibration range.

SWFTS-MW16-EM10 was analyzed twice for sulfate at 1x and 50x dilutions. Sulfate from the 50x dilution analysis was used because the result obtained was within the calibration range. The 1x analysis result was outside the calibration range.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified "UJ", "J", or "J+" are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW07B-EM10	440-210430-1	5/2/2018	1.2 °C/3.7 °C
SWFTS-MW07A-EM10	440-210430-2	5/2/2018	1.2 °C/3.7 °C
SWFTS-MW15-EM10	440-210430-3	5/2/2018	1.2 °C/3.7 °C
SWFTS-EM10-20180502-FB	440-210430-4	5/2/2018	1.2 °C/3.7 °C
SWFTS-MW23-EM10	440-210430-5	5/2/2018	1.2 °C/3.7 °C
SWFTS-MW03-EM10	440-210430-6	5/2/2018	1.2 °C/3.7 °C
SWFTS-MW24-EM10	440-210430-7	5/2/2018	1.2 °C/3.7 °C
PC-88-EM10	440-210430-8	5/2/2018	1.2 °C/3.7 °C
PC-88-EM10-FD	440-210430-9	5/2/2018	1.2 °C/3.7 °C
PC-58-EM10	440-210430-10	5/2/2018	1.2 °C/3.7 °C
COH-2B1-EM10	440-210430-11	5/2/2018	1.2 °C/3.7 °C
SWFTS-EM10-20180502-EB	440-210430-12	5/2/2018	1.2 °C/3.7 °C
SWFTS-MW16-EM10	440-210430-13	5/2/2018	1.2 °C/3.7 °C/5.1 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

Data Verification and Validation Summary

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Aluminum, calcium, chromium, magnesium, and sodium were detected in MB 440-475969/1-A. For most, the concentration in the associated field sample was >10x the amount spiked. Chromium was not detected in the samples. Aluminum will be qualified in one sample.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Sulfate and nitrite recoveries were high in the MS/MSD of SWFTS-MW16-EM10. The sulfate concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply. Nitrite was ND in the parent sample, so there can be no high bias. No qualification.	
6010B: Calcium, magnesium, silicon, sodium, and strontium results were outside limits in the MS and/or MSD of SWFTS-MW03-EM10. The concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply.	
6020: Thallium recoveries were low in the MS/MSD of SWFTS-MW16-EM10.	
VFA-IC: Pyruvic acid recovery was low in the MS of SWFTS-MW16-EM10. Only the MS was analyzed.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/25/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 7 with MS/MSD

SDG/Report No.: 440-210534-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW17-EM10: Qualify perchlorate "J-".
7. Laboratory Control Samples	X		No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW17-EM10: Qualify unused result "R".

Multiple results:

SWFTS-MW17-EM10 was analyzed twice for sulfate at 50x and 200x dilutions. Sulfate from the 200x dilution analysis was used because the result obtained was within the calibration range. The 50x dilution analysis result was outside the calibration range.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified "J" or "J-" are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW13-EM10	440-210534-1	5/3/2018	2.3 °C
SWFTS-MW25-EM10	440-210534-2	5/3/2018	2.3 °C
SWFTS-MW17-EM10	440-210534-3	5/3/2018	2.3 °C
SWFTS-MW17-EM10-MS	440-210534-3 MS	5/3/2018	2.3 °C
SWFTS-MW17-EM10-MSD	440-210534-3 MSD	5/3/2018	2.3 °C
SWFTS-MW12-EM10	440-210534-4	5/3/2018	2.3 °C
SWFTS-MW08A-EM10	440-210534-5	5/3/2018	2.3 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Sodium was detected in MB 440-475372/1-A. Calcium was detected in MB 440-469644/1-A. The concentration in the associated field sample was >10x the amount spiked.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

Data Verification and Validation Summary

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were low in the MS/MSD of SWFTS-MW17-EM10. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
314.0: Perchlorate recoveries were low in the MS/MSD of SWFTS-MW17-EM10.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/No
300.0: Nitrite recovery was high in LCS 440-474189/7. The associated sample was ND, so there can be no high bias.	

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
Lab DUP only.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/23/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 12

SDG/Report No.: 440-215437-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW03-EM11: Qualify boron "J+" and selenium "J-".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW03-EM11 and SWFTS-MW23-EM11: Qualify unused results "R".

Multiple results:

SWFTS-MW03-EM11 was analyzed twice for sulfate at 10x and 200x dilutions. Sulfate exceeded the calibration range in the 10x dilution and was not used. Sulfate result from the 200x dilution analysis was used because it was within the calibration range.

SWFTS-MW23-EM11 was analyzed twice for sulfate at 1x and 50x dilutions. Sulfate exceeded the calibration range in the 1x dilution and was not used. Sulfate result from the 50x dilution analysis was used because it was within the calibration range.

Verification and Validation Label

Stage_2A_Validation_Manual

Verification and Validation Label Code

S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (J-, J, J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID*	Date Collected	Cooler Temperatures
PC-94-EM11	440-215437-1	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C
SWFTS-MW01-EM11	440-215437-2	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C
PC-97-EM11	440-215437-3	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C
SWFTS-MW04-EM11	440-215437-4	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C
SWFTS-MW03-EM11	440-215437-5	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C
COH-2B1-EM11	440-215437-6	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C
SWFTS-MW23-EM11	440-215437-7	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C
SWFTS-MW14-EM11	440-215437-8	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C, 5.3°C
SWFTS-MW22-EM11	440-215437-9	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C
SWFTS-MW19-EM11	440-215437-10	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C
SWFTS-MW19-EM11-FD	440-215437-11	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C
SWFTS-MW25-EM11	440-215437-12	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
Note: Cooler temperatures at receipt were 4.0°, 4.5°, 5.0° and 5.3°C. Cooler custody seals were not present. No evidence of tampering.	
RSK175: Sample SWFTS-MW14-EM11 was not properly preserved to a pH <2. The pH was recorded at 6. Lab SOP allows unpreserved samples.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The collection time was documented incorrectly on the COC for SWFTS-MW01-EM11. The sample was logged in by the laboratory according to the time on the label per the client’s instructions. Cooler custody seals were not present. No evidence of tampering.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

Data Verification and Validation Summary

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Calcium was detected in MB 440-488238/1-A.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	NA/NA/NA
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Sulfate recoveries low in MS/MSD of SWFTS-MW03-EM11 and SWFTS-MW23-EM11. The concentrations in the parent samples were >4x the amount spiked, so recovery criteria do not apply.	
300.1: Chlorate recovery was low in the MS of SWFTS-MW19-EM11. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply. Low recoveries reported in one additional spike pair performed on a project sample from another data set. Recovery criteria do not apply.	
VFA: Pyruvic acid recoveries were low in the MS/MSD performed on a project sample from another data set. Recovery criteria do not apply.	
6010B: Calcium, magnesium, potassium, silicon, sodium, and strontium recoveries were above limits in the MS/MSD of SWFTS-MW03-EM11. The concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply. Boron recoveries were high in the MS/MSD of SWFTS-MW03-EM11.	
6020: Selenium recoveries were low in the MS/MSD of SWFTS-MW03-EM11.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
300.0, 314.0, 5310B: Sample results for SWFTS-MW19-EM11 were reported in Job Number 440-215437-2.	
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Cecelia Minch 08/02/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 4

SDG/Report No.: 440-215437-2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	--	--	--	--
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates	--	--	--	--
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
Overall Assessment: Acceptable.				
Usability: All results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW01-EM11	440-215437-2	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C
SWFTS-MW03-EM11	440-215437-5	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C
SWFTS-MW14-EM11	440-215437-8	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C
SWFTS-MW19-EM11	440-215437-10	07/10/18	4.0°, 4.5°, 5.0°, 5.3°C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
Note: Cooler temperatures at receipt were 4.0°, 4.5°, 5.0° and 5.3°C. Cooler custody seals were not present. No evidence of tampering.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The collection time was documented incorrectly on the COC for SWFTS-MW01-EM11. The sample was logged in by the laboratory according to the time on the label per the client's instructions.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	NA/NA/NA

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Recovery of the nitrite MSD performed on a project sample in another data set was below the laboratory limit. Recovery criteria do not apply.	
314.0: One of the MSDs performed on a non-project sample was above the upper limit. Recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	No/NA/NA

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/NA

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Cecelia Minch 07/26/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 18 with MS/MSD

SDG/Report No.: 440-215585-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW10A-EM11: Qualify pyruvic acid "UJ".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified as estimated (J/UJ) are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS- 20180710-EB	440-215585-1	7/10/2018	2.0 °C/3.5 °C/4.7 °C
SWFTS-MW06A-EM11	440-215585-2	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW06A-EM11-FD	440-215585-3	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW06B-EM11	440-215585-4	7/11/2018	2.0 °C/3.5 °C
PC-92-EM11	440-215585-5	7/11/2018	2.0 °C/3.5 °C
PC-91-EM11	440-215585-6	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW07A-EM11	440-215585-7	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW07B-EM11	440-215585-8	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW10A-EM11	440-215585-9	7/11/2018	2.0 °C/3.5 °C/4.7 °C
SWFTS-MW10A-EM11-MS	440-215585-9 MS	7/11/2018	2.0 °C/3.5 °C/4.7 °C
SWFTS-MW10A-EM11-MSD	440-215585-9 MSD	7/11/2018	2.0 °C/3.5 °C/4.7 °C
SWFTS-MW05B-EM11	440-215585-10	7/10/2018	2.0 °C/3.5 °C
SWFTS-20180711-FB	440-215585-11	7/11/2018	2.0 °C/3.5 °C/4.7 °C
SWFTS-MW16-EM11	440-215585-12	7/11/2018	2.0 °C/3.5 °C/4.7 °C
SWFTS-MW17-EM11	440-215585-13	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW05A-EM11	440-215585-14	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW05A-EM11-MS	440-215585-14 MS	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW05A-EM11-MSD	440-215585-14 MSD	7/11/2018	2.0 °C/3.5 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
Cooler temperatures at receipt were 2.0°C and 3.5°C.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

Data Verification and Validation Summary

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Copper and sodium were detected in MB 440-487554/1-A. Calcium was detected in SWFTS-20180711-FB.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were low in the MS/MSD of SWFTS-MW05A-EM11. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply. Low recoveries reported in three additional spike pairs performed on project samples from other data sets. Recovery criteria do not apply.	
VFA: Pyruvic acid recoveries were low in the MS/MSD of SWFTS-MW10A-EM11.	
6010B: Calcium, magnesium, silicon and sodium recoveries were high in the MS and/or MSD of SWFTS-MW10A-EM11. Calcium, magnesium, sodium, and strontium recoveries were below limits in the MS/MSD of SWFTS-MW05A-EM11. The concentrations in the parent samples were >4x the amounts spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Cecelia Minch 08/2/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 10 with MS/MSD

SDG/Report No.: 440-215585-2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times	X		Yes	SWFTS-MW05B-EM11: Qualify nitrate "J-".
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	--	--	--	--
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW10A-EM11: Qualify perchlorate "J-".
7. Laboratory Control Samples		X	No	None
8. Duplicates	--	--	--	--
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW05A-EM11 and SWFTS-MW10A-EM11: Qualify unused results "R".

Multiple results:

SWFTS-MW05A-EM11 was analyzed twice for nitrate at 10x and 500x dilutions. The nitrate result from the 10x dilution analysis was used. According to the lab, the result obtained from the 500x dilution was used for lab QC and does not reflect the actual concentration. The result was magnified due to the dilution.

SWFTS-MW10A-EM11 was analyzed twice for nitrate and nitrite at 10x and 500x dilutions. Neither was detected in the 500x dilution. Nitrate from the 10x dilution was used because it was detected. Nitrite from the 10x dilution was used because it had a lower RL/PQL.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Results qualified "R" should not be used. Sample results qualified as estimated (J/J-) are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID*	Date Collected	Cooler Temperatures
PC-92-EM11	440-215585-5	7/11/2018	2.0 °C/3.5 °C
PC-91-EM11	440-215585-6	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW10A-EM11	440-215585-9	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW10A-EM11-MS	440-215585-9 MS	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW10A-EM11-MSD	440-215585-9 MSD	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW05B-EM11	440-215585-10	7/10/2018	2.0 °C/3.5 °C
SWFTS-MW16-EM11	440-215585-12	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW05A-EM11	440-215585-14	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW05A-EM11-MS	440-215585-14 MS	7/11/2018	2.0 °C/3.5 °C
SWFTS-MW05A-EM11-MSD	440-215585-14 MSD	7/11/2018	2.0 °C/3.5 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
Cooler temperatures at receipt were 2.0°C and 3.5°C.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The expedited TAT was not indicated on the COC for all affected samples. The laboratory was notified by the client.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
300.0: Nitrate exceeded holding time in sample SWFTS-MW05B-EM11. The sample was received at the laboratory with less than 6 hours remaining in the 48 hour holding time.	

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	NA/NA/NA

Data Verification and Validation Summary

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
314.0: Perchlorate recoveries were low in the MS/MSD of SWFTS-MW10A-EM11.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	No/NA/NA

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Cecelia Minch 08/2/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 18

SDG/Report No.: 440-215717-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/MDL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW11-EM11 and SWFTS-MW21-EM11: Qualify unused results "R".

Multiple results: SWFTS-MW11-EM11 was analyzed twice for sulfate at 10x and 500x dilutions. Sulfate result in the 10x dilution exceeded the calibration range and is not used. The 500x dilution analysis was used because the sulfate concentration was within the calibration range.
 SWFTS-MW21-EM11 was analyzed twice for sulfate at 20x and 500x dilutions. Sulfate result in the 20x dilution exceeded the calibration range and is not used. The 200x dilution analysis was used because the sulfate concentration was within the calibration range.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated, "J", are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW15-EM11	440-215717-1	07/11/18	2.1°C, 4.0°C, 4.9°C
SWFTS-MW18-EM11	440-215717-2	07/11/18	2.1°C, 4.0°C, 4.9°C
SWFTS-MW21-EM11	440-215717-3	07/12/18	2.1°C, 4.0°C, 4.9°C
SWFTS-20180712-FB	440-215717-4	07/12/18	2.1°C, 4.0°C, 4.9°C
SWFTS-MW24-EM11	440-215717-5	07/12/18	2.1°C, 4.0°C, 4.9°C
SWFTS-20180712-EB	440-215717-6	07/12/18	2.1°C, 4.0°C, 4.9°C
PC-58-EM11	440-215717-7	07/11/18	2.1°C, 4.0°C, 4.9°C
SWFTS-MW20-EM11	440-215717-8	07/11/18	2.1°C, 4.0°C, 4.9°C
SWFTS-MW09B-EM11	440-215717-9	07/12/18	2.1°C, 4.0°C, 4.9°C
SWFTS-MW09A-EM11	440-215717-10	07/12/18	2.1°C, 4.0°C, 4.9°C
PC-88-EM11	440-215717-11	07/12/18	2.1°C, 4.0°C, 4.9°C
PC-88-EM11-FD	440-215717-12	07/12/18	2.1°C, 4.0°C, 4.9°C
SWFTS-MW02-EM11	440-215717-13	07/11/18	2.1°C, 4.0°C, 4.9°C
SWFTS-MW08A-EM11	440-215717-14	07/11/18	2.1°C, 4.0°C, 4.9°C
SWFTS-MW13-EM11	440-215717-15	07/12/18	2.1°C, 4.0°C, 4.9°C
SWFTS-MW12-EM11	440-215717-16	07/12/18	2.1°C, 4.0°C, 4.9°C
SWFTS-MW11-EM11	440-215717-17	07/12/18	2.1°, 4.0°, 4.7°C, 4.9°C
SWFTS-MW11-EM11-FD	440-215717-18	07/12/18	2.1°, 4.0°, 4.7°C, 4.9°C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
Cooler temperatures at receipt were 2.1°C, 4.0°C and 4.9°C. Temperature at TestAmerica-Buffalo was 4.7°C.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

Data Verification and Validation Summary

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Aluminum and calcium were detected in MB 440-490274/1-A. Aluminum was not detected in the samples. Calcium concentrations in the samples were >10x the amount in the MB.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Nitrite recoveries were high in the MS/MSD performed on SWFTS-MW11-EM11. Nitrite was not detected in the parent sample, so recovery criteria do not apply. Sulfate recoveries were below limits in the MS performed on SWFTS-MW21-EM11 and above limits in SWFTS-MW11-EM11 MS/MSD. The concentrations in the parent samples were >4x the amounts spiked, so recovery criteria do not apply. Sulfate recovery was high in the MSD performed on a non-project sample. Recovery criteria do not apply.	
300.1B: Chlorate recoveries were low in the spikes performed on SWFTS-MW21-EM11 and SWFTS-MW09A-EM11. The concentrations in the parent samples were >4x the amounts spiked, so recovery criteria do not apply. Recoveries were out of limits in the MS/MSD performed on a non-project sample. Recovery criteria do not apply.	
351.2: TKN recoveries were low in the MS/MSD of a non-project sample. Recovery criteria do not apply.	
365.3: Total phosphorus recoveries were low in the MS/MSD of a non-project sample. Recovery criteria do not apply.	
VFA: Pyruvic acid recovery was low in the MS/MSD performed on a non-project sample. Recovery criteria do not apply.	
6010B: Calcium, magnesium, potassium, sodium, and strontium recoveries were below limits in the MS/MSD of SWFTS-MW18-EM11. The concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Cecelia Minch 08/07/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 8

SDG/Report No.: 440-215717-2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times	X		Yes	SWFTS-MW15-EM11: Qualify nitrate "J-". (h)
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	--	--	--	--
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates	--	--	--	--
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified.				
Usability: Sample results qualified as estimated (J-) are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW15-EM11	440-215717-1	07/11/18	2.1°, 4.0°, 4.9°C
SWFTS-MW18-EM11	440-215717-2	07/11/18	2.1°, 4.0°, 4.9°C
SWFTS-MW21-EM11	440-215717-3	07/12/18	2.1°, 4.0°, 4.9°C
SWFTS-MW24-EM11	440-215717-5	07/12/18	2.1°, 4.0°, 4.9°C
SWFTS-MW20-EM11	440-215717-8	07/11/18	2.1°, 4.0°, 4.9°C
SWFTS-MW09B-EM11	440-215717-9	07/12/18	2.1°, 4.0°, 4.9°C
SWFTS-MW09A-EM11	440-215717-10	07/12/18	2.1°, 4.0°, 4.9°C
SWFTS-MW02-EM11	440-215717-13	07/11/18	2.1°, 4.0°, 4.9°C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
Cooler temperatures at receipt were 2.1°, 4.0° and 4.9°C.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
300.0: Nitrate exceeded holding time in sample SWFTS-MW15-EM11. The sample was received at the laboratory with only 2.25 hours remaining in the 48 hour holding time.	

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	NA/NA/NA

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	No/NA/NA

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Cecelia Minch 07/26/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 8

SDG/Report No.: 440-215795-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	--	--	--	--
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all TOC results detected between the MDL and RL "J". (sp)
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified as estimated (J) are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
LVWPS-MW101A-EM11	440-215795-1	07/12/18	3.6°C
LVWPS-MW104-EM11	440-215795-2	07/12/18	3.6°C
LVWPS-MW109-EM11	440-215795-3	07/12/18	3.6°C
LVWPS-MW112A-EM11	440-215795-4	07/12/18	3.6°C
LVWPS-MW108A-EM11	440-215795-5	07/12/18	3.6°C
LVWPS-MW108A-EM11-FD	440-215795-6	07/12/18	3.6°C
LVWPS-MW107A-EM11	440-215795-7	07/12/18	3.6°C
LVWPS-MW111A-EM11	440-215795-8	07/12/18	3.6°C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
Cooler temperature at receipt was 3.6°C.	
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
Discrepancies regarding the identifications of two (2) samples were noted by the laboratory between the COC and labels on the containers. The samples were logged in by the laboratory as instructed by the client as LVWPS-MW101A-EM11 and LVWPS-MW104-EM11. Samples requiring expedited TAT were not clearly indicated on the COC. The laboratory contacted the client for clarification.	
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	NA/NA/NA
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Cecelia Minch 07/26/18

Data Verification and Validation Summary

Project Name: NERT Seep Well Field TS
 Task No.: M11
 No. of Samples: 8

SDG/Report No.: 440-215795-2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
Overall Assessment: Acceptable.				
Usability: All results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
LVWPS-MW101A-EM11	440-215795-1	07/12/18	3.6°C
LVWPS-MW104-EM11	440-215795-2	07/12/18	3.6°C
LVWPS-MW109-EM11	440-215795-3	07/12/18	3.6°C
LVWPS-MW112A-EM11	440-215795-4	07/12/18	3.6°C
LVWPS-MW108A-EM11	440-215795-5	07/12/18	3.6°C
LVWPS-MW108A-EM11-FD	440-215795-6	07/12/18	3.6°C
LVWPS-MW107A-EM11	440-215795-7	07/12/18	3.6°C
LVWPS-MW111A-EM11	440-215795-8	07/12/18	3.6°C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
Cooler temperature at receipt was 3.6°C.	
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
Discrepancies regarding the identifications of two (2) samples were noted by the laboratory between the COC and labels on the containers. The samples were logged in by the laboratory as instructed by the client as LVWPS-MW101A-EM11 and LVWPS-MW104-EM11.	
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were low in the batch MS/MSD performed on a project sample from another data set, so recovery criteria do not apply.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Cecelia Minch 07/26/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 9

SDG/Report No.: 440-216784-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable. Usability: All results are considered valid and useable for all purposes.				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-MW09B-EM12	440-216784-1	07/26/18	1.1°C
SWFTS-MW10A-EM12	440-216784-2	07/26/18	1.1°C
SWFTS-MW14-EM12	440-216784-3	07/26/18	1.1°C
SWFTS-MW15-EM12	440-216784-4	07/26/18	1.1°C
SWFTS-MW16-EM12	440-216784-5	07/26/18	1.1°C
SWFTS-MW18-EM12	440-216784-6	07/26/18	1.1°C
SWFTS-MW19-EM12	440-216784-7	07/26/18	1.1°C
SWFTS-MW19-EM12-FD	440-216784-8	07/26/18	1.1°C
SWFTS-MW20-EM12	440-216784-9	07/26/18	1.1°C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
Note: Cooler temperature at receipt was 1.1°C.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes

Data Verification and Validation Summary

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Cecelia Minch 08/14/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 9

SDG/Report No.: 440-216784-2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	--	--	--	--
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits	X		No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable.				
Usability: All results are considered valid and useable for all purposes.				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW09B-EM12	440-216784-1	07/26/18	1.1°C
SWFTS-MW10A-EM12	440-216784-2	07/26/18	1.1°C
SWFTS-MW14-EM12	440-216784-3	07/26/18	1.1°C
SWFTS-MW15-EM12	440-216784-4	07/26/18	1.1°C
SWFTS-MW16-EM12	440-216784-5	07/26/18	1.1°C
SWFTS-MW18-EM12	440-216784-6	07/26/18	1.1°C
SWFTS-MW19-EM12	440-216784-7	07/26/18	1.1°C
SWFTS-MW19-EM12-FD	440-216784-8	07/26/18	1.1°C
SWFTS-MW20-EM12	440-216784-9	07/26/18	1.1°C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/No
Note: Cooler temperature at receipt was 1.1°C.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The collection time was documented incorrectly on the COC for SWFTS-MW01-EM11. The sample was logged in by the laboratory according to the time on the label per the client's instructions.	
314.0: The expedited TAT was not indicated on the COC for all of the affected samples. The laboratory was notified by the client.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	NA/NA/NA

Data Verification and Validation Summary

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
314.0: Recoveries for one of the MS/MSD that were performed on a project sample in another data set was above the laboratory limit. Recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Cecelia Minch 08/07/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 16

SDG/Report No.: 440-216872-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		--	--	--
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable. Usability: All results are considered valid and useable for all purposes.				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-20180727-EB	440-216872-1	07/27/18	3.3°C
SWFTS-20180727-FB	440-216872-2	07/27/18	3.3°C
SWFTS-MW21-EM12	440-216872-3	07/27/18	3.3°C
SWFTS-MW22-EM12	440-216872-4	07/27/18	3.3°C
SWFTS-MW24-EM12	440-216872-5	07/27/18	3.3°C
SWFTS-MW25-EM12	440-216872-6	07/27/18	3.3°C
SWFTS-MW05B-EM12	440-216872-7	07/27/18	3.3°C
SWFTS-MW05A-EM12	440-216872-8	07/27/18	3.3°C
SWFTS-MW09A-EM12	440-216872-9	07/27/18	3.3°C
SWFTS-MW03-EM12	440-216872-10	07/27/18	3.3°C
SWFTS-MW02-EM12	440-216872-11	07/27/18	3.3°C
SWFTS-PC-94-EM12	440-216872-12	07/27/18	3.3°C
SWFTS-MW01-EM12	440-216872-13	07/27/18	3.3°C
SWFTS-MW01-EM12-FD	440-216872-14	07/27/18	3.3°C
SWFTS-PC-92-EM12	440-216872-15	07/27/18	3.3°C
SWFTS-PC-91-EM12	440-216872-16	07/27/18	3.3°C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
Note: Cooler temperature at receipt was 3.3°C. Cooler custody seals were not present. No evidence of tampering.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The expedited TAT was not indicated on the COC for the affected samples. The laboratory was notified by the client.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

Data Verification and Validation Summary

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	NA/NA/NA

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were high in the MS/MSD of SWFTS-MW03-EM12. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Cecelia Minch 08/07/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 16

SDG/Report No.: 440-216872-2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		--	--	--
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW03-EM12: Qualify perchlorate "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
<p>Overall Assessment: Acceptable as qualified. Usability: Sample results qualified as estimated (J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
SWFTS-20180727-EB	440-216872-1	07/27/18	3.3°C
SWFTS-20180727-FB	440-216872-2	07/27/18	3.3°C
SWFTS-MW21-EM12	440-216872-3	07/27/18	3.3°C
SWFTS-MW22-EM12	440-216872-4	07/27/18	3.3°C
SWFTS-MW24-EM12	440-216872-5	07/27/18	3.3°C
SWFTS-MW25-EM12	440-216872-6	07/27/18	3.3°C
SWFTS-MW05B-EM12	440-216872-7	07/27/18	3.3°C
SWFTS-MW05A-EM12	440-216872-8	07/27/18	3.3°C
SWFTS-MW09A-EM12	440-216872-9	07/27/18	3.3°C
SWFTS-MW03-EM12	440-216872-10	07/27/18	3.3°C
SWFTS-MW02-EM12	440-216872-11	07/27/18	3.3°C
SWFTS-PC-94-EM12	440-216872-12	07/27/18	3.3°C
SWFTS-MW01-EM12	440-216872-13	07/27/18	3.3°C
SWFTS-MW01-EM12-FD	440-216872-14	07/27/18	3.3°C
SWFTS-PC-92-EM12	440-216872-15	07/27/18	3.3°C
SWFTS-PC-91-EM12	440-216872-16	07/27/18	3.3°C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport

Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes
---	-------------

Note: Cooler temperature at receipt was 3.3°C. Cooler custody seals were not present. No evidence of tampering.

2. Chain-of-Custody (COC)

Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
--	---------

314.0: The expedited TAT was not indicated on the COC for the affected samples. The laboratory was notified by the client.

3. Holding Times

Were samples analyzed within acceptable holding times?	Yes
--	-----

Data Verification and Validation Summary

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	NA/NA/NA
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
314.0: Perchlorate recoveries were high for SWFTS-MW03-EM12.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Cecelia Minch 08/07/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 13 including MS/MS

SDG/Report No.: 440-218109-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-20180814-FB: Qualify calcium "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW05A-EM13: Qualify nitrate "J+". SWFTS-MW14-EM13: Qualify selenium "J+". SWFTS-20180814-FB: Qualify pyruvic acid "UJ".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None

Verification and Validation Label

Stage_2A_Validation_Manual

Verification and Validation Label Code

S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified as estimated (UJ, J, J+) are useable for limited purposes only. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature (s)
PC-91-EM13	440-218109-1	8/14/2018	3.0 °C
SWFTS-MW05A-EM13	440-218109-2	8/14/2018	3.0 °C
SWFTS-MW05A-EM13-MS	440-218109-2 MS	8/14/2018	3.0 °C
SWFTS-MW05A-EM13-MSD	440-218109-2 MSD	8/14/2018	3.0 °C
SWFTS-MW05B-EM13	440-218109-3	8/14/2018	3.0 °C
SWFTS-MW06A-EM13	440-218109-4	8/14/2018	3.0 °C
SWFTS-MW06A-EM13-FD	440-218109-5	8/14/2018	3.0 °C
SWFTS-MW06B-EM13	440-218109-6	8/14/2018	3.0 °C
SWFTS-20180814-FB	440-218109-7	8/14/2018	3.0 °C/4.3 °C
SWFTS-MW09B-EM13	440-218109-8	8/14/2018	3.0 °C
SWFTS-MW09A-EM13	440-218109-9	8/14/2018	3.0 °C
SWFTS-MW10A-EM13	440-218109-10	8/14/2018	3.0 °C/4.3 °C
SWFTS-MW14-EM13	440-218109-11	8/14/2018	3.0 °C/4.3 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Calcium was detected in MB 440-494626/1-I. The concentration in most field samples was >10x the amount in the blank.	

Data Verification and Validation Summary

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Nitrate recovery was high in the MSD of SWFTS-MW05A-EM13. Sulfate recoveries were low in the MS/MSD of SWFTS-MW05A-EM13. The concentration of sulfate in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
300.1B: Chlorate recoveries were low in the MS/MSD of SWFTS-MW05A-EM13. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
6010B: The following recoveries were outside limits in MS/MSD of SWFTS-MW05A-EM13: calcium, magnesium, silicon, sodium, and strontium. The concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply.	
6020: Selenium recoveries were high in the MS/MSD of SWFTS-MW14-EM13.	
VFA-IC: Pyruvic acid recovery was low in the MSD of SWFTS-20180814-FB. Lactic acid RPD was high, but the sample was ND. No qualification for lactic acid.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 09/05/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 20 with MS/MSD

SDG/Report No.: 440-218208-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW16-EM13: Qualify manganese "J-", pyruvic acid and selenium "UJ".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW02-EM13 and SWFTS-MW16-EM13: Qualify unused results "R".
<p>Multiple results: SWFTS-MW02-EM13 was analyzed twice for sulfate at 10x and 200x dilutions. Sulfate result in the 10x dilution exceeded the calibration range. The 200x dilution analysis was used because the sulfate concentration was within the calibration range.</p> <p>SWFTS-MW16-EM13 was analyzed twice for nitrate and nitrite at 5x and 200x dilutions. They were not detected in either run, so the 5x analysis results were used because of the lower RL/PQL.</p>				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
<p>Overall Assessment: Acceptable as qualified.</p> <p>Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (UJ, J-, J) are useable for limited purposes. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
PC-92-EM13	440-218208-1	8/15/2018	2.9 °C/5.0 °C
PC-94-EM13	440-218208-2	8/15/2018	2.9 °C/5.0 °C
SWFTS-MW02-EM13	440-218208-3	8/15/2018	2.9 °C/5.0 °C
SWFTS-MW03-EM13	440-218208-4	8/15/2018	2.9 °C/5.0 °C
PC-58-EM13	440-218208-5	8/15/2018	2.9 °C/5.0 °C
LVWPS-MW108A-EM13	440-218208-6	8/15/2018	2.9 °C/5.0 °C
LVWPS-MW109-EM13	440-218208-7	8/15/2018	2.9 °C/5.0 °C
LVWPS-MW104-EM13	440-218208-8	8/15/2018	2.9 °C/5.0 °C
LVWPS-MW111A-EM13	440-218208-9	8/15/2018	2.9 °C/5.0 °C
SWFTS-MW25-EM13	440-218208-10	8/15/2018	2.9 °C/5.0 °C
SWFTS-MW24-EM13	440-218208-11	8/15/2018	2.9 °C/5.0 °C
SWFTS-MW15-EM13	440-218208-12	8/15/2018	2.9 °C/5.0 °C
SWFTS-MW16-EM13	440-218208-13	8/15/2018	2.9 °C/4.3 °C/5.0 °C
SWFTS-MW16-EM13-MS	440-218208-13 MS	8/15/2018	2.9 °C/4.3 °C/5.0 °C
SWFTS-MW16-EM13-MSD	440-218208-13 MSD	8/15/2018	2.9 °C/4.3 °C/5.0 °C
SWFTS-MW18-EM13	440-218208-14	8/15/2018	2.9 °C/5.0 °C
SWFTS-MW19-EM13	440-218208-15	8/15/2018	2.9 °C/5.0 °C
SWFTS-MW20-EM13	440-218208-16	8/15/2018	2.9 °C/5.0 °C
SWFTS-MW20-EM13-FD	440-218208-17	8/15/2018	2.9 °C/5.0 °C
SWFTS-MW21-EM13	440-218208-18	8/15/2018	2.9 °C/5.0 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Calcium was detected in MB 440-495522/1-A. Calcium and magnesium were detected in MB 440-495323/1-A. The concentrations in the associated field samples were >10x the amount spiked.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Nitrite recoveries were high and sulfate recoveries were low in the MS/MSD of SWFTS-MW02-EM13. Nitrite was not detected in the parent, so there can be no high bias. Nitrite was not requested for this sample. The sulfate concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
300.1B: Chlorate recoveries were low in the MS/MSDs of LVWPS-MW104-EM13, LVWPS-MW109-EM13, and PC-92-EM13. Chlorate concentrations in the parent samples were >4x the amount spiked, so recovery criteria do not apply.	
6010B: Calcium, magnesium, silicon, sodium, and strontium recoveries were outside limits in the MS and/or MSD of SWFTS-MW03-EM13. The concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply. Calcium, magnesium, silicon, and sodium recoveries were outside limits in the MS and/or MSD of SWFTS-MW16-EM13. The concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply. Manganese recoveries were low in the MS/MSD of SWFTS-MW16-EM13.	
6020: Selenium recoveries were low and the RPD high in the MS/MSD of SWFTS-MW16-EM13. It was ND in the parent and will be qualified “UJ” for recovery only. One recovery was <30%, but both were not, so the data point is not rejected.	
VFA-IC: Pyruvic acid recoveries were low in the MS/MSD of SWFTS-MW16-EM13.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

Data Verification and Validation Summary

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 09/07/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 19

SDG/Report No.: 440-218296-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-20180816-FB and SWFTS-20180816-EB (-18): Qualify calcium "J". SWFTS-20180816-EB (-7): Qualify calcium "J+". SWFTS-20180816-FB and SWFTS-20180816-EB (-7): Qualify sodium "J" and "J+", respectively. COH-2B1-EM13 and SWFTS-MW23-EM13: Qualify nitrate "J". PC-97-EM13, SWFTS-MW04-EM13, SWFTS-MW22-EM13: Qualify nitrate "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW04-EM13, SWFTS-MW23-EM13, and SWFTS-MW17-EM13: Qualify unused results "R".
Multiple results: Three samples were each analyzed twice for sulfate: SWFTS-MW04-EM13 (5x and 100x), SWFTS-MW23-EM13 (1x and 50x), and SWFTS-MW17-EM13 (5x and 200x). Sulfate results in the lower dilutions exceeded the calibration range. The higher dilution analyses were used because sulfate concentrations were within the calibration range.				
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified. Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (J, J+) are useable for limited purposes. All other results are considered valid and useable for all purposes.				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature (s)
SWFTS-MW04-EM13	440-218296-1	8/16/2018	2.2 °C/3.7 °C/5.1 °C
SWFTS-MW07A-EM13	440-218296-2	8/16/2018	2.2 °C/3.7 °C/5.1 °C
SWFTS-MW07B-EM13	440-218296-3	8/16/2018	2.2 °C/3.7 °C/5.1 °C
SWFTS-MW08A-EM13	440-218296-4	8/16/2018	2.2 °C/3.7 °C/5.1 °C
SWFTS-20180816-FB	440-218296-5	8/16/2018	2.2 °C/3.7 °C/3.9 °C/5.1 °C
SWFTS-MW01-EM13	440-218296-6	8/16/2018	2.2 °C/3.7 °C/5.1 °C
SWFTS-20180816-EB	440-218296-7	8/16/2018	2.2 °C/3.7 °C/3.9 °C/5.1 °C
PC-97-EM13	440-218296-8	8/16/2018	2.2 °C/3.7 °C/5.1 °C
PC-88-EM13	440-218296-9	8/16/2018	2.2 °C/3.7 °C/5.1 °C
PC-88-EM13-FD	440-218296-10	8/16/2018	2.2 °C/3.7 °C/5.1 °C
COH-2B1-EM13	440-218296-11	8/16/2018	2.2 °C/3.7 °C/5.1 °C
SWFTS-MW11-EM13	440-218296-12	8/16/2018	2.2 °C/3.7 °C/5.1 °C
SWFTS-MW11-EM13-FD	440-218296-13	8/16/2018	2.2 °C/3.7 °C/5.1 °C
SWFTS-MW12-EM13	440-218296-14	8/16/2018	2.2 °C/3.7 °C/5.1 °C
SWFTS-MW13-EM13	440-218296-15	8/16/2018	2.2 °C/3.7 °C/5.1 °C
SWFTS-MW22-EM13	440-218296-16	8/16/2018	2.2 °C/3.7 °C/5.1 °C
SWFTS-MW23-EM13	440-218296-17	8/16/2018	2.2 °C/3.7 °C/5.1 °C
SWFTS-20180816-EB	440-218296-18	8/16/2018	2.2 °C/3.7 °C/3.9 °C/5.1 °C
SWFTS-MW17-EM13	440-218296-19	8/16/2018	2.2 °C/3.7 °C/5.1 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/No
SWFTS-20180816-FB, several containers were received broken or leaking. Enough sample remained for the analyses requested.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	No/Yes
SWFTS-MW17-EM13 was not listed on the COC. For SWFTS-20180816-FB, the time on the container label (12:00) did not match the time on the COC (11:00). The sample was logged in per the COC.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
300.0: Nitrate was detected in SWFTS-20180816-FB. When dilution factors were considered, several samples were qualified.	
6010B: Calcium and sodium were detected in MB 440-496880/1-A. Calcium and sodium were detected in SWFTS-20180816-FB. Calcium, magnesium, silicon, and sodium were detected in SWFTS-20180816-EB (-7). Calcium was detected in SWFTS-20180816-EB (-18). The concentrations in most of the field samples were >10x the amount in the blank.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Nitrite recoveries were high in the MS/MSD of SWFTS-MW04-EM13. Sulfate recovery was low in the MS only. Nitrite was ND in the parent, so there can be no high bias. Sulfate recoveries were low in the MS/MSD of SWFTS-MW17-EM13. Nitrite and sulfate recoveries were low in the MS/MSD of SWFTS-MW23-EM13. Nitrite was not requested nor reported in this sample. The concentrations of sulfate in the parent samples were >4x the amount spiked, so recovery criteria do not apply.	
300.1B: Chlorate recoveries were low in the MS/MSDs of COH-2B1-EM13 and SWFTS-MW01-EM13. The concentrations in the parent samples were >4x the amount spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

Data Verification and Validation Summary

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 09/07/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 8 with MS/MSD

SDG/Report No.: 440-219797-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	SWFTS-MW01-EM14 and SWFTS-MW02-EM14: Qualify TKN "UJ".
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-20180910-EB: Qualify calcium "J+". SWFTS-MW10A-EM14 and SWFTS-MW16-EM14: Qualify silicon "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW16-EM14: Qualify pyruvic acid "UJ".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW16-EM14: Qualify unused result "R".

Multiple results:

SWFTS-MW16-EM14 was analyzed twice for nitrate and nitrite at 5x and 200x dilutions. Nitrite was not detected in either run. Nitrate was not detected in the 200x analysis. The 5x analysis results were used because of the lower RL/PQL.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (UJ, J+, J) are useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW01-EM14	440-219797-1	9/10/2018	3.3 °C
SWFTS-MW02-EM14	440-219797-2	9/10/2018	3.3 °C
SWFTS-20180910-FB	440-219797-3	9/10/2018	3.3 °C/4.0 °C
SWFTS-MW10A-EM14	440-219797-4	9/10/2018	3.3 °C/4.0 °C
SWFTS-20180910-EB	440-219797-5	9/10/2018	3.3 °C/4.0 °C
SWFTS-MW16-EM14	440-219797-6	9/10/2018	3.3 °C/4.0 °C
SWFTS-MW16-EM14-MS	440-219797-6 MS	9/10/2018	3.3 °C/4.0 °C
SWFTS-MW16-EM14-MSD	440-219797-6 MSD	9/10/2018	3.3 °C/4.0 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	No/Yes/Yes
351.2: Preserved bottles were not received for SWFTS-MW01-EM14 and SWFTS-MW02-EM14. The lab used an aliquot from an unpreserved sample, preserved it, and analyzed it.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
351.2: The COC requested the analysis for total nitrogen, but preserved bottles were not in the cooler for SWFTS-MW01-EM14 and SWFTS-MW02-EM14.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
SWFTS-20180910-FB: The following metals were detected: aluminum, calcium, iron, magnesium, silicon, sodium, and titanium. Silicon results in two samples were qualified.	
SWFTS-20180910-EB: The following metals were detected: calcium, iron, magnesium, and sodium.	
6010B: Calcium was detected in MB 440-499701/1-A, SWFTS-20180910-FB, and SWFTS-20180910-EB. The concentrations in the associated samples were >10x the amount in the blank, except for the EB. The EB will be qualified.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

Data Verification and Validation Summary

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recovery was low in the MS of SWFTS-MW16-EM14. Chlorate concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
6010B: Aluminum, calcium, magnesium, phosphorous, potassium, and sodium recoveries were outside limits in the MS and/or MSD of SWFTS-MW16-EM14. The concentrations in the parent sample were >4x the amount spiked for all except aluminum. Aluminum recoveries were high, but the sample is ND, so there can be no high bias. No qualification.	
VFA-IC: Pyruvic acid recovery was low in the MSD of SWFTS-MW16-EM14.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
Lab duplicates only.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/02/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 19 with MS/MSD

SDG/Report No.: 440-219886-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-MW22-EM14: Qualify chlorate "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	PC-94-EM14: Qualify total manganese "J".
7. Laboratory Control Samples		X	No	None
8. Duplicates	X		Yes	SWFTS-MW06A-EM14 and -FD: Qualify nitrate "J".
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Other - Serial Dilution	X		Yes	PC-94-EM14: Qualify total manganese "J".
12. Multiple Results (see below)	---	---	Yes	SWFTS-MW05A-EM14: Qualify unused result "R".

Multiple results:

SWFTS-MW05A-EM14 was analyzed twice for nitrate at 10x and 200x dilutions. The 10x analysis result was used. According to the lab, the result obtained from the 200x dilution was used for lab QC and does not reflect the actual concentration. The result was magnified due to the dilution.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (J, J+) are useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW18-EM14	440-219886-1	9/11/2018	4.2 °C /4.6 °C
SWFTS-MW15-EM14	440-219886-2	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW20-EM14	440-219886-3	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW20-EM14-FD	440-219886-4	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW22-EM14	440-219886-5	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW19-EM14	440-219886-6	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW05A-EM14	440-219886-7	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW05A-EM14-MS	440-219886-7 MS	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW05A-EM14-MSD	440-219886-7 MSD	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW05B-EM14	440-219886-8	9/11/2018	4.2 °C/4.6 °C
PC-94-EM14	440-219886-9	9/11/2018	4.2 °C/4.6 °C
COH-2B1-EM14	440-219886-10	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW03-EM14	440-219886-11	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW09A-EM14	440-219886-12	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW09B-EM14	440-219886-13	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW06B-EM14	440-219886-14	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW06A-EM14	440-219886-15	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW06A-EM14-FD	440-219886-16	9/11/2018	4.2 °C/4.6 °C
SWFTS-MW14-EM14	440-219886-17	9/11/2018	4.0 °C/4.2 °C/4.6 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	No/Yes/Yes
RSK-175: SWFTS-MW14-EM14 was not preserved to pH<2. The SOP allows unpreserved samples.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
300.1B: Chlorate was detected in MB 440-499203/46, CCB 440-499203/43, CCB 440-499203/56, and CCB 440-499203/68. The concentrations in most of the samples were >10x the amount in the blanks.	
6010B: Calcium was detected in MB 440-499701/1-A. The concentrations in the associated samples were >10x the amount in the blank..	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were low in the MS/MSD of SWFTS-MW05A-EM14. Chlorate concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
6010B: Manganese recovery was high in the MSD of PC-94-EM14.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/No/N/A
Two REG/FD pairs: SWFTS-MW06A-EM14 and SWFTS-MW06A-EM14-FD; SWFTS-MW20-EM14 and SWFTS-MW20-EM14-FD. RPD = 100% for nitrate between SWFTS-MW20-EM14 and SWFTS-MW20-EM14-FD.	

Data Verification and Validation Summary

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

11. Other – Serial Dilution	
Data package definitions indicated an issue with serial dilution which the validator verified.	
For PC-94-EM14, serial dilution %D of manganese was 13%.	

Validated by: Maureen McMyler 10/02/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 17

SDG/Report No.: 440-220031-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Other – Serial Dilution	X		Yes	SWFTS-MW25-EM14: Qualify boron, calcium, magnesium, manganese, silicon, sodium, strontium "J".
12. Multiple Results (see below)	---	---	Yes	SWFTS-MW12-EM14, PC-92-EM14: Qualify unused results "R".
<p>Multiple results: SWFTS-MW12-EM14 was analyzed twice for sulfate at 10x and 200x dilutions. Sulfate result in the 10x dilution exceeded the calibration range. The 200x dilution analysis was used because the sulfate concentration was within the calibration range.</p> <p>PC-92-EM14 was analyzed twice for sulfate at 5x and 200x dilutions. Sulfate result in the 5x dilution exceeded the calibration range. The 200x dilution analysis was used because the sulfate concentration was within the calibration range.</p>				
Verification and Validation Label		Stage_2A_Validation_Manual		
Verification and Validation Label Code		S2AVM		
<p>Overall Assessment: Acceptable as qualified.</p> <p>Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (J) are useable for limited purposes. All other results are considered valid and useable for all purposes.</p>				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW23-EM14	440-220031-1	9/12/2018	1.4 °C/1.5 °C
SWFTS-MW25-EM14	440-220031-2	9/12/2018	1.4 °C/1.5 °C
SWFTS-MW24-EM14	440-220031-3	9/12/2018	1.4 °C/1.5 °C
SWFTS-MW21-EM14	440-220031-4	9/12/2018	1.4 °C/1.5 °C
SWFTS-MW17-EM14	440-220031-5	9/12/2018	1.4 °C/1.5 °C
SWFTS-MW07A-EM14	440-220031-6	9/12/2018	1.4 °C/1.5 °C
SWFTS-MW07B-EM14	440-220031-7	9/12/2018	1.4 °C/1.5 °C
SWFTS-MW11-EM14	440-220031-8	9/12/2018	1.4 °C/1.5 °C
SWFTS-MW11-EM14-FD	440-220031-9	9/12/2018	1.4 °C/1.5 °C
SWFTS-MW08A-EM14	440-220031-10	9/12/2018	1.4 °C/1.5 °C
SWFTS-MW12-EM14	440-220031-11	9/12/2018	1.4 °C/1.5 °C
PC-91-EM14	440-220031-12	9/12/2018	1.4 °C/1.5 °C
PC-92-EM14	440-220031-13	9/12/2018	1.4 °C/1.5 °C
SWFTS-MW04-EM14	440-220031-14	9/12/2018	1.4 °C/1.5 °C
PC-88-EM14	440-220031-15	9/12/2018	1.4 °C/1.5 °C
PC-88-EM14-FD	440-220031-16	9/12/2018	1.4 °C/1.5 °C
PC-97-EM14	440-220031-17	9/12/2018	1.4 °C/1.5 °C

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/No/Yes
2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes
4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Calcium and sodium were detected in MB 440-500364/1-A. The concentrations in the associated field samples were >10x the amount in the blank.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Sulfate recoveries were low in the MS/MSD of SWFTS-MW12-EM14. The sulfate concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
6010B: Calcium, magnesium, silicon, sodium, and strontium recoveries were outside limits in the MS and/or MSD of SWFTS-MW25-EM14. The concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

Data Verification and Validation Summary

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

11. Other – Serial Dilution	
Data package definitions indicated an issue with serial dilution which the validator verified.	
For SWFTS-MW25-EM14, serial dilution %Ds were high (>10%) for the following metals: boron (11%), calcium (13%), magnesium (17%), manganese (17%), silicon (13%), sodium (15%), and strontium (11%).	

Validated by: Maureen McMyler 10/03/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 8

SDG/Report No.: 440-220125-1
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	LVWPS-MW109-EM14, LVWPS-MW111A-EM14, and LVWPS-MW108A-EM14: Qualify nitrate "J+". SWFTS-20180913-FB and SWFTS-20180913-EB: Qualify calcium "J" and "J+", respectively.
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Other – Calibration	X		Yes	SWFTS-20180913-FB and SWFTS-20180913-EB: Qualify acetic acid, formic acid, lactic acid, and propionic acid "UJ".
12. Multiple Results (see below)	---	---	Yes	LVWPS-MW109-EM14 and LVWPS-MW108A-EM14: Qualify unused results "R".

Multiple results: LVWPS-MW109-EM14 was analyzed twice for sulfate at 10x and 200x dilutions. Sulfate result in the 10x dilution exceeded the calibration range. The 200x dilution analysis was used because the sulfate concentration was within the calibration range.

LVWPS-MW108A-EM14 was analyzed twice for sulfate at 10x and 200x dilutions. Sulfate result in the 5x dilution exceeded the calibration range. The 200x dilution analysis was used because the sulfate concentration was within the calibration range.

Verification and Validation Label

Stage_2A_Validation_Manual

Verification and Validation Label Code

S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (UJ, J, or J+) are useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
LVWPS-MW109-EM14	440-220125-1	9/13/2018	2.1 °C
LVWPS-MW111A-EM14	440-220125-2	9/13/2018	2.1 °C
SWFTS-20180913-FB	440-220125-3	9/13/2018	2.1 °C/3.7 °C
LVWPS-MW108A-EM14	440-220125-4	9/13/2018	2.1 °C
PC-58-EM14	440-220125-5	9/13/2018	2.1 °C
SWFTS-MW13-EM14	440-220125-6	9/13/2018	2.1 °C
SWFTS-20180913-EB	440-220125-7	9/13/2018	2.1 °C/3.7 °C
LVWPS-MW104-EM14	440-220125-8	9/13/2018	2.1 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
SWFTS-20180913-FB: Nitrate, sulfate, and calcium were detected. FB value adjusted by all sample prep factors to assess contamination in field samples.	
SWFTS-20180913-EB: Chlorate and calcium were detected. EB value adjusted by all sample prep factors to assess contamination in field samples.	
300.1B: Chlorate was detected in MB 440-499203/46 and some CCBs. The concentrations in the associated samples were >10x the amount in the blanks.	
6010B: Calcium was detected in MB 440-499701/1-A.	

Data Verification and Validation Summary

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Sulfate recovery was low in the MS of LVWPS-MW109-EM14 and high in the MS of LVWPS-MW108A-EM14. The sulfate concentrations in the parent samples were >4x the amount spiked, so recovery criteria do not apply. Nitrite recoveries were high in the MS/MSD of LVWPS-MW108A-EM14, but nitrite was not requested. The parent sample is ND, so there can be no high bias.	
300.1B: Chlorate recoveries were low in the MS/MSDs of LVWPS-MW109-EM14 and PC-58-EM14. The concentrations in the parent samples were >4x the amount spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/N/A
Lab DUPs only.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified “J”.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

11. Other – Calibration	
This was mentioned in the case narrative and verified by the validator.	
VFA-IC: Recoveries were high (>120%) in the opening CCV for the following compounds: acetic acid (203%), formic acid (212%), lactic acid (445%), and propionic acid (146%).	

Validated by: Maureen McMyler 10/03/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 16 with MS/MSD

SDG/Report No.: 440-221855-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	SWFTS-MW01-EM15: Qualify perchlorate "J".
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-MW19-EM15, SWFTS-MW19-EM15-FD, and SWFTS-MW03-EM15: Qualify aluminum "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW10A-EM15: Qualify potassium "J+" and pyruvic acid "UJ".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW10A-EM15: Qualify unused results "R".

Multiple results:

SWFTS-MW10A-EM15 was analyzed twice for nitrate and nitrite at 10x and 500x dilutions. Nitrite and nitrate were not detected in either run. The 10x analysis results were used because of the lower RL/PQLs.

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (UJ, J, J+) are useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW20-EM15	440-221855-1	10/9/2018	1.4 °C/1.7 °C/3.2 °C
SWFTS-MW22-EM15	440-221855-2	10/9/2018	1.4 °C/1.7 °C/3.2 °C
SWFTS-MW21-EM15	440-221855-3	10/9/2018	1.4 °C/1.7 °C/3.2 °C
SWFTS-MW19-EM15	440-221855-4	10/9/2018	1.4 °C/1.7 °C/3.2 °C
SWFTS-MW19-EM15-FD	440-221855-5	10/9/2018	1.4 °C/1.7 °C/3.2 °C
SWFTS-20181009-EB	440-221855-6	10/9/2018	1.4 °C/1.7 °C/3.2 °C/3.1 °C
SWFTS-MW09A-EM15	440-221855-7	10/9/2018	1.4 °C/1.7 °C/3.2 °C
SWFTS-MW09B-EM15	440-221855-8	10/9/2018	1.4 °C/1.7 °C/3.2 °C
SWFTS-MW10A-EM15	440-221855-9	10/9/2018	1.4 °C/1.7 °C/3.2 °C/3.1 °C
SWFTS-MW10A-EM15-MS	440-221855-9 MS	10/9/2018	1.4 °C/1.7 °C/3.2 °C/3.1 °C
SWFTS-MW10A-EM15-MSD	440-221855-9 MSD	10/9/2018	1.4 °C/1.7 °C/3.2 °C/3.1 °C
SWFTS-MW14-EM15	440-221855-10	10/9/2018	1.4 °C/1.7 °C/3.2 °C/3.1 °C
SWFTS-MW15-EM15	440-221855-11	10/9/2018	1.4 °C/1.7 °C/3.2 °C
SWFTS-MW01-EM15	440-221855-12	10/9/2018	1.4 °C/1.7 °C/3.2 °C
SWFTS-MW03-EM15	440-221855-13	10/9/2018	1.4 °C/1.7 °C/3.2 °C
SWFTS-MW05B-EM15	440-221855-14	10/9/2018	1.4 °C/1.7 °C/3.2 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	No/No/No
314.0: For sample SWFTS-MW01-EM15, the sterile container used for perchlorate was received at the lab empty.	
RSK-175: Sample SWFTS-MW14-EM15 was collected un a properly preserved container, but the pH was 5 when checked prior to analysis. Unpreserved samples are allowed per the lab’s SOP.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

Data Verification and Validation Summary

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Aluminum (0.0764), calcium (0.152), and zinc (0.0230) were detected in MB 440-505005/1-A. The calcium concentrations in the associated field samples were >10x the amount in the blank. Zinc was not detected.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Sulfate recoveries were low in the MS/MSD of SWFTS-MW12-EM14. The sulfate concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
6010B: Aluminum, calcium, magnesium, potassium, silicon, sodium, and strontium recoveries were outside limits in the MS and/or MSD of SWFTS-MW10A-EM15. The concentrations of calcium, magnesium, silicon, sodium, and strontium in the parent sample were >4x the amount spiked, so recovery criteria do not apply. Aluminum recovery was high, but the sample was ND, so there can be no high bias. Potassium may be biased high and will be qualified.	
VFA-IC: Pyruvic acid recovery was low in the MSD of SWFTS-MW10A-EM15.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/25/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 18 with MS/MSD

SDG/Report No.: 440-221975-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-MW02-EM15: Qualify aluminum "J+". SWFTS-MW05A-EM15, SWFTS-MW06A-EM15, SWFTS-MW06A-EM15-FD, SWFTS-MW06B-EM15, and SWFTS-MW24-EM15: Qualify aluminum "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW05A-EM15: Qualify boron "J+". SWFTS-MW06B-EM15 and SWFTS-MW06B-EM15-FD: Qualify potassium and strontium "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW05A-EM15: Qualify unused result "R".

Multiple results: SWFTS-MW05A-EM15 was analyzed twice for nitrate at 20x and 500x dilutions. Nitrate was not detected in the 500x dilution analysis. The 20x dilution analysis was used because nitrate was detected.

Verification and Validation Label

Stage_2A_Validation_Manual

Verification and Validation Label Code

S2AVM

Overall Assessment: Acceptable as qualified.

Usability: Sample results qualified "R" should not be used. Sample results qualified as estimated (J, J+) are useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
LVWPS-MW108A-EM15	440-221975-1	10/10/2018	4.1 °C/4.2 °C
LVWPS-MW111A-EM15	440-221975-2	10/10/2018	4.1 °C/4.2 °C
SWFTS-20181010-FB	440-221975-3	10/10/2018	4.1 °C/4.2 °C/4.9 °C
LVWPS-MW112A-EM15	440-221975-4	10/10/2018	4.1 °C/4.2 °C
LVWPS-MW104-EM15	440-221975-5	10/10/2018	4.1 °C/4.2 °C
LVWPS-MW109-EM15	440-221975-6	10/10/2018	4.1 °C/4.2 °C
SWFTS-MW24-EM15	440-221975-7	10/10/2018	4.1 °C/4.2 °C
SWFTS-MW06A-EM15	440-221975-8	10/10/2018	4.1 °C/4.2 °C
SWFTS-MW06B-EM15	440-221975-9	10/10/2018	4.1 °C/4.2 °C
SWFTS-MW06A-EM15-FD	440-221975-10	10/10/2018	4.1 °C/4.2 °C
SWFTS-MW07A-EM15	440-221975-11	10/10/2018	4.1 °C/4.2 °C
SWFTS-MW07B-EM15	440-221975-12	10/10/2018	4.1 °C/4.2 °C
SWFTS-MW08A-EM15	440-221975-13	10/10/2018	4.1 °C/4.2 °C
SWFTS-MW05A-EM15	440-221975-14	10/10/2018	4.1 °C/4.2 °C
SWFTS-MW05A-EM15-MS	440-221975-14 MS	10/10/2018	4.1 °C/4.2 °C
SWFTS-MW05A-EM15-MSD	440-221975-14 MSD	10/10/2018	4.1 °C/4.2 °C
SWFTS-MW02-EM15	440-221975-15	10/10/2018	4.1 °C/4.2 °C
PC-91-EM15	440-221975-16	10/10/2018	4.1 °C/4.2 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

Data Verification and Validation Summary

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Aluminum, calcium, and zinc were detected in MB 440-505005/1-A. Aluminum and calcium were detected in MB 440-505006/1-A. Calcium concentrations in the associated field samples were >10x the amount in the blank. Zinc was not detected in the samples.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	No/Yes/No
300.1B: Chlorate recoveries were outside limits in the MS/MSDs of LVWPS-MW104-EM15 and SWFTS-MW05A-EM15. The concentrations in the parent samples were >4x the amount spiked, so recovery criteria do not apply.	
6010B: Boron, calcium, magnesium, potassium, silicon, sodium, and strontium recoveries were outside limits in the MS and/or MSD of SWFTS-MW05A-EM15. Except for boron, the concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply. Calcium, magnesium, potassium, silicon, sodium, and strontium recoveries were outside limits in the MS/MSD of SWFTS-MW06A-EM15-FD. Calcium, magnesium, silicon, and sodium concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL/SQL but below the RL/PQL are estimated and qualified "J".	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/25/18

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
 Task No.: M11
 No. of Samples: 19

SDG/Report No.: 440-222092-1/2
 Lab ID: Test America
 Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times	X		Yes	PC-88-EM15: Qualify nitrate "J".
4. Blanks	X		Yes	PC-58-EM15, PC-88-EM15, PC-88-EM15-FD, PC-92-EM15, PC-94-EM15, PC-97-EM15, SWFTS-MW04-EM15, SWFTS-MW16-EM15, SWFTS-MW18-EM15, SWFTS-MW23-EM15, and SWFTS-MW25-EM15: Qualify aluminum "J". SWFTS-MW16-EM15: Qualify nickel "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	COH-2B1-EM15: Qualify total phosphorus "R". SWFTS-MW11-EM15: Qualify pyruvic acid "UJ".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	COH-2B1-EM15, SWFTS-MW11-EM15, SWFTS-MW13-EM15, and SWFTS-MW18-EM15: Qualify unused results "R".
Multiple results: COH-2B1-EM15, SWFTS-MW11-EM15, SWFTS-MW13-EM15, and SWFTS-MW18-EM15 were analyzed twice for sulfate. The initial analyses were not used because sulfate was outside the calibration range of the instrument. The dilution analyses were used because the re-analysis results were within the calibration range.				
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Except where rejected, acceptable as qualified. Usability: Sample results qualified "R" are not useable. Sample results qualified as estimated (J-, J, UJ) are useable for limited purposes. All other results are considered valid and useable for all purposes.				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
COH-2B1-EM15	440-222092-1	10/11/2018	2.8 °C/2.9 °C/4.2 °C
SWFTS-20181011-EB	440-222092-2	10/11/2018	2.8 °C/2.9 °C/4.2 °C
SWFTS-MW16-EM15	440-222092-3	10/11/2018	2.8 °C/2.9 °C/3.2 °C/4.2 °C
SWFTS-MW17-EM15	440-222092-4	10/11/2018	2.8 °C/2.9 °C/4.2 °C
SWFTS-MW18-EM15	440-222092-5	10/11/2018	2.8 °C/2.9 °C/4.2 °C
SWFTS-MW25-EM15	440-222092-6	10/11/2018	2.8 °C/2.9 °C/4.2 °C
SWFTS-MW23-EM15	440-222092-7	10/11/2018	2.8 °C/2.9 °C/4.2 °C
SWFTS-20181011-FB	440-222092-8	10/11/2018	2.8 °C/2.9 °C/4.2 °C
SWFTS-MW04-EM15	440-222092-9	10/11/2018	2.8 °C/2.9 °C/4.2 °C
SWFTS-MW11-EM15	440-222092-10	10/11/2018	2.8 °C/2.9 °C/3.2 °C/4.2 °C
SWFTS-MW11-EM15-FD	440-222092-11	10/11/2018	2.8 °C/2.9 °C/3.2 °C/4.2 °C
SWFTS-MW12-EM15	440-222092-12	10/11/2018	2.8 °C/2.9 °C/4.2 °C
PC-97-EM15	440-222092-13	10/11/2018	2.8 °C/2.9 °C/4.2 °C
SWFTS-MW13-EM15	440-222092-14	10/11/2018	2.8 °C/2.9 °C/4.2 °C
PC-88-EM15	440-222092-15	10/11/2018	2.8 °C/2.9 °C/4.2 °C
PC-88-EM15-FD	440-222092-16	10/11/2018	2.8 °C/2.9 °C/4.2 °C
PC-92-EM15	440-222092-17	10/11/2018	2.8 °C/2.9 °C/4.2 °C
PC-94-EM15	440-222092-18	10/11/2018	2.8 °C/2.9 °C/4.2 °C
PC-58-EM15	440-222092-19	10/11/2018	2.8 °C/2.9 °C/4.2 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at 4°C (+ or – 2°C)? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
300.0: Nitrate analysis in PC-88-EM15 was after the holding expired due to lab error.	

Data Verification and Validation Summary

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Aluminum and calcium were detected in MB 440-505003/1-A. Calcium concentrations in the associated field samples were >10x the amount in the blank. Aluminum was detected in the samples at similar concentrations as the blank. Case narrative notes that nickel was detected in calibration blanks CCB 440-505628/39 and CCB 440-505628/48. Nickel was detected in one sample. Magnesium was detected in calibration blank CCB 440-505852/44. Magnesium detections in the samples were >10x the amount in the blank.	
5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes
6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	No/Yes/No
300.0: Nitrite recoveries were high in the MS of COH-2B1-EM15 and the MS/MSD of SWFTS-MW18-EM15. Nitrite was not detected in the samples so there can be no high bias. Sulfate recoveries were high in the MS/MSD of SWFTS-MW13-EM15 and the MS/MSD of SWFTS-MW18-EM15. Sulfate concentrations in the parent samples were >4x the amount spiked, so recovery criteria do not apply for sulfate.	
365.3: Total phosphorus recoveries were below limits and below 30% in the MS/MSD of COH-2B1-EM15. The data are rejected.	
6010B: Aluminum, calcium, magnesium, and sodium recoveries were outside limits in the MS and/or MSD of COH-2B1-EM15. Except for aluminum, the concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply. Aluminum recovery was high but was not detected in the sample. There can be no high bias. No qualification.	
VFA: Pyruvic acid recoveries were low in the MS/MSD of SWFTS-MW11-EM15.	
7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes
8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL, were differences between the two values < RL.	Yes/Yes/Yes
9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
All: Results detected above the MDL but below the RL are estimated and qualified "J".	
10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 11/06/18

Appendix L.2

Laboratory Data Packages

Due to the quantity and size of the files, the laboratory data packages have been provided in a separate file.

Appendix L.3

DVSR Electronic Data Deliverable

Per the requirements provided by NDEP for Unified Chemical Electronic Data Deliverable Format, databases are provided in Microsoft Access format and include location, analytical and groundwater gauging data supporting the DVSR and for upload of the Companies' electronic data into the regional database maintained by NDEP. These databases have been provided in separate files.