

The order of this data package is as follows:

1. Chain-of-Custody/Lab Request
2. Copies of field COCs
3. Validation Report
4. Laboratory analysis

Comments:

Validation report not required for University of Illinois samples.

[illegible]

[illegible]

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132200

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	5/11/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1544		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSA	
LOCATION ID:	MCOI-6		FIELD PREP:	F	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
TOP DEPTH:	LSD		SAMPLE USAGE:	INV	
BOTTOM DEPTH:	TD		EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
Temperature _____ Turbidity _____

COLLECTED BY (PRINT): T. Bonham

RELINQUISHED BY T. Bonham (Printed Name) (Signature)	Date/Time 5/11/2017 1650	RECEIVED BY Shearwood (Printed Name) (Signature)	Date/Time 5/11/17 1650
RELINQUISHED BY T. Walker (Printed Name) (Signature)	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 04/25/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132211

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/17/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	12:42		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-45 S1		FIELD PREP:	F	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP-N15/O18- NO3	40 ML SEPTUM AMBER GLASS	2	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
 Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
 Temperature _____ Turbidity _____

COLLECTED BY (PRINT): T. Bonham & A. Stanfield

RELINQUISHED BY (Printed Name) (Signature)	T. Bonham <i>[Signature]</i>	Date/Time 5/17/17 1550	RECEIVED BY (Printed Name) (Signature)	S. Sherwood <i>[Signature]</i>	Date/Time 5/17/17 1558
RELINQUISHED BY (Printed Name) (Signature)		Date/Time	RECEIVED BY (Printed Name) (Signature)		Date/Time

Report Date: 04/25/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132212

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05-17-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	14:36		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-45 S2		FIELD PREP:	F	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP-N15/O18- NO3	40 ML SEPTUM AMBER GLASS	2	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
Oxidation-Reduction _____ pH _____ Specific _____
Potential _____ Conductance _____
Temperature _____ Turbidity _____

COLLECTED BY (PRINT): T. Bonham, A. Stanfield

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 05/17/17 1550	RECEIVED BY (Printed Name) (Signature)	Date/Time 5/17/17 1550
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132214

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/17/2017	ok	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):	1212		MEDIA:	UA	
PRS ID:	ok		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-50 S1		FIELD PREP:	F	
LOCATION TYPE:	ok		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / <input checked="" type="radio"/> NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM Dissolved Oxygen _____ Flow (in gpm) _____
 Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
 Temperature _____ Turbidity _____

COLLECTED BY (PRINT): W. Pryce

RELINQUISHED BY (Printed Name) Whitney Pryce (Signature)	Date/Time 5/17/17 1330	RECEIVED BY (Printed Name) S. Sherwood (Signature)	Date/Time 5/17/17 1330
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132218

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05-16-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	10:35		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	SIMR-2		FIELD PREP:	F	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:	1		SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM Dissolved Oxygen 05-16-17 Flow (in gpm) _____
Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
Temperature _____ Turbidity _____

COLLECTED BY (PRINT): T. Bonham, A. Vigil

RELINQUISHED BY (Printed Name) (Signature)	T. Bonham <i>T. Bonham</i>	Date/Time 5/16/17 1550/1450	RECEIVED BY (Printed Name) (Signature)	S. Sherwood <i>S. Sherwood</i>	Date/Time 5/16/17 1458
RELINQUISHED BY (Printed Name) (Signature)		Date/Time	RECEIVED BY (Printed Name) (Signature)		Date/Time

Report Date: 04/25/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132308

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	5/11/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1544		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	MCOI-6		FIELD PREP:	F	
LOCATION TYPE:	MON		FIELD QC TYPE:	FD	
TOP DEPTH:	LSD		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	TD		EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

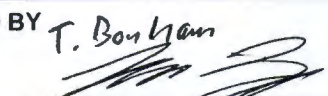
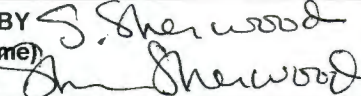
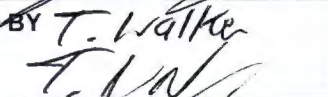
FIELD PARAMETERS:

Sample Time _____ HH:MM Dissolved Oxygen _____ Flow (in gpm) _____

Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____

Temperature _____ Turbidity _____

COLLECTED BY (PRINT): T. Bonham

RELINQUISHED BY (Printed Name) (Signature)	T. Bonham 	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) (Signature)	S. Sherwood 	Date/Time 5/11/17 1650
RELINQUISHED BY (Printed Name) (Signature)	T. Walker 	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) (Signature)		Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CASA-17-132319

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/05/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	11:01 10:01 5/5/17TB		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-11		FIELD PREP:	F	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / <u>NO</u> / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
 Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
 Temperature _____ Turbidity _____

COLLECTED BY (PRINT): A. Vigil

RELINQUISHED BY (Printed Name) Andrew Vigil (Signature) <i>Andrew Vigil</i>	Date/Time 05/05/2017 11:50	RECEIVED BY (Printed Name) K. Green (Signature) <i>K. Green</i>	Date/Time 5/5/17 11:50
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 05/02/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CASA-17-132323

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05-08-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1215		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-43 S1		FIELD PREP:	F	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
 Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
 Temperature _____ Turbidity _____

COLLECTED BY (PRINT): T. Walker, A. Stanfield

RELINQUISHED BY (Printed Name) (Signature)	T. Walker T.E. Walker	Date/Time 1550 5/8/2017	RECEIVED BY (Printed Name) (Signature)	K. Sherwood K. Sherwood	Date/Time 5/8/17 1550
RELINQUISHED BY (Printed Name) (Signature)		Date/Time	RECEIVED BY (Printed Name) (Signature)		Date/Time

Report Date: 05/02/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CASA-17-132325

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/03/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1033		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-67		FIELD PREP:	F	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
 Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
 Temperature _____ Turbidity _____

COLLECTED BY (PRINT): A. Stanfield

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 5/3/2017 1135	RECEIVED BY (Printed Name) (Signature)	Date/Time 5/3/17 1135
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 05/02/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CASA-17-132327

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	5/4/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1147		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	RSP	
LOCATION ID:	SCI-2		FIELD PREP:	F	
LOCATION TYPE:	Mon		FIELD QC TYPE:	REG	
TOP DEPTH:	OK		SAMPLE USAGE:	INV	
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
↓	WSP-CR52/53	1 LITER POLY	1	ICE	↓	↓
↓	WSP- GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
Oxidation-Reduction _____ pH _____ Specific _____
Potential _____ Conductance _____
Temperature _____ Turbidity _____

COLLECTED BY (PRINT): T. Bonham, T. Walker

RELINQUISHED BY (Printed Name) Tanner Bonham (Signature) <i>[Signature]</i>	Date/Time 5/4/17 1225	RECEIVED BY <i>[Signature]</i> (Printed Name) M. Martin (Signature) <i>[Signature]</i>	Date/Time 5/4/17 1225
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 05/02/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CASA-17-132338

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/03/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1033		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-67		FIELD PREP:	F	
LOCATION TYPE:	OK		FIELD QC TYPE:	FD	
TOP DEPTH:	↓		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / <u>NO</u> / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	MA
↓	WSP-CR52/53	1 LITER POLY	1	ICE	↓	↓
↓	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE	↓	↓
↓	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
 Oxidation-Reduction _____ pH _____ Specific _____
 Potential _____ Conductance _____
 Temperature _____ Turbidity _____

COLLECTED BY (PRINT): A. Stanford

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 05/03/2017 1135	RECEIVED BY (Printed Name) (Signature)	Date/Time 5/3/17 1135
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 05/02/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132523

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/18/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1153		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-44 S1		FIELD PREP:	F	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP-N15/O18- NO3	40 ML SEPTUM AMBER GLASS	2	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen 5/18/2017 Flow (in gpm) _____
 Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
 Temperature _____ Turbidity _____

COLLECTED BY (PRINT): M. Sando & D. Jaramila

RELINQUISHED BY (Printed Name) <u>Maurice Sando</u> (Signature) <u>[Signature]</u>	Date/Time <u>05/18/2017</u> <u>1445</u>	RECEIVED BY (Printed Name) <u>S. Sherwood</u> (Signature) <u>[Signature]</u>	Date/Time <u>5/18/17</u> <u>1445</u>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132524

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/08/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1315	OK	MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-62		FIELD PREP:	F	
LOCATION TYPE:	N		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
 Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
 Temperature _____ Turbidity _____

COLLECTED BY (PRINT):

RELINQUISHED BY (Printed Name) Daniel J. Serna (Signature) [Signature]	Date/Time 5/8/17 1600	RECEIVED BY (Printed Name) S. Sherwood (Signature) [Signature]	Date/Time 5/8/17 1600
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

[illegible]

[illegible]

UNIVERSITY OF ILLINOIS
AT URBANA - CHAMPAIGN

Department of Geology
School of Earth, Society, & Environment
3081 Natural History Building
1301 W. Springfield Avenue
Urbana, IL 61801



24 January, 2018

Ms. Susan Leese
ARS International, LLC
2609 North River Road
Port Allen, LA 70767-3469
225.381.2991 sleese@amrad.com

Subject: Cr stable isotope results

Dear Susan:

Please find below tabulated results from Cr stable isotope analysis of water samples from Los Alamos National Laboratory (LANL). The samples were analyzed on January 17th and 18th, 2018 and results were previously reported via EDD, on January 23rd.

COC #	Sample ID	$\delta^{53}\text{Cr}^1$ (per mil)	Duplicate $\delta^{53}\text{Cr}^1$ (per mil)
2017-2464	CASA-17-142775	1.94	
2017-2464	CASA-17-142776	0.92	
2017-2464	CAMO-17-142777	1.16	1.21
2017-2464	CAMO-17-142778	1.12	
2017-2464	CAMO-17-142779	1.37	
2017-2464	CAMO-17-142780	0.93	
2017-2464	CAMO-17-142781	1.03	
2017-2465	CrIN6-17-142163	1.31	
2017-2466	CAMO-17-132200	1.24	
2017-2466	CAMO-17-132211	1.04	1.05
2017-2466	CAMO-17-132212	1.25	
2017-2466	CAMO-17-132214	0.89	
2017-2466	CAMO-17-132218	Reprep ³	
2017-2466	CAMO-17-132308	1.25	
2017-2466	CASA-17-132319	1.28	
2017-2466	CASA-17-132323	0.85	
2017-2466	CASA-17-132325	Reprep ³	
2017-2466	CASA-17-132327	1.15	
2017-2466	CASA-17-132338	1.96	
2017-2466	CAMO-17-132523	0.85	
2017-2466	CAMO-17-132524	1.8	

¹Parts per thousand deviation of the measured $^{53}\text{Cr}/^{52}\text{Cr}$ ratio from that of the NIST SRM-979 standard.

²Not analyzed; insufficient Cr(VI) was present in the sample to allow accurate isotope ratio analysis.

³Reanalysis in progress; sample must be prepared again.

The analytical methods used for these samples are identical to those used for LANL water analyses for the past several years, and are described in the article: Reinhard, C.T., et al., 2014. The isotopic composition of authigenic chromium in anoxic marine sediments: A case study from the Cariaco Basin. *Earth and Planetary Science Letters* vol. **407**, pp. 9-18. Nominal precision is ± 0.2 per mil, though actual reproducibility is generally better than that.

A raw data table is attached. Analyses identified as "979" are NIST SRM-979. Analyses identified as "3112a" are NIST SRM-3112a, which has a published value of -0.07 per mil. The SRM-3112a standard solutions were processed through the sample preparation procedure with the reported samples. Sample results are normalized to the mean value of SRM-979 for the analytical session.

Chain of Custody (COC) forms are also attached. Some samples, as indicated above, were not analyzed. If indicated, insufficient Cr was recovered by our sample preparation method to allow isotope ratio analysis. In some cases, sufficient Cr is present but samples must be prepared a second time. These will be analyzed as soon as possible.

Sincerely,



Thomas M. Johnson
Professor of Geology

Sample	52 Int (V)			Raw 50/52			Raw 53/52			Raw 54/52		
'979_125p	3.97E+00	{ 1.92E-03	6.14E-01	{ 8.20E-06	1.17E-01	{ 1.20E-06	5.18E-01	{ 5.31E-06				
'979_125p	3.95E+00	{ 2.08E-03	6.14E-01	{ 8.74E-06	1.17E-01	{ 1.75E-06	5.18E-01	{ 6.70E-06				
'3112a_12	4.49E+00	{ 2.83E-03	6.61E-01	{ 8.24E-06	1.17E-01	{ 1.27E-06	5.56E-01	{ 5.07E-06				
'3112a_12	4.39E+00	{ 2.38E-03	6.61E-01	{ 2.19E-05	1.17E-01	{ 1.23E-06	5.56E-01	{ 8.34E-06				
'979_75pp	1.83E+00	{ 9.63E-04	6.14E-01	{ 8.46E-06	1.17E-01	{ 2.40E-06	5.18E-01	{ 5.72E-06				
'979_125p	3.55E+00	{ 4.59E-03	6.14E-01	{ 1.23E-05	1.17E-01	{ 2.11E-06	5.18E-01	{ 7.25E-06				
'979_125p	3.64E+00	{ 3.62E-03	6.14E-01	{ 1.54E-05	1.17E-01	{ 2.13E-06	5.18E-01	{ 9.72E-06				
'979_125p	3.55E+00	{ 2.12E-03	6.14E-01	{ 6.57E-06	1.17E-01	{ 1.93E-06	5.18E-01	{ 5.90E-06				
'979_125p	3.55E+00	{ 3.68E-03	6.14E-01	{ 9.23E-06	1.17E-01	{ 2.05E-06	5.18E-01	{ 4.68E-06				
'Proc_3112	2.83E+00	{ 6.43E-03	5.94E-01	{ 1.12E-05	1.17E-01	{ 2.51E-06	5.02E-01	{ 5.91E-06				
'Proc_3112	2.30E+00	{ 2.78E-03	5.98E-01	{ 1.15E-05	1.17E-01	{ 2.18E-06	5.05E-01	{ 6.94E-06				
'979_Unde	4.08E+00	{ 8.74E-03	2.65E-01	{ 3.27E-06	1.17E-01	{ 1.90E-06	2.16E-01	{ 4.54E-06				
'979_125p	3.04E+00	{ 2.73E-03	6.14E-01	{ 8.23E-06	1.17E-01	{ 1.98E-06	5.18E-01	{ 6.38E-06				
132214	5.91E+00	6.00E-03	6.22E-01	1.08E-05	1.17E-01	1.93E-06	5.24E-01	4.87E-06				
'979_125p	3.57E+00	{ 1.91E-03	6.11E-01	{ 6.56E-06	1.18E-01	{ 2.05E-06	5.27E-01	{ 6.08E-06				
'979_125p	3.55E+00	{ 1.51E-03	6.11E-01	{ 6.38E-06	1.18E-01	{ 1.76E-06	5.27E-01	{ 9.00E-06				
'979_125p	3.53E+00	{ 1.39E-03	6.11E-01	{ 4.69E-06	1.18E-01	{ 2.04E-06	5.27E-01	{ 1.38E-05				
'979_125p	3.50E+00	{ 1.86E-03	6.11E-01	{ 4.25E-06	1.18E-01	{ 1.46E-06	5.27E-01	{ 4.24E-06				
'Proc_3112	2.89E+00	{ 1.59E-03	6.58E-01	{ 5.53E-06	1.18E-01	{ 2.38E-06	5.59E-01	{ 4.91E-06				
'979_Unde	3.74E+00	{ 1.57E-03	2.64E-01	{ 6.65E-06	1.17E-01	{ 1.66E-06	2.18E-01	{ 1.00E-05				
'979_125p	3.58E+00	{ 1.73E-03	6.10E-01	{ 1.18E-05	1.18E-01	{ 1.95E-06	5.27E-01	{ 8.38E-06				
'132524' ru	3.32E+00	{ 1.69E-03	5.84E-01	{ 8.90E-05	1.18E-01	{ 2.07E-06	4.98E-01	{ 6.97E-06				
'142780' ru	3.55E+00	{ 1.44E-03	6.01E-01	{ 2.72E-05	1.18E-01	{ 2.18E-06	5.11E-01	{ 8.58E-06				
'132323' ru	3.38E+00	{ 1.64E-03	6.07E-01	{ 1.36E-05	1.18E-01	{ 2.06E-06	5.15E-01	{ 5.28E-06				
'132211' ru	2.45E+00	{ 1.09E-03	6.04E-01	{ 7.16E-06	1.18E-01	{ 2.58E-06	5.15E-01	{ 4.78E-06				
'979_125p	3.74E+00	{ 2.88E-03	6.11E-01	{ 1.31E-05	1.18E-01	{ 2.20E-06	5.28E-01	{ 6.16E-06				
'142781' ru	2.08E+00	{ 1.22E-03	6.13E-01	{ 9.65E-06	1.18E-01	{ 2.63E-06	5.22E-01	{ 7.33E-06				
'142778' ru	2.67E+00	{ 1.14E-03	5.83E-01	{ 8.60E-06	1.18E-01	{ 3.01E-06	4.97E-01	{ 9.20E-06				
'142777' ru	3.43E+00	{ 1.97E-03	6.21E-01	{ 6.71E-06	1.18E-01	{ 2.13E-06	5.51E-01	{ 5.56E-06				
'142776' ru	3.52E+00	{ 2.55E-03	5.96E-01	{ 7.35E-06	1.18E-01	{ 1.97E-06	5.06E-01	{ 4.15E-06				
'132308' ru	4.39E+00	{ 1.71E-03	5.40E-01	{ 1.06E-05	1.18E-01	{ 2.23E-06	4.58E-01	{ 7.48E-06				
'979_125p	3.93E+00	{ 3.17E-03	6.11E-01	{ 7.84E-06	1.18E-01	{ 2.15E-06	5.31E-01	{ 4.95E-06				
'132200' ru	3.67E+00	{ 1.92E-03	6.31E-01	{ 9.80E-06	1.18E-01	{ 2.67E-06	5.36E-01	{ 8.58E-06				
'142779' ru	2.54E+00	{ 1.52E-03	5.76E-01	{ 9.66E-06	1.18E-01	{ 2.72E-06	4.87E-01	{ 8.99E-06				
'132327' ru	3.20E+00	{ 1.52E-03	6.61E-01	{ 8.41E-06	1.18E-01	{ 2.60E-06	5.68E-01	{ 5.61E-06				
'142163' ru	4.45E+00	{ 7.87E-02	6.38E-01	{ 2.03E-04	1.17E-01	{ 1.82E-05	5.30E-01	{ 1.65E-04				
'132212' ru	1.78E+00	{ 6.73E-03	5.60E-01	{ 5.75E-05	1.17E-01	{ 5.65E-06	4.66E-01	{ 3.79E-05				
'979_125p	2.94E+00	{ 3.09E-03	6.15E-01	{ 4.37E-05	1.17E-01	{ 3.80E-06	5.18E-01	{ 4.99E-05				
'132319' ru	1.96E+00	{ 2.02E-03	8.05E-01	{ 1.77E-05	1.18E-01	{ 2.86E-06	6.81E-01	{ 1.58E-05				
'142775' ru	1.67E+00	{ 8.43E-04	7.05E-01	{ 1.48E-05	1.18E-01	{ 3.65E-06	6.00E-01	{ 1.10E-05				
'132338' ru	1.77E+00	{ 1.13E-03	6.58E-01	{ 1.05E-05	1.18E-01	{ 3.08E-06	5.59E-01	{ 6.91E-06				
'132523' ru	6.62E-01	{ 4.05E-04	5.27E-01	{ 1.18E-05	1.18E-01	{ 8.63E-06	4.56E-01	{ 1.31E-05				
'132211-2'	2.43E+00	{ 1.06E-03	6.09E-01	{ 9.18E-06	1.18E-01	{ 3.43E-06	5.15E-01	{ 5.77E-06				
'979_125p	3.04E+00	{ 1.45E-03	6.12E-01	{ 2.22E-05	1.18E-01	{ 2.27E-06	5.21E-01	{ 2.20E-05				

'142777-2'	6.12E+00	{ 4.73E-03	6.36E-01	{ 2.97E-05	1.18E-01	{ 3.18E-06	5.38E-01	{ 2.56E-05
Proc_3112:	2.64E+00	1.57E-03	5.93E-01	1.57E-05	1.17E-01	3.60E-06	5.03E-01	1.44E-05

Raw 56/54		Raw 51/52		Raw 49/50		Conv Err		FeCorrEst	
6.07E-03	{ 0.00E+00	3.47E-05	{ 6.33E-07	2.32E-05	{ 1.08E-13	-2.84E-05	{ 3.73E-06	1.22E-01	
6.30E-03	{ 6.28E-12	3.90E-05	{ 4.99E-07	1.21E-05	{ 7.20E-14	-3.26E-05	{ 5.26E-06	1.27E-01	
5.71E-03	{ 0.00E+00	1.78E-03	{ 6.85E-07	1.38E-04	{ 0.00E+00	-4.43E-05	{ 3.37E-06	1.15E-01	
8.72E-03	{ 0.00E+00	1.79E-03	{ 1.51E-06	1.32E-04	{ 0.00E+00	-3.09E-05	{ 3.41E-06	1.75E-01	
1.54E-02	{ 8.33E-11	7.27E-05	{ 1.33E-06	3.49E-05	{ 0.00E+00	-6.43E-06	{ 6.61E-06	3.10E-01	
1.52E-02	{ 0.00E+00	4.55E-05	{ 1.04E-06	2.38E-05	{ 1.71E-13	7.19E-06	{ 6.71E-06	3.06E-01	
6.10E-03	{ 0.00E+00	3.58E-05	{ 6.26E-07	1.14E-05	{ 0.00E+00	-3.67E-05	{ 6.32E-06	1.22E-01	
7.91E-03	{ 1.27E-11	3.60E-05	{ 5.04E-07	1.90E-05	{ 1.42E-13	-2.16E-05	{ 6.12E-06	1.59E-01	
6.70E-03	{ 2.31E-11	4.37E-05	{ 5.08E-07	1.00E-05	{ 4.88E-14	-2.12E-05	{ 6.66E-06	1.34E-01	
5.83E-02	{ 0.00E+00	9.98E-05	{ 7.18E-07	5.90E-05	{ 0.00E+00	-2.72E-05	{ 8.62E-06	1.17E+00	
4.11E-02	{ 2.69E-10	1.21E-04	{ 1.66E-06	1.10E-04	{ 0.00E+00	-1.29E-05	{ 7.92E-06	8.24E-01	
1.21E-02	{ 4.34E-11	2.99E-05	{ 4.40E-07	3.38E-05	{ 2.56E-13	-4.08E-04	{ 7.44E-05	2.42E-01	
2.91E-02	{ 0.00E+00	4.93E-05	{ 5.37E-07	1.88E-05	{ 1.24E-13	-1.26E-05	{ 6.16E-06	5.84E-01	
2.45E-02	1.86E-10	7.10E-04	5.82E-07	5.74E-05	0.00E+00	2.60E-04	5.64E-06	4.93E-01	
2.29E-01	{ 1.27E-09	1.28E-04	{ 8.76E-07	5.43E-05	{ 2.71E-13	3.31E-05	{ 7.35E-06	4.58E+00	
2.26E-01	{ 8.92E-10	1.46E-04	{ 5.87E-07	4.93E-05	{ 1.61E-13	1.63E-05	{ 6.69E-06	4.51E+00	
2.25E-01	{ 0.00E+00	1.53E-04	{ 5.28E-07	4.99E-05	{ 1.82E-13	-1.42E-05	{ 7.37E-06	4.49E+00	
2.30E-01	{ 1.47E-09	1.59E-04	{ 8.12E-07	5.01E-05	{ 0.00E+00	1.55E-05	{ 5.24E-06	4.60E+00	
6.81E-03	{ 0.00E+00	2.03E-03	{ 7.57E-07	1.63E-04	{ 8.32E-13	-5.31E-05	{ 5.77E-06	1.36E-01	
1.91E-02	{ 0.00E+00	8.84E-05	{ 8.45E-07	3.02E-05	{ 1.07E-13	-5.01E-04	{ 6.70E-05	3.82E-01	
2.50E-01	{ 7.17E-10	3.57E-04	{ 4.71E-06	5.68E-05	{ 2.65E-13	-2.04E-06	{ 7.62E-06	5.00E+00	
1.45E-01	{ 3.69E-10	1.21E-03	{ 3.45E-05	8.82E-05	{ 0.00E+00	7.41E-04	{ 2.06E-05	2.92E+00	
4.02E-02	{ 0.00E+00	1.39E-03	{ 5.88E-06	5.40E-05	{ 1.82E-13	2.79E-04	{ 7.30E-06	8.05E-01	
3.35E-02	{ 0.00E+00	7.09E-04	{ 2.39E-06	4.54E-05	{ 0.00E+00	2.43E-04	{ 6.65E-06	6.71E-01	
5.88E-02	{ 0.00E+00	2.79E-03	{ 1.37E-06	7.85E-05	{ 4.34E-13	3.24E-04	{ 8.33E-06	1.18E+00	
2.90E-01	{ 0.00E+00	2.00E-04	{ 4.56E-06	5.80E-05	{ 0.00E+00	4.10E-05	{ 8.23E-06	5.79E+00	
5.53E-02	{ 0.00E+00	2.99E-03	{ 2.10E-06	8.04E-05	{ 8.91E-14	3.03E-04	{ 7.91E-06	1.11E+00	
1.32E-01	{ 0.00E+00	1.81E-03	{ 2.08E-06	2.49E-04	{ 0.00E+00	4.59E-04	{ 1.09E-05	2.64E+00	
7.57E-01	{ 0.00E+00	7.43E-04	{ 6.32E-07	6.12E-05	{ 3.56E-13	1.08E-03	{ 9.97E-06	1.52E+01	
2.95E-02	{ 0.00E+00	1.05E-03	{ 7.20E-07	6.78E-05	{ 0.00E+00	2.76E-04	{ 6.96E-06	5.91E-01	
9.92E-02	{ 4.44E-10	7.04E-04	{ 7.86E-07	4.99E-04	{ 1.49E-12	5.98E-04	{ 1.00E-05	1.99E+00	
3.72E-01	{ 0.00E+00	1.59E-04	{ 6.12E-07	6.01E-05	{ 1.40E-13	1.42E-04	{ 7.09E-06	7.43E+00	
3.45E-02	{ 2.47E-10	6.97E-04	{ 5.27E-07	5.17E-05	{ 0.00E+00	3.33E-04	{ 6.61E-06	6.91E-01	
2.59E-02	{ 0.00E+00	2.43E-03	{ 1.03E-06	1.03E-04	{ 6.25E-13	4.76E-04	{ 9.37E-06	5.19E-01	
2.31E-01	{ 1.49E-09	2.92E-04	{ 8.16E-07	2.41E-04	{ 0.00E+00	4.16E-04	{ 7.09E-06	4.63E+00	
8.06E-02	{ 3.09E-10	4.61E-04	{ 3.38E-07	1.57E-04	{ 0.00E+00	4.56E-04	{ 7.82E-06	1.63E+00	
2.70E-02	{ 0.00E+00	4.58E-03	{ 2.02E-06	7.13E-05	{ 3.84E-13	4.95E-04	{ 1.39E-05	5.44E-01	
4.16E-02	{ 0.00E+00	6.84E-05	{ 9.21E-07	2.00E-05	{ 0.00E+00	-7.89E-06	{ 8.76E-06	8.36E-01	
2.11E-02	{ 0.00E+00	3.44E-03	{ 1.42E-06	1.10E-04	{ 6.54E-13	1.70E-04	{ 3.93E-06	4.25E-01	
1.76E-02	{ 0.00E+00	1.30E-02	{ 1.82E-06	1.14E-04	{ 1.84E-13	3.75E-04	{ 6.55E-06	3.53E-01	
1.70E-02	{ 1.28E-10	1.08E-02	{ 1.77E-06	8.78E-05	{ 0.00E+00	4.64E-04	{ 7.37E-06	3.40E-01	
6.21E-02	{ 0.00E+00	3.05E-02	{ 6.61E-06	2.40E-04	{ 0.00E+00	3.20E-04	{ 3.48E-05	1.23E+00	
4.15E-02	{ 8.37E-11	1.52E-02	{ 1.94E-06	7.60E-05	{ 0.00E+00	3.15E-04	{ 1.04E-05	8.32E-01	
5.24E-02	{ 0.00E+00	6.13E-05	{ 7.34E-07	1.65E-05	{ 8.39E-14	-2.57E-06	{ 6.35E-06	1.05E+00	

2.98E-02	{	6.76E-11	5.22E-04	{	3.24E-07	5.01E-05	{	2.23E-13	3.18E-04	{	4.94E-06	5.98E-01
5.31E-02		0.00E+00	1.00E-04		8.53E-07	6.45E-05		0.00E+00	-4.17E-05		9.37E-06	1.06E+00

VCorrEst			TiCorrEst		Mass Bias		54Spk/52Nat	
{ 9.17E-07	3.23E-05	{ 5.89E-07	5.73E-03	{ 2.39E-08	2.98E+01	{ 4.08E-03	4.61E-01	{ 4.91E-06
{ 1.19E-06	3.62E-05	{ 4.64E-07	3.00E-03	{ 1.56E-08	2.99E+01	{ 5.08E-03	4.61E-01	{ 5.03E-06
{ 9.22E-07	1.54E-03	{ 5.93E-07	3.40E-02	{ 1.52E-07	2.92E+01	{ 4.34E-03	4.98E-01	{ 2.95E-06
{ 1.87E-06	1.55E-03	{ 1.31E-06	3.26E-02	{ 1.92E-07	2.91E+01	{ 5.75E-03	4.98E-01	{ 1.20E-05
{ 3.08E-06	6.77E-05	{ 1.24E-06	8.62E-03	{ 4.75E-08	3.00E+01	{ 5.37E-03	4.61E-01	{ 3.67E-06
{ 4.46E-06	4.23E-05	{ 9.69E-07	5.87E-03	{ 4.75E-08	2.98E+01	{ 7.88E-03	4.61E-01	{ 4.60E-06
{ 2.48E-06	3.33E-05	{ 5.82E-07	2.82E-03	{ 3.17E-08	3.00E+01	{ 1.10E-02	4.61E-01	{ 4.53E-06
{ 1.48E-06	3.35E-05	{ 4.68E-07	4.69E-03	{ 2.43E-08	3.01E+01	{ 5.05E-03	4.61E-01	{ 3.10E-06
{ 1.53E-06	4.06E-05	{ 4.72E-07	2.48E-03	{ 1.57E-08	3.01E+01	{ 6.16E-03	4.61E-01	{ 4.04E-06
{ 1.75E-05	9.59E-05	{ 6.90E-07	1.46E-02	{ 1.21E-07	3.01E+01	{ 8.11E-03	4.44E-01	{ 4.41E-06
{ 1.16E-05	1.16E-04	{ 1.59E-06	2.71E-02	{ 2.11E-07	3.01E+01	{ 7.60E-03	4.47E-01	{ 5.00E-06
{ 3.39E-06	6.45E-05	{ 9.49E-07	8.37E-03	{ 6.50E-08	3.01E+01	{ 7.63E-03	1.76E-01	{ 2.31E-06
{ 6.06E-06	4.58E-05	{ 5.00E-07	4.64E-03	{ 2.67E-08	3.00E+01	{ 5.62E-03	4.61E-01	{ 4.27E-06
6.33E-06	6.53E-04	5.35E-07	1.42E-02	1.01E-07	2.95E+01	6.95E-03	4.67E-01	4.01E-06
{ 3.81E-05	1.19E-04	{ 8.14E-07	1.35E-02	{ 6.21E-08	3.24E+01	{ 4.52E-03	4.60E-01	{ 4.29E-06
{ 4.36E-05	1.36E-04	{ 5.46E-07	1.22E-02	{ 6.56E-08	3.25E+01	{ 5.24E-03	4.60E-01	{ 5.00E-06
{ 6.24E-05	1.42E-04	{ 4.90E-07	1.24E-02	{ 9.54E-08	3.26E+01	{ 7.54E-03	4.60E-01	{ 6.54E-06
{ 2.82E-05	1.48E-04	{ 7.54E-07	1.24E-02	{ 4.23E-08	3.25E+01	{ 3.33E-03	4.60E-01	{ 2.80E-06
{ 8.30E-07	1.76E-03	{ 6.56E-07	4.05E-02	{ 1.37E-07	3.15E+01	{ 3.30E-03	4.98E-01	{ 4.03E-06
{ 5.26E-06	1.90E-04	{ 1.82E-06	7.48E-03	{ 5.72E-08	3.23E+01	{ 7.51E-03	1.76E-01	{ 7.40E-06
{ 7.46E-05	3.32E-04	{ 4.37E-06	1.41E-02	{ 1.17E-07	3.25E+01	{ 8.09E-03	4.60E-01	{ 4.27E-06
{ 2.18E-04	1.18E-03	{ 3.37E-05	2.18E-02	{ 9.06E-07	3.07E+01	{ 4.05E-02	4.37E-01	{ 3.81E-05
{ 2.47E-05	1.32E-03	{ 5.56E-06	1.34E-02	{ 2.28E-07	3.17E+01	{ 1.66E-02	4.52E-01	{ 7.24E-06
{ 8.53E-06	6.65E-04	{ 2.25E-06	1.12E-02	{ 7.92E-08	3.12E+01	{ 6.88E-03	4.56E-01	{ 6.52E-06
{ 8.97E-06	2.62E-03	{ 1.29E-06	1.94E-02	{ 8.23E-08	3.17E+01	{ 4.14E-03	4.54E-01	{ 3.97E-06
{ 4.83E-05	1.86E-04	{ 4.23E-06	1.44E-02	{ 6.66E-08	3.23E+01	{ 4.52E-03	4.60E-01	{ 7.28E-06
{ 1.31E-05	2.77E-03	{ 1.94E-06	1.99E-02	{ 1.30E-07	3.18E+01	{ 6.39E-03	4.62E-01	{ 4.38E-06
{ 3.91E-05	1.77E-03	{ 2.05E-06	6.17E-02	{ 5.06E-07	3.10E+01	{ 8.00E-03	4.36E-01	{ 3.78E-06
{ 1.53E-04	6.81E-04	{ 5.78E-07	1.51E-02	{ 8.50E-08	3.12E+01	{ 5.48E-03	4.67E-01	{ 2.63E-06
{ 5.51E-06	1.00E-03	{ 6.87E-07	1.68E-02	{ 8.70E-08	3.13E+01	{ 5.06E-03	4.47E-01	{ 3.30E-06
{ 3.21E-05	7.43E-04	{ 8.29E-07	1.23E-01	{ 1.11E-06	3.10E+01	{ 8.76E-03	4.01E-01	{ 2.72E-06
{ 6.27E-05	1.48E-04	{ 5.69E-07	1.49E-02	{ 6.97E-08	3.19E+01	{ 4.57E-03	4.60E-01	{ 3.70E-06
{ 9.40E-06	6.29E-04	{ 4.76E-07	1.28E-02	{ 9.65E-08	3.13E+01	{ 7.36E-03	4.76E-01	{ 3.62E-06
{ 7.94E-06	2.40E-03	{ 1.03E-06	2.55E-02	{ 2.16E-07	3.09E+01	{ 8.28E-03	4.30E-01	{ 3.76E-06
{ 3.67E-05	2.51E-04	{ 7.04E-07	5.96E-02	{ 2.62E-07	3.09E+01	{ 4.29E-03	5.00E-01	{ 4.71E-06
{ 4.87E-04	4.20E-04	{ 3.36E-07	3.85E-02	{ 6.37E-06	2.48E+01	{ 1.60E-01	4.75E-01	{ 5.60E-06
{ 4.83E-05	4.72E-03	{ 2.23E-06	1.76E-02	{ 8.65E-07	2.70E+01	{ 4.78E-02	4.14E-01	{ 6.84E-06
{ 4.09E-05	6.37E-05	{ 8.60E-07	4.95E-03	{ 1.34E-07	2.95E+01	{ 2.64E-02	4.60E-01	{ 2.96E-05
{ 7.43E-06	2.45E-03	{ 1.02E-06	2.71E-02	{ 2.64E-07	2.94E+01	{ 9.46E-03	6.16E-01	{ 7.29E-06
{ 6.13E-06	1.05E-02	{ 1.52E-06	2.81E-02	{ 2.71E-07	3.13E+01	{ 9.41E-03	5.37E-01	{ 4.67E-06
{ 4.37E-06	9.36E-03	{ 1.70E-06	2.17E-02	{ 1.55E-07	3.14E+01	{ 6.98E-03	4.98E-01	{ 4.13E-06
{ 2.32E-05	3.25E-02	{ 7.21E-06	5.98E-02	{ 6.26E-07	3.67E+01	{ 1.03E-02	3.95E-01	{ 8.86E-06
{ 7.98E-06	1.42E-02	{ 1.81E-06	1.88E-02	{ 1.00E-07	3.06E+01	{ 5.20E-03	4.57E-01	{ 4.27E-06
{ 1.60E-05	5.70E-05	{ 6.83E-07	4.09E-03	{ 3.46E-08	3.14E+01	{ 8.26E-03	4.61E-01	{ 1.95E-05

{ 2.65E-05	4.68E-04	{ 2.90E-07	1.24E-02	{ 3.05E-07	3.00E+01	{ 2.40E-02	4.79E-01	{ 3.12E-06
2.47E-05	9.63E-05	8.18E-07	1.60E-02	2.05E-07	3.09E+01	1.25E-02	4.45E-01	5.20E-06

Delta 53Cr

Average 97 Final d53 Replicate d

-0.10	{ 1.20E-02	'979_125pj	17-Jan	12:50	-8.85E-02	-0.02
-0.12	{ 1.69E-02	'979_125pj	17-Jan	12:59	-8.85E-02	-0.03
-0.19	{ 1.34E-02	'3112a_125pj	17-Jan	13:14	-8.85E-02	-0.10
-0.15	{ 1.35E-02	'3112a_125pj	17-Jan	13:24	-8.85E-02	-0.06
-0.05	{ 2.11E-02	'979_75ppl	17-Jan	13:39	-8.85E-02	0.04
-0.01	{ 2.15E-02	'979_125pj	17-Jan	14:42	-8.85E-02	0.08
-0.13	{ 2.04E-02	'979_125pj	17-Jan	14:51	-8.85E-02	-0.04
-0.08	{ 1.97E-02	'979_125pj	17-Jan	15:20	-8.85E-02	0.00
-0.08	{ 2.15E-02	'979_125pj	17-Jan	15:30	-8.85E-02	0.01
-0.18	{ 2.41E-02	'Proc_3112	17-Jan	15:45	-8.85E-02	-0.09
-0.11	{ 2.28E-02	'Proc_3112	17-Jan	16:00	-8.85E-02	-0.02
-0.12	{ 2.05E-02	'979_Unde	17-Jan	16:15	-8.85E-02	-0.03
-0.10	{ 1.94E-02	'979_125pj	17-Jan	16:30	-8.85E-02	-0.01
0.80	1.86E-02	132214	17-Jan	16:38	-8.85E-02	0.89
-0.13	{ 1.97E-02	'979_125pj	18-Jan	10:07	-1.51E-01	0.02
-0.15	{ 1.75E-02	'979_125pj	18-Jan	10:17	-1.51E-01	0.00
-0.23	{ 1.97E-02	'979_125pj	18-Jan	10:27	-1.51E-01	-0.08
-0.16	{ 1.40E-02	'979_125pj	18-Jan	10:36	-1.51E-01	-0.01
-0.22	{ 2.29E-02	'Proc_3112	18-Jan	10:52	-1.51E-01	-0.07
-0.15	{ 1.85E-02	'979_Unde	18-Jan	11:07	-1.51E-01	0.00
-0.23	{ 1.97E-02	'979_125pj	18-Jan	11:22	-1.51E-01	-0.08
1.65	{ 5.04E-02	'132524' ru	18-Jan	11:37	-1.51E-01	1.80
0.78	{ 2.16E-02	'142780' ru	18-Jan	11:52	-1.51E-01	0.93
0.70	{ 2.04E-02	'132323' ru	18-Jan	12:07	-1.51E-01	0.85
0.89	{ 2.48E-02	'132211' ru	18-Jan	12:22	-1.51E-01	1.04
-0.19	{ 2.17E-02	'979_125pj	18-Jan	12:38	-1.51E-01	-0.04
0.88	{ 2.47E-02	'142781' ru	18-Jan	12:53	-1.51E-01	1.03
0.97	{ 2.75E-02	'142778' ru	18-Jan	13:08	-1.51E-01	1.12
1.01	{ 1.89E-02	'142777' ru	18-Jan	13:23	-1.51E-01	1.16
0.77	{ 2.03E-02	'142776' ru	18-Jan	13:38	-1.51E-01	0.92
1.10	{ 2.01E-02	'132308' ru	18-Jan	13:53	-1.51E-01	1.25
-0.07	{ 1.72E-02	'979_125pj	18-Jan	14:08	-1.51E-01	0.08
1.09	{ 2.27E-02	'132200' ru	18-Jan	14:23	-1.51E-01	1.24
1.22	{ 2.48E-02	'142779' ru	18-Jan	14:38	-1.51E-01	1.37
1.00	{ 2.35E-02	'132327' ru	18-Jan	14:54	-1.51E-01	1.15
1.16	{ 2.45E-02	'142163' ru	18-Jan	15:09	-1.51E-01	1.31
1.10	{ 3.31E-02	'132212' ru	18-Jan	15:24	-1.51E-01	1.25
-0.11	{ 2.73E-02	'979_125pj	18-Jan	15:39	-1.51E-01	0.04
1.13	{ 2.76E-02	'132319' ru	18-Jan	15:54	-1.51E-01	1.28
1.79	{ 3.18E-02	'142775' ru	18-Jan	16:09	-1.51E-01	1.94
1.81	{ 2.92E-02	'132338' ru	18-Jan	16:24	-1.51E-01	1.96
0.70	{ 7.15E-02	'132523' ru	18-Jan	16:39	-1.51E-01	0.85
0.90	{ 3.20E-02	'132211-2'	18-Jan	16:54	-1.51E-01	1.05
-0.08	{ 1.97E-02	'979_125pj	18-Jan	17:09	-1.51E-01	0.07

0.01

1.06 { 1.73E-02 '142777-2'	18-Jan	17:25	-1.51E-01	1.21	0.05
-1.96E-01 2.64E-02 Proc_3112;	18-Jan	17:32	-1.51E-01	-0.05	