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This quality assurance (QA) review is based upon an examination of the data generated from the analyses of the samples collected as part of the:

John Sevier Sediments

Data Verification was performed in accordance with the Tennessee Valley Authority . This review was performed with guidance from the National Functional Guidelines for Inorganic Data Review (US EPA, October 2004); the US EPA Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (November 2001); and the US EPA Region IV Data Validation Standard Operating Procedures. These validation guidance documents specifically address analyses performed in accordance with the Contract Laboratory Program (CLP) analytical methods and are not completely applicable to the type of analyses and analytical protocols performed for the US EPA, SW-846, and Standard Methods utilized by the laboratory for these samples. Environmental Standards, Inc. (Environmental Standards) used professional judgment to determine the usability of the analytical results and compliance relative to the US EPA, SW-846, and Standard Methods utilized by the laboratory. This QA review was performed on the data associated with Job Number:

AOH1052409-0

The findings offered in this report are based on a review of holding times and preservation, method blank results, field blank results, filter blank results, equipment blank results, tubing blank results, matrix spike/matrix spike duplicate recoveries and precision, laboratory control sample/laboratory control sample duplicate recoveries and precision, laboratory and field duplicate precision, total and dissolved results comparisons, and/or positive results between the method detection limit and quantitation limit.

The following results were qualified based on the data verification effort:

Sample	Location	Sample Type	Method	Anayte	T/D	Result	Qual	Reason Code(s)	MDL	QL	Unit

Data Qualifiers

U*	This result should be considered "not-detected" because it was detected in a rinsate blank or laboratory blank at a similar level.
UR	Unreliable reporting limit; analyte may or may not be present in sample.
R	Unreliable positive result; analyte may or may not be present in sample.
J	Quantitation is approximate due to limitations identified during data validation.
UJ	This analyte was not detected, but the reporting limit may or may not be higher due to a bias identified during data validation.

Reason Codes and Explanations

BE	Equipment blank contamination. The result should be considered "not-detected."
BF	Field blank contamination. The result should be considered "not-detected."
BL	Laboratory blank contamination. The result should be considered "not-detected."
FD	Field duplicate imprecision.
FG	Total versus Dissolved Imprecision.
H	Holding time exceeded.
L	LCS and LCSD recoveries outside of acceptance limits, indeterminate bias.
L+	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased high.
L-	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased low.
LD	Laboratory duplicate imprecision.
LP	LCS/LCSD imprecision.
M	MS and MSD recoveries outside of acceptance limits, indeterminate bias.
M+	MS and/or MSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.
MP	MS/MSD imprecision.

Q	Chemical Preservation issue.
RL	Reported Results between the MDL and RL.
T	Temperature preservation issue.
X	Percent solids < 50%.
Y+	Chemical Yield outside of acceptance limits. The result may be biased high.
Y-	Chemical yield outside of acceptance limits. The result may be biased low.

Lab Sample ID	10459417
Sys Sample Code	JSF-SED-PB03-CORLB-0.0/0.5-20181218
Sample Name	JSF-SED-PB03-CORLB-0.0/0.5-20181218
Sample Date	12/18/2018 10:50:00 AM
Location	JSF-PB03
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%	2				1		Y	Yes	1	NA

Lab Sample ID	10459418
Sys Sample Code	JSF-SED-PB03-CORLB-0.5/1.4-20181218
Sample Name	JSF-SED-PB03-CORLB-0.5/1.4-20181218
Sample Date	12/18/2018 10:50:00 AM
Location	JSF-PB03
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%		U			1		N	Yes	1	NA

Lab Sample ID	10459419
Sys Sample Code	JSF-SED-PB03-CORCC-0.0/0.5-20181218
Sample Name	JSF-SED-PB03-CORCC-0.0/0.5-20181218
Sample Date	12/18/2018 11:05:00 AM
Location	JSF-PB03
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%	2				1		Y	Yes	1	NA

Lab Sample ID	10459420
Sys Sample Code	JSF-SED-PB03-CORCC-0.5/1.2-20181218
Sample Name	JSF-SED-PB03-CORCC-0.5/1.2-20181218
Sample Date	12/18/2018 11:05:00 AM
Location	JSF-PB03
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%	2				1		Y	Yes	1	NA

Lab Sample ID	10459421
Sys Sample Code	JSF-SED-PB03-CORRB-0.0/0.5-20181218
Sample Name	JSF-SED-PB03-CORRB-0.0/0.5-20181218
Sample Date	12/18/2018 11:25:00 AM
Location	JSF-PB03
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%		U			1		N	Yes	1	NA

Lab Sample ID	10459422
Sys Sample Code	JSF-SED-PB03-CORRB-0.5/1.6-20181218
Sample Name	JSF-SED-PB03-CORRB-0.5/1.6-20181218
Sample Date	12/18/2018 11:25:00 AM
Location	JSF-PB03
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%		U			1		N	Yes	1	NA

Lab Sample ID	10459423
Sys Sample Code	JSF-SED-PB02-CORCC-0.0/0.5-20181218
Sample Name	JSF-SED-PB02-CORCC-0.0/0.5-20181218
Sample Date	12/18/2018 11:40:00 AM
Location	JSF-PB02
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%	1				1		Y	Yes	1	NA

Lab Sample ID	10459424
Sys Sample Code	JSF-SED-PB02-CORCC-0.5/2.5-20181218
Sample Name	JSF-SED-PB02-CORCC-0.5/2.5-20181218
Sample Date	12/18/2018 11:40:00 AM
Location	JSF-PB02
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%	1				1		Y	Yes	1	NA

Lab Sample ID	10459425
Sys Sample Code	JSF-SED-PB01-CORCC-0.0/0.5-20181218
Sample Name	JSF-SED-PB01-CORCC-0.0/0.5-20181218
Sample Date	12/18/2018 12:35:00 PM
Location	JSF-PB01
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%		U			1		N	Yes	1	NA

Lab Sample ID	10459426
Sys Sample Code	JSF-SED-PB04-CORLB-0.0/0.5-20181218
Sample Name	JSF-SED-PB04-CORLB-0.0/0.5-20181218
Sample Date	12/18/2018 3:40:00 PM
Location	JSF-PB04
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%		U			1		N	Yes	1	NA

Lab Sample ID	10459427
Sys Sample Code	JSF-SED-PB04-CORLB-0.5/1.0-20181218
Sample Name	JSF-SED-PB04-CORLB-0.5/1.0-20181218
Sample Date	12/18/2018 3:40:00 PM
Location	JSF-PB04
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%	2				1		Y	Yes	1	NA

Lab Sample ID	10459428
Sys Sample Code	JSF-SED-PB04-CORCC-0.0/0.5-20181218
Sample Name	JSF-SED-PB04-CORCC-0.0/0.5-20181218
Sample Date	12/18/2018 3:54:00 PM
Location	JSF-PB04
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%		U			1		N	Yes	1	NA

Lab Sample ID	10459429
Sys Sample Code	JSF-SED-PB04-CORCC-0.5/1.8-20181218
Sample Name	JSF-SED-PB04-CORCC-0.5/1.8-20181218
Sample Date	12/18/2018 3:54:00 PM
Location	JSF-PB04
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%	1				1		Y	Yes	1	NA

Lab Sample ID	10459430
Sys Sample Code	JSF-SED-PB04-CORRB-0.0/0.5-20181218
Sample Name	JSF-SED-PB04-CORRB-0.0/0.5-20181218
Sample Date	12/18/2018 4:15:00 PM
Location	JSF-PB04
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%		U			1		N	Yes	1	NA

Lab Sample ID	10459431
Sys Sample Code	JSF-SED-PB04-CORRB-0.5/1.2-20181218
Sample Name	JSF-SED-PB04-CORRB-0.5/1.2-20181218
Sample Date	12/18/2018 4:15:00 PM
Location	JSF-PB04
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%		U			1		N	Yes	1	NA

Lab Sample ID	10459432
Sys Sample Code	JSF-SED-PB03-DUP01-20181218
Sample Name	JSF-SED-PB03-DUP01-20181218
Sample Date	12/18/2018 12:00:00 AM
Location	JSF-PB03
Sample Type	FD
Parent Sample	JSF-SED-PB03-CORRB-0.0/0.5-20181218

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%		U			1		N	Yes	1	NA

Lab Sample ID	10459433
Sys Sample Code	JSF-SED-PB05-CORCC-0.0/0.5-20181219
Sample Name	JSF-SED-PB05-CORCC-0.0/0.5-20181219
Sample Date	12/19/2018 9:20:00 AM
Location	JSF-PB05
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%		U			1		N	Yes	1	NA

Lab Sample ID	10459434
Sys Sample Code	JSF-SED-PB05-CORCC-0.5/0.9-20181219
Sample Name	JSF-SED-PB05-CORCC-0.5/0.9-20181219
Sample Date	12/19/2018 9:20:00 AM
Location	JSF-PB05
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%	4				1		Y	Yes	1	NA

Lab Sample ID	10459435
Sys Sample Code	JSF-SED-PB09-CORCC-0.0/0.5-20181219
Sample Name	JSF-SED-PB09-CORCC-0.0/0.5-20181219
Sample Date	12/19/2018 10:40:00 AM
Location	JSF-PB09
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%		U			1		N	Yes	1	NA

Lab Sample ID	10459436
Sys Sample Code	JSF-SED-PB06-CORCC-0.0/0.5-20181219
Sample Name	JSF-SED-PB06-CORCC-0.0/0.5-20181219
Sample Date	12/19/2018 11:55:00 AM
Location	JSF-PB06
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%	7				1		Y	Yes	1	NA

Lab Sample ID	10459437
Sys Sample Code	JSF-SED-PB07-CORCC-0.0/0.5-20181219
Sample Name	JSF-SED-PB07-CORCC-0.0/0.5-20181219
Sample Date	12/19/2018 12:30:00 PM
Location	JSF-PB07
Sample Type	N
Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%	5				1		Y	Yes	1	NA

	Lab Sample ID	10459438
	Sys Sample Code	JSF-SED-PB08-CORCC-0.0/0.5-20181219
	Sample Name	JSF-SED-PB08-CORCC-0.0/0.5-20181219
	Sample Date	12/19/2018 12:55:00 PM
	Location	JSF-PB08
	Sample Type	N
	Parent Sample	

Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
PLM	% ASH	%ASH	N	%	2				1		Y	Yes	1	NA