Case: _____ SDG:_____

COMPLETE SDG FILE (CSF) AUDIT

Inorganic Parameters:_____

Missing Information	Date Lab Contacted	Date Received

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-I

Case: _____ SDG:_____

I. PRESERVATION AND HOLDING TIMES Circle sample numbers with exceeded technical holding times or omitted preservation. Circle all exceeded technical holding times.

Sample No.	Matrix	Pres. Code		Date Sampled	Metals		Hg		CN		Action
		Metals	CN		Date Analyzed	# of Days from Samp. to Analysis	Date Analyzed	# of Days from Samp. to Analysis	Date Analyzed	# of Days from Samp. to Analysis	

Preservation Code:
1. Cool (≤ 6°C)
2. pH < 2 with HNO_3
3. pH > 12 with NaOH
4. Room Temperature
5. Freeze
6. Reducing agent (for oxidants)
7. Treated for sulfides
8. Other - _____

Action Code:
J - Estimate (J) Detected Values
UJ - Estimate (UJ) Non-Detected Values
R - Reject (R) Non-Detected Values

Sampler:_____

Company:
Contacted: Y N
Date:_____

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-II

Case: _____ SDG:_____

II. ICP-MS TUNE

List all Tunes that are outside method QC acceptance criteria. Use a separate sheet if more than one instrument was used for sample analysis.

Method:_____ Instrument ID: _____

Method QC acceptance criteria for mass calibration:

Method QC acceptance criteria for resolution check/peak width:_____ at_____% peak height.

Method QC acceptance criteria for % RSD:

Analysis Date and Time	Analyte	Mass Calibration			Mass Resolution		% RSD of Absolute Signals	Analyte/Samples Affected	Action
		True Mass (amu)	Measured Mass (amu)	Absolute Difference of Masses (amu)	Peak Width (amu)	% Peak Height			
Comments:									

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-III-A/B

Case: _____ SDG:_____

III. CALIBRATIONS

A. Initial Calibration - List all calibration correlation coefficients that are outside the method QC acceptance criteria and/or the y-intercept of the calibration curve that is >CRQL.

Calibration correlation QC acceptance criteria: _____ Calibration Type: _____

Date/Time	Instrument ID	Analyte	Correlation Coefficient	y-Intercept	CRQL	Samples Affected	Action

B. Initial Calibration Standard Concentration Verifications – Review CLP Form 16-IN and list all calculated %Ds that are >30 of the true value of any non-zero standard.

Date/time	Instrument ID	Analyte	True Conc.	Found Conc.	%D	Samples Affected	Action

Comments: _____
_____

Validator: _____ Date: _____

Case: _____ SDG:_____

III. CALIBRATIONS

C. Initial and Continuing Calibration Verifications - List all ICV and CCV analyte recoveries that are outside the method QC acceptance criteria.

ICV method QC acceptance criteria: _____ CCV method QC acceptance criteria: _____

Date/Time	Instrument ID	Analyte	ICV/CCV #	% R	Samples Affected	Action

D. Quantitation Limit Check Standard - List all QL Check Standard analytes that are outside method QC acceptance criteria (for non-CLP methods).

QL Check Standard method QC acceptance criteria: _____

Date	Instr.	Analyte	QL Check Std. #	% R	Affected Range	Samples Affected	Action

Comments: _____

_____

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-IV-A/B

Case: _____ SDG:_____

IV. BLANKS - List the blank contamination and negative blank results below.

Sampler: _____ Company: _____ Contacted: Y N Date:_____

A. Laboratory: Preparation (Method) and Calibration (Instrument) Blanks

Date Prepared	Date Analyzed	Blank Type (ICB/CCB#/PB)	Matrix	Instrument	Analyte	Concentration	Units

B. Field: Equipment (Rinsate) and Bottle Blanks

Date Sampled	Date Analyzed	Sample No. (Blank Type)	Matrix	Instrument	Analyte	Concentration	Units

Were the proper number of blanks analyzed at the proper frequency? Y N

For ICP MS - Are internal standard responses in all blanks within method QC acceptance criteria? Y N

Comments:_____

_____

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-IV-C.1

Case: _____ SDG:_____

IV. BLANKS

C.1 Blank Contamination Worksheet - Circle or list the highest concentration of each contaminant.

Analyte	Date Analyzed	ICB	CCB							PBW	PBS	EB	BB	Max. Conc.	CRQL
			1	2	3	4	5	6	7						
Aluminum															
Antimony															
Arsenic															
Barium															
Beryllium															
Cadmium															
Calcium															
Chromium															
Cobalt															
Copper															
Iron															
Lead															
Magnesium															
Manganese															
Mercury															
Nickel															
Potassium															
Selenium															
Silver															
Sodium															
Thallium															
Vanadium															
Zinc															
Cyanide															

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-IV-C.2

Case: _____ SDG:_____

IV. BLANKS

C.2 Blank Actions - List the maximum concentrations of each analyte among all blanks associated with each sample.

Analyte	Type of Blank	Date Blank Originated	Max. Conc. (units)	MDL or (-MDL) (units)	CRQL or (-CRQL) (units)	10xCRQL	Samples Affected	Action

Comments:

Refer to EPA R1 DR Supplement guidance for blank contamination actions (Section 2.6).

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-V-A

Case: _____ SDG:_____

V. A. ICP-AES INTERFERENCE CHECK SAMPLE - ICSAB

List all analytes in the ICSAB that are outside ICSAB recovery of 80-120% or outside true value (TV) ± CRQL, whichever is greater.

Date	Analyte	%R	ICSAB Found Conc.	ICSAB True Value	Analyte CRQL	TV ± CRQL	Conc. of Interferents Observed in ICSAB (ug/L)				Associated Samples	Action
							Al	Ca	Fe	Mg		
Comments:												

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-V-B

Case: _____ SDG:_____

V. B. ICP-AES INTERFERENCE CHECK SAMPLE - ICSA

List all analytes in the ICSA that are outside ICSA recovery of 80-120% or outside true value (TV) ± CRQL, whichever is greater.

Date	Analyte	%R	ICSA Found Conc.	ICSA True Value	Analyte CRQL	TV ± CRQL	Conc. of Interferents Observed in ICSA (ug/L)				Associated Samples	Action
							Al	Ca	Fe	Mg		
Comments:												

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-VI-A

Case: _____ SDG:_____

VI. A. ICP-MS INTERFERENCE CHECK SAMPLE - ICSAB

List all analytes in the ICSAB that are outside ICSAB recovery of 80-120% or outside true value (TV) ± 2xCRQL, whichever is greater.

Date	Analyte	%R	ICSAB Found Conc.	ICSAB True Value	Analyte CRQL	TV ± 2xCRQL	Conc. of Interferents Observed in ICSAB (ug/L)				Associated Samples	Action
							Al	Ca	Fe	Mg		
Comments:												

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-VI-B

Case: _____ SDG:_____

VI. B. ICP-MS INTERFERENCE CHECK SAMPLE - ICSA

List all analytes in the ICSA that are outside ICSA recovery of 80-120% or outside true value (TV) ± 2xCRQL, whichever is greater.

Date	Analyte	%R	ICSA Found Conc.	ICSA True Value	Analyte CRQL	TV ± 2xCRQL	Conc. of Interferents Observed in ICSA (ug/L)				Associated Samples	Action
							Al	Ca	Fe	Mg		
Comments:												

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-VII

Case: _____ SDG:_____

VII. ICP-MS INTERNAL STANDARDS

Method: _____ Method QC acceptance criteria: _____

List all internal standards that are outside method QC acceptance criteria.

Sample Number	Date and Time Analyzed	IS, amu	% RI	Analytes Affected (amu)	Action
Comments:					

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-VIII

Case: _____ SDG:_____

VIII. MATRIX SPIKES

Sample No.: _____ Matrix: _____

List all matrix spike analytes that are outside method QC acceptance criteria. Use a separate worksheet for each matrix spike sample.

Method	Analyte	Spiked Sample Result	Sample Result	Amount of Spike Added	MS % Recovery	Method QC Limits % Recovery	Post-Digest Spike % Recovery	Action
Comments:								

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-IX

Case: _____ SDG:_____

IX. LABORATORY DUPLICATE SAMPLES

Sample No.:_____ Duplicate Sample No.: _____ Matrix:_____

Laboratory duplicate sample method QC acceptance criteria: _____

List all analytes that are outside method QC acceptance criteria for the specific matrix. Use a separate worksheet for each laboratory duplicate sample.

Method	Analyte	Sample Conc.	Sample		Duplicate Conc.	Duplicate		RPD or Abs. Diff.	QC Acceptance Criteria (RPD or Abs. Diff.)	Action
			SQL	5xSQL		SQL	5xSQL			

Do the field duplicate sample data indicate acceptable field precision? Y N

Comments:_____

_____

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-X

Case: _____ SDG:_____

X. FIELD DUPLICATES

Sample No.:_____ Duplicate Sample No.: _____ Matrix:_____

List all field duplicate analytes that are outside criteria. Use a separate worksheet for each field duplicate pair.

Method	Analyte	Sample Conc.	Sample		Duplicate Conc.	Duplicate		RPD or Abs. Diff.	QC Acceptance Criteria (RPD or Abs. Diff.)	Action
			SQL	5xSQL		SQL	5xSQL			

Refer to EPA R1 DR Supplement guidance for field duplicate actions (Section 2.7).

Do the laboratory duplicate sample data indicate acceptable laboratory precision? Y N

Comments: _____

_____

Sampler Name: _____ Contractor Name: _____ Date Contacted: _____

Reason for contact and resolution obtained: _____

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-XI

Case: _____ SDG:_____

XI. ICP SERIAL DILUTIONS

Sample No.:_____ Matrix:_____ Method:_____

% Difference method QC acceptance criteria: _____

Minimum concentration required to apply the % D criteria (e.g., 50x MDL): _____

List all serial dilution analytes that are outside method QC acceptance criteria. Use a separate worksheet for each serial dilution sample.

Analyte	MDL	Min. Conc. Required	Sample Result	Serial Dilution Sample Result (corrected for dilution)	% D	Action
Comments:						

Validator: _____ Date: _____

EPA R1 Data Validation Worksheet
INORG-XII

Case: _____ SDG:_____

XII. LABORATORY CONTROL SAMPLES

Are more than one-half of the LCS analytes within criteria for each parameter and method? **Y** **N**

List all analytes that are outside criteria.

Date Prepared	Date Analyzed	Parameter/ Method	Matrix	Analyte	% Recovery (or Observed Conc.)	Method QC Acceptance Criteria	Samples Affected	Action
Comments:								

Validator: _____ Date: _____

Case: _____ SDG:_____

XIII. PERFORMANCE EVALUATION SAMPLES

Indicate the source of the PES: Region 1 EPA PES Non-EPA PES _____

Are more than one-half of the PES analytes within criteria for each parameter and method? **Y** **N**

List all analytes that are outside criteria.

PE Sample Number	Ampule Number	Parameter/ Method	Type of PES	Matrix	Analyte	Conc.	PES Score*	Samples Affected	Action

Refer to NFG for PES actions.

***** For Region I PESs indicate the Region I PES Score Report Result: Action High, Action Low, Analyte Missed, Contaminant.
For Non-EPA PESs indicate the Non-EPA PES Score: PES Analyte Missed; PES Analyte Contaminant; PES Analyte Hit (% Recovery Limits).

Comments:_____

_____

Validator: _____ Date: _____

Case: _____ SDG:_____

XIV. ANALYTE QUANTITATION, REPORTED QUANTITATION LIMITS AND % SOLIDS

Recalculate, from the raw data, the concentrations for one positive detect and one reported sample quantitation limit for a non-detect in a diluted sample or soil sample per analytical method

Do all soil/sediment samples have % solids greater than or equal to 30%? **Y** **N**

- If no, were any steps employed to address the high moisture content? _____
- Indicate the action and list the affected sample nos.:_____
  Refer to EPA R1 DR Supplement guidance for actions related to %solids (Section 2.8).

Method		Calculation
ICP-AES		
Sample No.:		
Reported Analyte:		
Reported Value:		
Non-Detected Analyte:		
Reported Quantitation Limit:		
ICP-MS		
Sample No.:		
Reported Analyte:		
Reported Value:		
Non-Detected Analyte:		
Reported Quantitation Limit:		
Mercury		
Sample No.:		
Reported Value:		
Sample No.:		
Reported Quantitation Limit:		
Cyanide		
Sample No.:		
Reported Value:		
Sample No.:		
Reported Quantitation Limit:		

Validator:_____ Date:_____