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Field Summary Report

Mortandad and Sandia Watershed (Chromium Investigation, MDA C, and General Surveillance Monitoring Groups) Quarterly Sampling Event 1, 2014 Interim Facility-Wide Groundwater Monitoring Plan

Other Field Activities from September 24- November 25, 2013

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EXECUTIVE SUMMARY

This report summarizes field activities completed by TerranearPMC, LLC in support of groundwater monitoring at Los Alamos National Laboratory from September 24-November 25, 2013, pursuant to the Interim Facility-Wide Groundwater Monitoring Plan for the 2014 Monitoring Year, October 2013-September 2014 (LANL 2013, 241962).

The Mortandad/Sandia and Watershed first quarter sampling activities were scheduled for November 11-November 25, 2013 and were completed on November 19, 2013. The MDA C Monitoring Group annual, semi-annual, and 2014 requirements were met during this event. The Chromium Investigation Monitoring Groups biennial, annual, semi-annual, quarterly, and 2014 requirements were met during this event. The Mortandad/Sandia General Surveillance Monitoring Group quarterly requirements were met during this event. Locations planned included 4 intermediate wells and 24 regional wells for a total of 28 sites planned. Full sample suites were collected at 3 intermediate wells and 22 regional wells. Sampling at one regional and one intermediate well was cancelled by the LANL Groundwater Project Manager. Sampling at one regional well was delayed due to access issues.

Modifications were made to the sampling requirements outlined in the Interim Plan at 3 sites, per request from the LANL Groundwater Project Manager. Additional samples were collected at R-61 S1, R-61 S2, and R-60. Additionally, CDBO-6, MCO-3, MCO-4B, MCO-6, and MCO-7 were scheduled for discharge permit sampling. MCO-4B, MCO-6, and MCO-7 were sampled; CDBO-6 and MCO-3 were not.

CONTENTS

1.0 INTRODUCTION Page 1
1.1 Background Page 1
1.2 Objectives Page 1

2.0 SCOPE OF WORK Page 1

3.0 FIELD IMPLEMENTATION Page 1
3.1 Methods and Procedures Page 2
3.2 Sampling Criteria Page 2

4.0 RESULTS Page 3
4.1 Interim Plan Activities Page 3
4.1.1 Well Sampling Observations Page 3
4.1.2 Deviations from Sampling Requirements Page 3
4.2 Modifications to the Interim Plan and Supplemental Activities Page 3

5.0 SUMMARY Page 4

6.0 REFERENCES Page 4

Tables

Table 4.1-1 Well Sampling Observations Page 5
Table 4.1-2 Sampling Requirements Deviations Page 8

Figures

Figure 2.0-1 Sampling locations in the MDA C Page 9
Figure 2.0-2 Sampling locations in the Chromium Investigation Monitoring Group Page 10
Figure 2.0-3 Sampling locations in the General Surveillance Monitoring Group Page 11

Appendices

Appendix A Samples Taken Table Page A-1
Appendix B Well Completion and Pump Information Page B-1
Appendix C Time-Series Purge Data Page C-1
Appendix D Field Parameter Summary Table Page D-1

Acronyms and Abbreviations:

CV	casing volume
DOE	Department of Energy (U.S.)
EP	Environmental Programs Directorate
FSR	Field Summary Report
ft msl	feet above mean sea level
ft BGS	feet below ground surface
ft BTOC	feet below top of outer casing
ft BTIC	feet below top of inner casing
ft BTOM	feet below top of manhole
gpm	gallons per minute
GTL	Groundwater Technical Lead
LANL	Los Alamos National Laboratory
LSD	land surface datum
MY	Monitoring Year
NMED	New Mexico Environment Department
NTU	nephelometric turbidity unit
PCB	polychlorinated biphenyl
Q1	Quarter 1 Sampling Event
Q2	Quarter 2 Sampling Event
Q3	Quarter 3 Sampling Event
Q4	Quarter 4 Sampling Event
Q5	Quarter 5 Sampling Event
QA	quality assurance
QC	quality control
RAD	radionuclide
SCLs	sample collection logs
SMO	LANL Sample Management Office
SOP	standard operating procedure
SOP-20032	Standard Operating Procedure for Ground Water Sampling
STR	LANL subcontract technical representative
SVOC	semi-volatile organic compound
TA	technical area
VOC	volatile organic compound

1.0 INTRODUCTION

This field summary report (FSR) details the field activities conducted by TerranearPMC, LLC in support of groundwater monitoring at Los Alamos National Laboratory (LANL) pursuant to the Interim Facility-Wide Groundwater Monitoring Plan for the 2014 Monitoring Year, October 2013- September 2014 (also referred to as the Interim Plan) (LANL 2013, 241962). Sampling under the Interim Plan is implemented by watershed or monitoring group on a quarterly, semiannual, or annual basis. The date range discussed in each FSR is bracketed by the end date of the previous watershed and the end date of the current watershed or start date of the following watershed. The date range for this reporting period is September 24- November 25, 2013.

1.1 Background

Historical and background information for the Chromium Investigation Monitoring Group is provided in section 3.0 of the Interim Plan (LANL 2013, 241962). Historical and background information for the MDA C Monitoring Group is provided in section 4.0 of the Interim Plan. Historical and background information for the General Surveillance Monitoring Group is provided in section 8.0 of the Interim Plan.

1.2 Objectives

The principal objective of the Mortandad/Sandia Watershed monitoring year 2014 (MY2014) quarter 1 (Q1) sampling campaign is to fulfill requirements specified in the Interim Plan (LANL 2013, 241962) and secondarily to support supplemental field activities, as needed. Sampling of all watersheds is conducted within a 21-day period, pursuant to the Interim Plan.

2.0 SCOPE OF WORK

All MY2014 Q1 field activities conducted in the Mortandad/Sandia Watershed are presented in this FSR. Sampling activities were scheduled for September 24-November 25, 2013 and were completed on November 19, 2013 (day 14). Details regarding watershed sampling field results, including any deviations from Interim Plan requirements, are provided in section 4.1.

Occasionally, it is necessary to modify the sampling requirements outlined in the Interim Plan for a specific site or complete supplemental field activities. These requests are made by the LANL Groundwater Technical Lead (GTL) or LANL Groundwater Project Manager. Modifications and supplemental activities are outlined in section 4.2.

Appendix A presents a table of samples taken during the field event; Appendix B summarizes monitoring locations and well completion information for wells within the watershed; Appendix C presents time-series field parameter data collected during well purging; Appendix D summarizes the final field parameters from the last four sampling events; and watershed sampling locations are shown in figures 2.0-1, 2.0-2, and 2.0-3.

3.0 FIELD IMPLEMENTATION

All field activities are conducted in accordance with procedures and methods listed in the Interim Plan.

3.1 Methods and Procedures

In the weeks prior to any field activities, samples are planned and sample collection logs (SCLs) are prepared pursuant to the analytical suites and sampling frequencies detailed in the Interim Plan. Special requests and modifications are discussed with sample team representatives, the GTL, and the LANL Subcontract Technical Representative (STR). Modifications are incorporated into the sampling schedule as needed.

Instruments used to measure field parameters are calibrated on a daily basis, prior to use. All wells are purged and monitored for water quality field parameters before sampling (see section 3.2 for details), with the exception of wells sampled using the Westbay MP System. Monitored field parameters include water level, discharge rate, temperature, pH, specific conductance, oxidation reduction potential, turbidity, and dissolved oxygen. Data are recorded on the Groundwater Sampling Log and logged electronically using the field instruments. Spring and baseflow samples are collected upon arrival at the sites and field parameters are measured at the time of sampling. Samples are prepared, bottled, and preserved according to instructions provided on SCLs. Samples are then relinquished to the LANL Sample Management Office (SMO) for shipment to analytical laboratories. Complete details of sampling protocols are available in the Standard Operating Procedure for Ground Water Sampling (SOP-20032, R2).

3.2 Sampling Criteria

SOP-20032 outlines specific criteria that must be met prior to sampling an alluvial, intermediate, or regional well (with the exception of wells sampled using the Westbay MP System) for both Interim Plan sampling activities and supplemental sampling activities. Per SOP-20032, exceptions may be made to sampling criteria either by a written work plan provided by the GTL prior to sampling or verbal communication with the GTL or STR as issues arise during the sampling event. Compliance with sampling criteria is outlined in table 4.1-1 and details about deviations are in section 4.1.2.

Sampling conducted after September 23, 2013 is pursuant to SOP-20032: Revision 2, which states two main criteria for sampling:

1. A minimum of 1 casing volume (CV) must have been removed from alluvial wells and a minimum of 3 CVs plus drop pipe must have been removed from intermediate and regional wells prior to sampling.

2. Field indicator parameters must have stabilized within their allowable ranges for at least three consecutive measurements taken a minimum of three or five minutes apart prior to sampling. Data manually recorded on the Groundwater Sampling Log are used to determine stability.

Additionally, if 3 CVs have been purged from alluvial wells or 6 CVs have been purged from intermediate or regional wells, proceed with sampling even if field indicator parameters did not stabilize. The STR should be notified if wells were sampled without stable indicator parameters.

4.0 RESULTS

A complete list of analytical suites sampled by location is presented in Appendix A. Analytical results for samples should be accessible through the Intellus New Mexico database within 60 days of sample collection. Time-series data for the field parameters for alluvial, intermediate, and regional monitoring wells are presented in Appendix C. A summary of the final field parameters from the last four sampling events is provided in Appendix D.

4.1 Interim Plan Activities

A total of 28 sites were planned during the Mortandad/Sandia and Watershed MY2014 Q1 sampling campaign conducted from November 5-November 19, 2013. This includes 4 intermediate wells and 24 regional wells. Full sample suites were collected at 3 intermediate wells and 22 regional wells. Sampling at one regional and one intermediate well was cancelled by the LANL Groundwater Project Manager. Sampling at one regional well was delayed due to access issues. The Samples Taken Table provides further detail (Appendix A).

4.1.1 Well Sampling Observations

Notable observations of well behavior, including deviations from sampling criteria outlined in SOP-20032 R.2, are summarized in table 4.1-1. This section addresses wells visited for routine, interim plan sampling and extra wells visited per request from the LANL Groundwater Project Manager. Wells sampled using the Westbay MP System are not discussed in the section as they are not subject to sampling criteria outlined in SOP-20032 R.2.

4.1.2 Deviations from Sampling Requirements

Three deviations were made from sampling requirements for the Mortandad/Sandia Watershed MY2014 Q1 sampling campaign. See table 4.1-2 for details.

4.1.3 Modifications to the Interim Plan and Supplemental Activities

Modifications were made to the sampling requirements outlined in the Interim Plan at 3 sites, per request from the LANL Groundwater Project Manager.

R-61 S1 was sampled per the work plan provided by the STR. Interim Plan samples were collected per the SOP. The purge was continued until 12 CVs plus drop pipe had been purged. Time-series samples were collected at 1, 3, 6, 9, and 12 CVs. See appendix A for details.

R-61 S2 was sampled per the work plan provided by the STR. Interim Plan samples were collected per the SOP. The purge was continued until 12 CVs plus drop pipe had been purged. Time-series samples were collected at 1, 3, 6, 9, and 12 CVs. See appendix A for details.

An additional sample for TPH-DRO analysis was collected at R-60 after 1 CV plus drop pipe had been purged.

CDBO-6, MCO-3, MCO-4B, MCO-6, and MCO-7 were scheduled for discharge permit sampling. CDBO-6 was dry and was not sampled. MCO-3 was destroyed in recent flooding and could not be sampled.

5.0 SUMMARY

The Mortandad/Sandia Watershed MY2014 Q1 (MDA C, Chromium Investigation, and Mortandad/Sandia General Surveillance Monitoring Groups) sampling event, as implemented under the Interim Plan, was completed on November 19, 2013 (day 14). Locations planned included 4 intermediate wells and 24 regional wells for a total of 28 sites planned. Full sample suites were collected at 3 intermediate wells and 22 regional wells. Sampling at one regional and one intermediate well was cancelled by the LANL Groundwater Project Manager. Sampling at one regional well was delayed due to access issues.

Modifications were made to the sampling requirements outlined in the Interim Plan at 3 sites, per request from the LANL Groundwater Project Manager. Additional samples were collected at R-61 S1, R-61 S2, and R-60. Additionally, CDBO-6, MCO-3, MCO-4B, MCO-6, and MCO-7 were scheduled for discharge permit sampling. MCO-4B, MCO-6, and MCO-7 were sampled; CDBO-6 was dry and MCO-3 was destroyed during recent flooding.

6.0 REFERENCES

LANL (Los Alamos National Laboratory) May 2013. "Interim Facility-Wide Groundwater Monitoring Plan for the 2014 Monitoring Year, October 2013 – September 2014," Los Alamos National Laboratory document LA-UR-13-23479, Los Alamos, New Mexico. (LANL 2013, 241962)

Table 4.1-1
Well Sampling Observations

Location	Minimum purge volume met?	Parameters stable for three consecutive 3 or 5 minute readings?	SOP requirements met prior to sampling?	Casing Volumes purged before sampling	Comments
Alluvial Wells					
CDBO-6	NA	NA	NA	NA	Dry
MCO-3	NA	NA	NA	NA	Dry
MCO-4B	Yes	Yes	Yes	1	None
MCO-6	Yes	Yes	Yes	1	None
MCO-7	Yes	Yes	Yes	1.25	Extra volume purged to allow turbidity to stabilize. Sediment settled on the bottom of the flow through cell early in the purge and had to be cleaned in order to get an accurate turbidity reading.
Regional and Intermediate Wells					
MCOI-5	Yes	Yes	Yes	3.2	An extra 0.2 CV was purged to allow dissolved oxygen to stabilize.
MCOI-6	Yes	Yes	Yes	3	Pump tripped off repeatedly while clearing the drop pipe.
R-1	Yes	Yes	Yes	3	None
R-13	Yes	Yes	Yes	3	None
R-15	Yes	Yes	Yes	3.9	An extra 0.9 CV was purged to allow dissolved oxygen to stabilize
R-28	NA	NA	NA	NA	Not sampled
R-42	Yes	Yes	Yes	3	Sampled using a temporary sampling system installed for LANL pump test. Calculated volumes and purge rate vary from past sampling events. LANL personnel were on-site to operate pump and collect additional samples.
R-44 S1	Yes	Yes	Yes	3	None
R-44 S2	Yes	Yes	Yes	3	None
R-45 S1	Yes	Yes	Yes	3	None
R-45 S2	Yes	Yes	Yes	3	None
R-50 S1	Yes	Yes	Yes	3.3	An extra 0.3 CV was purged to allow dissolved oxygen to stabilize.
R-50 S2	Yes	Yes	Yes	3	One extra parameter (4.5 gallons) was collected to allow dissolved oxygen to stabilize. Cleaning of the flow through cell was required because effervescence was strongly affecting dissolved oxygen. Well was purged at approximately 1.5 gallons per minute (gpm), per the work plan provided by the GTL.

Table 4.1-1, continued
Well Sampling Observations

Location	Minimum purge volume met?	Parameters stable for three consecutive 3 or 5 minute readings?	SOP requirements met prior to sampling?	Casing Volumes purged before sampling	Comments
Intermediate and Regional Wells					
R-61 S1	Yes	No	Yes	6.0	Dissolved oxygen did not stabilize; samples were collected at 6 CVs in accordance with the SOP.
R-61 S2	Yes	No	Yes	6.0	Dissolved oxygen did not stabilize; samples were collected at 6 CVs in accordance with the SOP.
R-62	Yes	Yes	Yes	3	The work plan for this well directed "Pump at 2 to 2.5 gpm or the maximum possible flow rate that maintains the water level above the top of the screen. Do not vary the pumping rate during the purge and sampling event, if possible." Flow was initially restricted to 1.7 gpm, however after 19 minutes of purging drop pipe water, the crew made the decision to further restrict the flow to 1.3 gpm. This was to insure that the water level would remain above the top of the screen without the need to vary the flow rate while purging the casing volume water. The initial water level was 5838.90 feet above mean sea level (ft msl) and after clearing the drop pipe, it had drawn down to 5831.14 ft msl. The final water level was 5828.66 ft msl, less than 2 feet above the top of the screen (5826.83 ft msl). A consistent flow rate was maintained throughout the remainder of the purge, and although the water level continued to drawdown, it stayed above the top of the screen. During early sampling events at this well the field crew experimented with a variety of flow rates and determined that the ideal flow rate to maintain the water level above the top of the screen while minimizing the effects of back-pressure on the pump is about 1.25 gpm.
SCI-1	Yes	No	Yes	6.0	Dissolved oxygen did not stabilize; samples were collected at 6 CVs in accordance with the SOP. Crew notes a higher DO than reported during past sampling events.
SCI-2	NA	NA	NA	NA	Not sampled
R-11	Yes	Yes	Yes	3	None
R-35a	Yes	Yes	Yes	3	None
R-35b	Yes	Yes	Yes	3	None
R-36	Yes	Yes	Yes	3	None
R-43 S1	Yes	Yes	Yes	3	None

Table 4.1-1, continued
Well Sampling Observations

Location	Minimum purge volume met?	Parameters stable for three consecutive 3 or 5 minute readings?	SOP requirements met prior to sampling?	Casing Volumes purged before sampling	Comments
Intermediate and Regional Wells					
R-43 S2	Yes	Yes	Yes	3	None
R-14 S1	Yes	Yes	Yes	3	None
R-46	Yes	Yes	Yes	3	None
R-60	Yes	Yes	Yes	3	None
R-34	NA	NA	NA	NA	Not sampled

Table 4.1-2
Sampling Requirements Deviations

Location	Deviation	Cause	Comment
R-28	No field or analytical data will be available for this location	Site visited cancelled by the LANL groundwater project manager	Chromium Interim Measures pumping test activities conflicted with sampling this site during this watershed event
SCI-2	No field or analytical data will be available for this location	Site visited cancelled by the LANL groundwater project manager	Chromium Interim Measures pumping test activities conflicted with sampling this site during this watershed event
R-34	Delayed field and analytical data will be available for this location	Site could not be visited during this date range due to closure of the San Ildefonso Pueblo for all of November, 2013	Site will be visited in December, 2013. See the Water/CdV/LA/Pueblo MY2014 Q1 Field Summary Report for details.

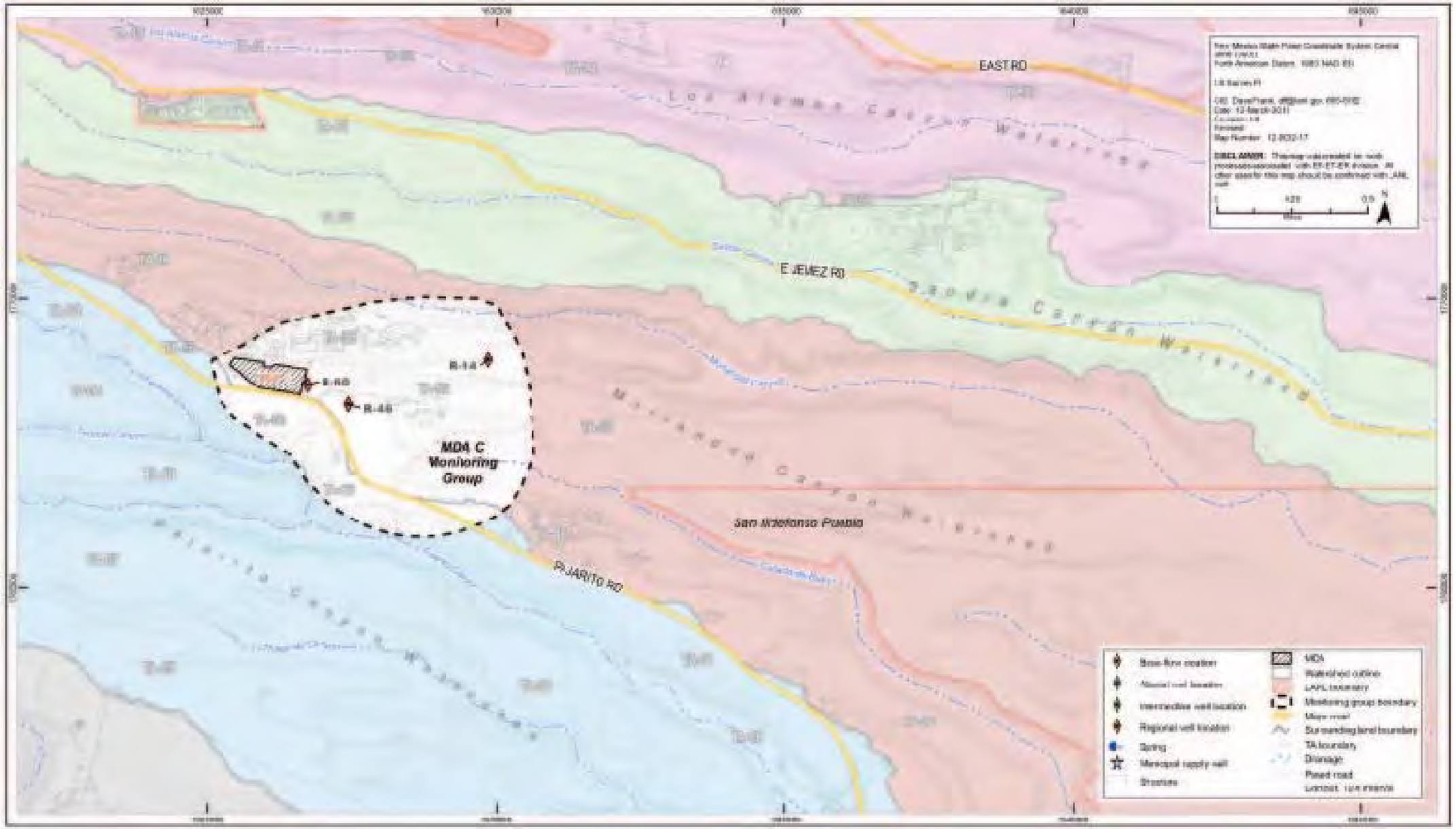

Figure 2.0-1. Sampling locations in the MDA C Monitoring Group.

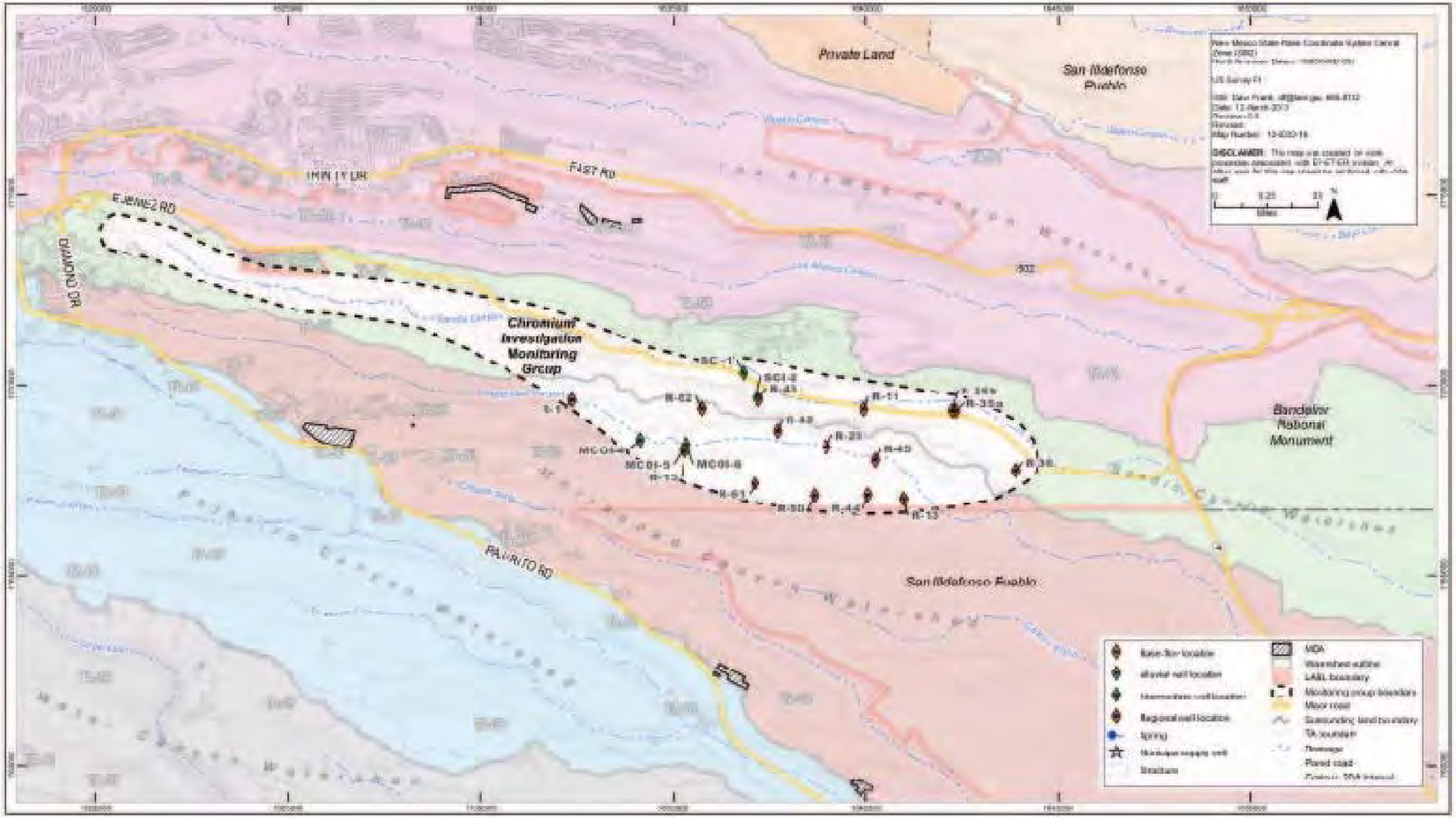

Figure 2.0-2. Sampling locations in the Chromium Investigation Monitoring Group.

Figure 2.0-3. Sampling locations in the General Surveillance Monitoring Group.

Appendix A

Samples Taken Table

Event IDs: 4455, 4457, 4459, 4460, 4464
Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGI (Intermediate Groundwater)	MCOI-5	CAMO-14-45743	WSP-8011-EDB_DBCP	INV	UF	11/8/2013	None
			MCOI-5	CAMO-14-45743	WSP-8260B-VOA	INV	UF	11/8/2013	
			MCOI-5	CAMO-14-45743	WSP-8270C-SVOA	INV	UF	11/8/2013	
			MCOI-5	CAMO-14-45743	WSP-8310-PAH	INV	UF	11/8/2013	
			MCOI-5	CAMO-14-45743	WSP-CN(T)	INV	UF	11/8/2013	
			MCOI-5	CAMO-14-45743	WSP-GrossA/B	INV	UF	11/8/2013	
			MCOI-5	CAMO-14-45743	WSP-H-3	INV	UF	11/8/2013	
			MCOI-5	CAMO-14-45743	WSP-LL-8081A-HCB	INV	UF	11/8/2013	
			MCOI-5	CAMO-14-45743	WSP-LL-8151A-PCP	INV	UF	11/8/2013	
			MCOI-5	CAMO-14-45743	WSP-LL-8260B	INV	UF	11/8/2013	
			MCOI-5	CAMO-14-45743	WSP-LL-8270C	INV	UF	11/8/2013	
			MCOI-5	CAMO-14-45743	WSP-RAD	INV	UF	11/8/2013	
			MCOI-5	CAMO-14-45743	WSP-TKN+TOC	INV	UF	11/8/2013	
			MCOI-5	CAMO-14-45730	WSP-8011-EDB_DBCP	FTB	UF	11/8/2013	
			MCOI-5	CAMO-14-45730	WSP-8260B-VOA	FTB	UF	11/8/2013	
			MCOI-5	CAMO-14-45730	WSP-LL-8260B	FTB	UF	11/8/2013	
			MCOI-5	CAMO-14-45759	WSP-All Metals	INV	F	11/8/2013	
			MCOI-5	CAMO-14-45759	WSP-GENINORG+PerChlorate	INV	F	11/8/2013	
			MCOI-5	CAMO-14-45759	WSP-NH3+NO3/NO2+PO4	INV	F	11/8/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGI (Intermediate Groundwater)	MCOI-6	CAMO-14-45744	WSP-8011-EDB_DBCP	INV	UF	11/7/2013	Sample collected 40' from running diesel generator
			MCOI-6	CAMO-14-45744	WSP-8260B-VOA	INV	UF	11/7/2013	
			MCOI-6	CAMO-14-45744	WSP-8270C-SVOA	INV	UF	11/7/2013	
			MCOI-6	CAMO-14-45744	WSP-8310-PAH	INV	UF	11/7/2013	
			MCOI-6	CAMO-14-45744	WSP-CN(T)	INV	UF	11/7/2013	
			MCOI-6	CAMO-14-45744	WSP-GrossA/B	INV	UF	11/7/2013	
			MCOI-6	CAMO-14-45744	WSP-H-3	INV	UF	11/7/2013	
			MCOI-6	CAMO-14-45744	WSP-LL-8081A-HCB	INV	UF	11/7/2013	
			MCOI-6	CAMO-14-45744	WSP-LL-8151A-PCP	INV	UF	11/7/2013	
			MCOI-6	CAMO-14-45744	WSP-LL-8260B	INV	UF	11/7/2013	
			MCOI-6	CAMO-14-45744	WSP-LL-8270C	INV	UF	11/7/2013	
			MCOI-6	CAMO-14-45744	WSP-RAD	INV	UF	11/7/2013	
			MCOI-6	CAMO-14-45744	WSP-TKN+TOC	INV	UF	11/7/2013	
			MCOI-6	CAMO-14-45731	WSP-8011-EDB_DBCP	FTB	UF	11/7/2013	
			MCOI-6	CAMO-14-45731	WSP-8260B-VOA	FTB	UF	11/7/2013	
			MCOI-6	CAMO-14-45731	WSP-LL-8260B	FTB	UF	11/7/2013	
			MCOI-6	CAMO-14-45760	WSP-All Metals	INV	F	11/7/2013	
			MCOI-6	CAMO-14-45760	WSP-CR52/53	INV	F	11/7/2013	
			MCOI-6	CAMO-14-45760	WSP-GENINORG+PerChlorate	INV	F	11/7/2013	
			MCOI-6	CAMO-14-45760	WSP-N15/O18-NO3	INV	F	11/7/2013	
			MCOI-6	CAMO-14-45760	WSP-NH3+NO3/NO2+PO4	INV	F	11/7/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464
Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-1	CAMO-14-45745	WSP-8011-EDB_DBCP	INV	UF	11/18/2013	Sample collected 20' from running diesel generator
			R-1	CAMO-14-45745	WSP-8260B-VOA	INV	UF	11/18/2013	
			R-1	CAMO-14-45745	WSP-8270C-SVOA	INV	UF	11/18/2013	
			R-1	CAMO-14-45745	WSP-8310-PAH	INV	UF	11/18/2013	
			R-1	CAMO-14-45745	WSP-CN(T)	INV	UF	11/18/2013	
			R-1	CAMO-14-45745	WSP-LL-8081A-HCB	INV	UF	11/18/2013	
			R-1	CAMO-14-45745	WSP-LL-8151A-PCP	INV	UF	11/18/2013	
			R-1	CAMO-14-45745	WSP-LL-8260B	INV	UF	11/18/2013	
			R-1	CAMO-14-45745	WSP-LL-8270C	INV	UF	11/18/2013	
			R-1	CAMO-14-45745	WSP-LL-H-3	INV	UF	11/18/2013	
			R-1	CAMO-14-45745	WSP-TKN+TOC	INV	UF	11/18/2013	
			R-1	CAMO-14-45732	WSP-8011-EDB_DBCP	FTB	UF	11/18/2013	
			R-1	CAMO-14-45732	WSP-8260B-VOA	FTB	UF	11/18/2013	
			R-1	CAMO-14-45732	WSP-LL-8260B	FTB	UF	11/18/2013	
			R-1	CAMO-14-45761	WSP-All Metals	INV	F	11/18/2013	
			R-1	CAMO-14-45761	WSP-GENINORG+PerChlorate	INV	F	11/18/2013	
			R-1	CAMO-14-45761	WSP-NH3+NO3/NO2+PO4	INV	F	11/18/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-13	CAMO-14-45746	WSP-CN(T)	INV	UF	11/8/2013	Sample collected 40' from running diesel generator
			R-13	CAMO-14-45746	WSP-LL-H-3	INV	UF	11/8/2013	
			R-13	CAMO-14-45746	WSP-TKN+TOC	INV	UF	11/8/2013	
			R-13	CAMO-14-45762	WSP-All Metals	INV	F	11/8/2013	
			R-13	CAMO-14-45762	WSP-GENINORG+PerChlorate	INV	F	11/8/2013	
			R-13	CAMO-14-45762	WSP-NH3+NO3/NO2+PO4	INV	F	11/8/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464
Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-15	CAMO-14-45747	WSP-8011-EDB_DBCP	INV	UF	11/7/2013	Sample collected 40' from running diesel generator
			R-15	CAMO-14-45747	WSP-8260B-VOA	INV	UF	11/7/2013	
			R-15	CAMO-14-45747	WSP-8270C-SVOA	INV	UF	11/7/2013	
			R-15	CAMO-14-45747	WSP-8310-PAH	INV	UF	11/7/2013	
			R-15	CAMO-14-45747	WSP-CN(T)	INV	UF	11/7/2013	
			R-15	CAMO-14-45747	WSP-GrossA/B	INV	UF	11/7/2013	
			R-15	CAMO-14-45747	WSP-LL-8081A-HCB	INV	UF	11/7/2013	
			R-15	CAMO-14-45747	WSP-LL-8151A-PCP	INV	UF	11/7/2013	
			R-15	CAMO-14-45747	WSP-LL-8260B	INV	UF	11/7/2013	
			R-15	CAMO-14-45747	WSP-LL-8270C	INV	UF	11/7/2013	
			R-15	CAMO-14-45747	WSP-LL-H-3	INV	UF	11/7/2013	
			R-15	CAMO-14-45747	WSP-RAD	INV	UF	11/7/2013	
			R-15	CAMO-14-45747	WSP-TKN+TOC	INV	UF	11/7/2013	
			R-15	CAMO-14-45725	WSP-8011-EDB_DBCP	FD	UF	11/7/2013	
			R-15	CAMO-14-45725	WSP-8260B-VOA	FD	UF	11/7/2013	
			R-15	CAMO-14-45725	WSP-8270C-SVOA	FD	UF	11/7/2013	
			R-15	CAMO-14-45725	WSP-8310-PAH	FD	UF	11/7/2013	
			R-15	CAMO-14-45725	WSP-CN(T)	FD	UF	11/7/2013	
			R-15	CAMO-14-45725	WSP-GrossA/B	FD	UF	11/7/2013	
			R-15	CAMO-14-45725	WSP-LL-8081A-HCB	FD	UF	11/7/2013	
			R-15	CAMO-14-45725	WSP-LL-8151A-PCP	FD	UF	11/7/2013	
			R-15	CAMO-14-45725	WSP-LL-8260B	FD	UF	11/7/2013	
			R-15	CAMO-14-45725	WSP-LL-8270C	FD	UF	11/7/2013	
			R-15	CAMO-14-45725	WSP-LL-H-3	FD	UF	11/7/2013	
			R-15	CAMO-14-45725	WSP-RAD	FD	UF	11/7/2013	
			R-15	CAMO-14-45725	WSP-TKN+TOC	FD	UF	11/7/2013	
			R-15	CAMO-14-45722	WSP-8011-EDB_DBCP	FB	UF	11/7/2013	
			R-15	CAMO-14-45722	WSP-8082-PCB	FB	UF	11/7/2013	
			R-15	CAMO-14-45722	WSP-8260B-VOA	FB	UF	11/7/2013	
			R-15	CAMO-14-45722	WSP-8270C-SVOA	FB	UF	11/7/2013	
			R-15	CAMO-14-45722	WSP-8290-D/F	FB	UF	11/7/2013	
			R-15	CAMO-14-45722	WSP-8310-PAH	FB	UF	11/7/2013	
			R-15	CAMO-14-45722	WSP-LL-8081A-HCB	FB	UF	11/7/2013	
			R-15	CAMO-14-45722	WSP-LL-8151A-PCP	FB	UF	11/7/2013	
			R-15	CAMO-14-45722	WSP-LL-8260B	FB	UF	11/7/2013	
			R-15	CAMO-14-45722	WSP-LL-8270C	FB	UF	11/7/2013	
			R-15	CAMO-14-45733	WSP-8011-EDB_DBCP	FTB	UF	11/7/2013	
			R-15	CAMO-14-45733	WSP-8260B-VOA	FTB	UF	11/7/2013	
			R-15	CAMO-14-45733	WSP-LL-8260B	FTB	UF	11/7/2013	
			R-15	CAMO-14-45763	WSP-All Metals	INV	F	11/7/2013	
			R-15	CAMO-14-45763	WSP-GENINORG+PerChlorate	INV	F	11/7/2013	
			R-15	CAMO-14-45763	WSP-NH3+NO3/NO2+PO4	INV	F	11/7/2013	
			R-15	CAMO-14-45728	WSP-All Metals	FD	F	11/7/2013	
			R-15	CAMO-14-45728	WSP-GENINORG+PerChlorate	FD	F	11/7/2013	
			R-15	CAMO-14-45728	WSP-NH3+NO3/NO2+PO4	FD	F	11/7/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464

Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	~~R-28~~	~~CAMO-14-45748~~	~~WSP-CN(T)~~	~~INV~~	~~UF~~	Not Collected; CPL	None
			~~R-28~~	~~CAMO-14-45748~~	~~WSP-H-3~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~R-28~~	~~CAMO-14-45748~~	~~WSP-TKN+TOC~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~R-28~~	~~CAMO-14-45764~~	~~WSP-All Metals~~	~~INV~~	~~F~~	Not Collected; CPL	
			~~R-28~~	~~CAMO-14-45764~~	~~WSP-CR52/53~~	~~INV~~	~~F~~	Not Collected; CPL	
			~~R-28~~	~~CAMO-14-45764~~	~~WSP-GENINORG+PerChlorate~~	~~INV~~	~~F~~	Not Collected; CPL	
			~~R-28~~	~~CAMO-14-45764~~	~~WSP-N15/O18-NO3~~	~~INV~~	~~F~~	Not Collected; CPL	
			~~R-28~~	~~CAMO-14-45764~~	~~WSP-NH3+NO3/NO2+PO4~~	~~INV~~	~~F~~	Not Collected; CPL	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-42	CAMO-14-45749	WSP-8011-EDB_DBCP	INV	UF	11/7/2013	Sample collected 15' from running diesel generator
			R-42	CAMO-14-45749	WSP-8260B-VOA	INV	UF	11/7/2013	
			R-42	CAMO-14-45749	WSP-8270C-SVOA	INV	UF	11/7/2013	
			R-42	CAMO-14-45749	WSP-8310-PAH	INV	UF	11/7/2013	
			R-42	CAMO-14-45749	WSP-CN(T)	INV	UF	11/7/2013	
			R-42	CAMO-14-45749	WSP-H-3	INV	UF	11/7/2013	
			R-42	CAMO-14-45749	WSP-LL-8081A-HCB	INV	UF	11/7/2013	
			R-42	CAMO-14-45749	WSP-LL-8151A-PCP	INV	UF	11/7/2013	
			R-42	CAMO-14-45749	WSP-LL-8260B	INV	UF	11/7/2013	
			R-42	CAMO-14-45749	WSP-LL-8270C	INV	UF	11/7/2013	
			R-42	CAMO-14-45749	WSP-TKN+TOC	INV	UF	11/7/2013	
			R-42	CAMO-14-45734	WSP-8011-EDB_DBCP	FTB	UF	11/7/2013	
			R-42	CAMO-14-45734	WSP-8260B-VOA	FTB	UF	11/7/2013	
			R-42	CAMO-14-45734	WSP-LL-8260B	FTB	UF	11/7/2013	
			R-42	CAMO-14-45765	WSP-All Metals	INV	F	11/7/2013	
			R-42	CAMO-14-45765	WSP-CR52/53	INV	F	11/7/2013	
			R-42	CAMO-14-45765	WSP-GENINORG+PerChlorate	INV	F	11/7/2013	
			R-42	CAMO-14-45765	WSP-N15/O18-NO3	INV	F	11/7/2013	
			R-42	CAMO-14-45765	WSP-NH3+NO3/NO2+PO4	INV	F	11/7/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-44 S1	CAMO-14-45750	WSP-8011-EDB_DBCP	INV	UF	11/6/2013	Sample collected 50' from running diesel generator
			R-44 S1	CAMO-14-45750	WSP-8260B-VOA	INV	UF	11/6/2013	
			R-44 S1	CAMO-14-45750	WSP-8270C-SVOA	INV	UF	11/6/2013	
			R-44 S1	CAMO-14-45750	WSP-8310-PAH	INV	UF	11/6/2013	
			R-44 S1	CAMO-14-45750	WSP-CN(T)	INV	UF	11/6/2013	
			R-44 S1	CAMO-14-45750	WSP-LL-8081A-HCB	INV	UF	11/6/2013	
			R-44 S1	CAMO-14-45750	WSP-LL-8151A-PCP	INV	UF	11/6/2013	
			R-44 S1	CAMO-14-45750	WSP-LL-8260B	INV	UF	11/6/2013	
			R-44 S1	CAMO-14-45750	WSP-LL-8270C	INV	UF	11/6/2013	
			R-44 S1	CAMO-14-45750	WSP-LL-H-3	INV	UF	11/6/2013	
			R-44 S1	CAMO-14-45750	WSP-TKN+TOC	INV	UF	11/6/2013	
			R-44 S1	CAMO-14-45735	WSP-8011-EDB_DBCP	FTB	UF	11/6/2013	
			R-44 S1	CAMO-14-45735	WSP-8260B-VOA	FTB	UF	11/6/2013	
			R-44 S1	CAMO-14-45735	WSP-LL-8260B	FTB	UF	11/6/2013	
			R-44 S1	CAMO-14-45766	WSP-All Metals	INV	F	11/6/2013	
			R-44 S1	CAMO-14-45766	WSP-GENINORG+PerChlorate	INV	F	11/6/2013	
			R-44 S1	CAMO-14-45766	WSP-NH3+NO3/NO2+PO4	INV	F	11/6/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464
Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-44 S2	CAMO-14-45751	WSP-8011-EDB_DBCP	INV	UF	11/6/2013	Sample collected 50' from running diesel generator
			R-44 S2	CAMO-14-45751	WSP-8260B-VOA	INV	UF	11/6/2013	
			R-44 S2	CAMO-14-45751	WSP-8270C-SVOA	INV	UF	11/6/2013	
			R-44 S2	CAMO-14-45751	WSP-8310-PAH	INV	UF	11/6/2013	
			R-44 S2	CAMO-14-45751	WSP-CN(T)	INV	UF	11/6/2013	
			R-44 S2	CAMO-14-45751	WSP-LL-8081A-HCB	INV	UF	11/6/2013	
			R-44 S2	CAMO-14-45751	WSP-LL-8151A-PCP	INV	UF	11/6/2013	
			R-44 S2	CAMO-14-45751	WSP-LL-8260B	INV	UF	11/6/2013	
			R-44 S2	CAMO-14-45751	WSP-LL-8270C	INV	UF	11/6/2013	
			R-44 S2	CAMO-14-45751	WSP-LL-H-3	INV	UF	11/6/2013	
			R-44 S2	CAMO-14-45751	WSP-TKN+TOC	INV	UF	11/6/2013	
			R-44 S2	CAMO-14-45736	WSP-8011-EDB_DBCP	FTB	UF	11/6/2013	
			R-44 S2	CAMO-14-45736	WSP-8260B-VOA	FTB	UF	11/6/2013	
			R-44 S2	CAMO-14-45736	WSP-LL-8260B	FTB	UF	11/6/2013	
			R-44 S2	CAMO-14-45767	WSP-All Metals	INV	F	11/6/2013	
			R-44 S2	CAMO-14-45767	WSP-GENINORG+PerChlorate	INV	F	11/6/2013	
			R-44 S2	CAMO-14-45767	WSP-NH3+NO3/NO2+PO4	INV	F	11/6/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-45 S1	CAMO-14-45752	WSP-8011-EDB_DBCP	INV	UF	11/6/2013	Sample collected 50' from running diesel generator
			R-45 S1	CAMO-14-45752	WSP-8260B-VOA	INV	UF	11/6/2013	
			R-45 S1	CAMO-14-45752	WSP-8270C-SVOA	INV	UF	11/6/2013	
			R-45 S1	CAMO-14-45752	WSP-8310-PAH	INV	UF	11/6/2013	
			R-45 S1	CAMO-14-45752	WSP-CN(T)	INV	UF	11/6/2013	
			R-45 S1	CAMO-14-45752	WSP-LL-8081A-HCB	INV	UF	11/6/2013	
			R-45 S1	CAMO-14-45752	WSP-LL-8151A-PCP	INV	UF	11/6/2013	
			R-45 S1	CAMO-14-45752	WSP-LL-8260B	INV	UF	11/6/2013	
			R-45 S1	CAMO-14-45752	WSP-LL-8270C	INV	UF	11/6/2013	
			R-45 S1	CAMO-14-45752	WSP-LL-H-3	INV	UF	11/6/2013	
			R-45 S1	CAMO-14-45752	WSP-TKN+TOC	INV	UF	11/6/2013	
			R-45 S1	CAMO-14-45737	WSP-8011-EDB_DBCP	FTB	UF	11/6/2013	
			R-45 S1	CAMO-14-45737	WSP-8260B-VOA	FTB	UF	11/6/2013	
			R-45 S1	CAMO-14-45737	WSP-LL-8260B	FTB	UF	11/6/2013	
			R-45 S1	CAMO-14-45768	WSP-All Metals	INV	F	11/6/2013	
			R-45 S1	CAMO-14-45768	WSP-CR52/53	INV	F	11/6/2013	
			R-45 S1	CAMO-14-45768	WSP-GENINORG+PerChlorate	INV	F	11/6/2013	
			R-45 S1	CAMO-14-45768	WSP-N15/O18-NO3	INV	F	11/6/2013	
			R-45 S1	CAMO-14-45768	WSP-NH3+NO3/NO2+PO4	INV	F	11/6/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464
Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-45 S2	CAMO-14-45753	WSP-8011-EDB_DBCP	INV	UF	11/6/2013	Sample collected 50' from running diesel generator
			R-45 S2	CAMO-14-45753	WSP-8260B-VOA	INV	UF	11/6/2013	
			R-45 S2	CAMO-14-45753	WSP-8270C-SVOA	INV	UF	11/6/2013	
			R-45 S2	CAMO-14-45753	WSP-8310-PAH	INV	UF	11/6/2013	
			R-45 S2	CAMO-14-45753	WSP-CN(T)	INV	UF	11/6/2013	
			R-45 S2	CAMO-14-45753	WSP-LL-8081A-HCB	INV	UF	11/6/2013	
			R-45 S2	CAMO-14-45753	WSP-LL-8151A-PCP	INV	UF	11/6/2013	
			R-45 S2	CAMO-14-45753	WSP-LL-8260B	INV	UF	11/6/2013	
			R-45 S2	CAMO-14-45753	WSP-LL-8270C	INV	UF	11/6/2013	
			R-45 S2	CAMO-14-45753	WSP-LL-H-3	INV	UF	11/6/2013	
			R-45 S2	CAMO-14-45753	WSP-TKN+TOC	INV	UF	11/6/2013	
			R-45 S2	CAMO-14-45738	WSP-8011-EDB_DBCP	FTB	UF	11/6/2013	
			R-45 S2	CAMO-14-45738	WSP-8260B-VOA	FTB	UF	11/6/2013	
			R-45 S2	CAMO-14-45738	WSP-LL-8260B	FTB	UF	11/6/2013	
			R-45 S2	CAMO-14-45769	WSP-All Metals	INV	F	11/6/2013	
			R-45 S2	CAMO-14-45769	WSP-CR52/53	INV	F	11/6/2013	
			R-45 S2	CAMO-14-45769	WSP-GENINORG+PerChlorate	INV	F	11/6/2013	
			R-45 S2	CAMO-14-45769	WSP-N15/O18-NO3	INV	F	11/6/2013	
			R-45 S2	CAMO-14-45769	WSP-NH3+NO3/NO2+PO4	INV	F	11/6/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-50 S1	CAMO-14-45754	WSP-8011-EDB_DBCP	INV	UF	11/12/2013	Sample collected 50' from running diesel generator
			R-50 S1	CAMO-14-45754	WSP-8260B-VOA	INV	UF	11/12/2013	
			R-50 S1	CAMO-14-45754	WSP-8270C-SVOA	INV	UF	11/12/2013	
			R-50 S1	CAMO-14-45754	WSP-8310-PAH	INV	UF	11/12/2013	
			R-50 S1	CAMO-14-45754	WSP-CN(T)	INV	UF	11/12/2013	
			R-50 S1	CAMO-14-45754	WSP-LL-8081A-HCB	INV	UF	11/12/2013	
			R-50 S1	CAMO-14-45754	WSP-LL-8151A-PCP	INV	UF	11/12/2013	
			R-50 S1	CAMO-14-45754	WSP-LL-8260B	INV	UF	11/12/2013	
			R-50 S1	CAMO-14-45754	WSP-LL-8270C	INV	UF	11/12/2013	
			R-50 S1	CAMO-14-45754	WSP-LL-H-3	INV	UF	11/12/2013	
			R-50 S1	CAMO-14-45754	WSP-TKN+TOC	INV	UF	11/12/2013	
			R-50 S1	CAMO-14-45739	WSP-8011-EDB_DBCP	FTB	UF	11/12/2013	
			R-50 S1	CAMO-14-45739	WSP-8260B-VOA	FTB	UF	11/12/2013	
			R-50 S1	CAMO-14-45739	WSP-LL-8260B	FTB	UF	11/12/2013	
			R-50 S1	CAMO-14-45770	WSP-All Metals	INV	F	11/12/2013	
			R-50 S1	CAMO-14-45770	WSP-CR52/53	INV	F	11/12/2013	
			R-50 S1	CAMO-14-45770	WSP-GENINORG+PerChlorate	INV	F	11/12/2013	
			R-50 S1	CAMO-14-45770	WSP-NH3+NO3/NO2+PO4	INV	F	11/12/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464

Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-50 S2	CAMO-14-45755	WSP-8011-EDB_DBCP	INV	UF	11/12/2013	Sample collected 50' from running diesel generator
			R-50 S2	CAMO-14-45755	WSP-8310-PAH	INV	UF	11/12/2013	
			R-50 S2	CAMO-14-45755	WSP-CN(T)	INV	UF	11/12/2013	
			R-50 S2	CAMO-14-45755	WSP-LL-8081A-HCB	INV	UF	11/12/2013	
			R-50 S2	CAMO-14-45755	WSP-LL-8151A-PCP	INV	UF	11/12/2013	
			R-50 S2	CAMO-14-45755	WSP-LL-8260B	INV	UF	11/12/2013	
			R-50 S2	CAMO-14-45755	WSP-LL-8270C	INV	UF	11/12/2013	
			R-50 S2	CAMO-14-45755	WSP-LL-H-3	INV	UF	11/12/2013	
			R-50 S2	CAMO-14-45755	WSP-TKN+TOC	INV	UF	11/12/2013	
			R-50 S2	CAMO-14-45898	WSP-8011-EDB_DBCP	FTB	UF	11/12/2013	
			R-50 S2	CAMO-14-45898	WSP-LL-8260B	FTB	UF	11/12/2013	
			R-50 S2	CAMO-14-45771	WSP-All Metals	INV	F	11/12/2013	
			R-50 S2	CAMO-14-45771	WSP-CR52/53	INV	F	11/12/2013	
			R-50 S2	CAMO-14-45771	WSP-GENINORG+PerChlorate	INV	F	11/12/2013	
			R-50 S2	CAMO-14-45771	WSP-NH3+NO3/NO2+PO4	INV	F	11/12/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464
Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-61 S1	CAMO-14-45756	WSP-8011-EDB_DBCP	INV	UF	11/15/2013	Sample collected 50' from running diesel generator
			R-61 S1	CAMO-14-45756	WSP-8082-PCB	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-8260B-VOA	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-8270C-SVOA	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-8290-D/F	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-8310-PAH	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-8321A-NMED HEXP	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-CN(T)	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-GrossA/B	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-LL-8081A-HCB	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-LL-8151A-PCP	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-LL-8260B	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-LL-8270C	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-LL-H-3	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-RAD	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45756	WSP-TKN+TOC	INV	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-8011-EDB_DBCP	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-8082-PCB	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-8260B-VOA	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-8270C-SVOA	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-8290-D/F	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-8310-PAH	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-8321A-NMED HEXP	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-CN(T)	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-GrossA/B	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-LL-8081A-HCB	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-LL-8151A-PCP	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-LL-8260B	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-LL-8270C	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-LL-H-3	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-RAD	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45726	WSP-TKN+TOC	FD	UF	11/15/2013	
			R-61 S1	CAMO-14-45723	WSP-8011-EDB_DBCP	FB	UF	11/15/2013	
			R-61 S1	CAMO-14-45723	WSP-8082-PCB	FB	UF	11/15/2013	
			R-61 S1	CAMO-14-45723	WSP-8260B-VOA	FB	UF	11/15/2013	
			R-61 S1	CAMO-14-45723	WSP-8270C-SVOA	FB	UF	11/15/2013	
			R-61 S1	CAMO-14-45723	WSP-8290-D/F	FB	UF	11/15/2013	
			R-61 S1	CAMO-14-45723	WSP-8310-PAH	FB	UF	11/15/2013	
			R-61 S1	CAMO-14-45723	WSP-LL-8081A-HCB	FB	UF	11/15/2013	
			R-61 S1	CAMO-14-45723	WSP-LL-8151A-PCP	FB	UF	11/15/2013	
			R-61 S1	CAMO-14-45723	WSP-LL-8260B	FB	UF	11/15/2013	
			R-61 S1	CAMO-14-45723	WSP-LL-8270C	FB	UF	11/15/2013	
			R-61 S1	CAMO-14-45740	WSP-8011-EDB_DBCP	FTB	UF	11/15/2013	
			R-61 S1	CAMO-14-45740	WSP-8260B-VOA	FTB	UF	11/15/2013	
			R-61 S1	CAMO-14-45740	WSP-LL-8260B	FTB	UF	11/15/2013	
			R-61 S1	CAMO-14-45772	WSP-All Metals	INV	F	11/15/2013	
			R-61 S1	CAMO-14-45772	WSP-CR52/53	INV	F	11/15/2013	
			R-61 S1	CAMO-14-45772	WSP-GENINORG+PerChlorate	INV	F	11/15/2013	
			R-61 S1	CAMO-14-45772	WSP-N15/O18-NO3	INV	F	11/15/2013	
			R-61 S1	CAMO-14-45772	WSP-NH3+NO3/NO2+PO4	INV	F	11/15/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464
Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-61 S1	CAMO-14-45729	WSP-All Metals	FD	F	11/15/2013	Sample collected 50' from running diesel generator
			R-61 S1	CAMO-14-45729	WSP-CR52/53	FD	F	11/15/2013	
			R-61 S1	CAMO-14-45729	WSP-GENINORG+PerChlorate	FD	F	11/15/2013	
			R-61 S1	CAMO-14-45729	WSP-N15/O18-NO3	FD	F	11/15/2013	
			R-61 S1	CAMO-14-45729	WSP-NH3+NO3/NO2+PO4	FD	F	11/15/2013	
Chromium Monitoring - Mortandad Canyon	W (Water)	WGR (Regional Groundwater)	R-61 S1	CAMO-14-45955	WSP-DRO	TEST	UF	11/15/2013	Sample collected at 1CV+DP; Sample collected 50' from running diesel generator
			R-61 S1	CAMO-14-45956	WSP-EES6-ALK	TEST	UF	11/15/2013	Sample collected at 3CV; Sample collected 50' from running diesel generator
			R-61 S1	CAMO-14-45956	WSP-EES6-TOC	TEST	UF	11/15/2013	
			R-61 S1	CAMO-14-45966	WSP-EES6-ANIONS	TEST	F	11/15/2013	
			R-61 S1	CAMO-14-45966	WSP-EES6-MET	TEST	F	11/15/2013	
			R-61 S1	CAMO-14-45957	WSP-EES6-ALK	TEST	UF	11/15/2013	Sample collected at 6CV; Sample collected 50' from running diesel generator
			R-61 S1	CAMO-14-45957	WSP-EES6-TOC	TEST	UF	11/15/2013	
			R-61 S1	CAMO-14-45967	WSP-EES6-ANIONS	TEST	F	11/15/2013	
			R-61 S1	CAMO-14-45967	WSP-EES6-MET	TEST	F	11/15/2013	
			R-61 S1	CAMO-14-45958	WSP-EES6-ALK	TEST	UF	11/15/2013	Sample collected at 9CV; Sample collected 50' from running diesel generator
			R-61 S1	CAMO-14-45958	WSP-EES6-TOC	TEST	UF	11/15/2013	
			R-61 S1	CAMO-14-45968	WSP-EES6-ANIONS	TEST	F	11/15/2013	
			R-61 S1	CAMO-14-45968	WSP-EES6-MET	TEST	F	11/15/2013	
			R-61 S1	CAMO-14-45959	WSP-EES6-ALK	TEST	UF	11/15/2013	Sample collected at 12CV; Sample collected 50' from running diesel generator
			R-61 S1	CAMO-14-45959	WSP-EES6-TOC	TEST	UF	11/15/2013	
			R-61 S1	CAMO-14-45969	WSP-EES6-ANIONS	TEST	F	11/15/2013	
			R-61 S1	CAMO-14-45969	WSP-EES6-MET	TEST	F	11/15/2013	
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-61 S2	CAMO-14-45757	WSP-8011-EDB_DBCP	INV	UF	11/14/2013	Sample collected 40' from running diesel generator
			R-61 S2	CAMO-14-45757	WSP-8082-PCB	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-8260B-VOA	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-8270C-SVOA	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-8290-D/F	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-8310-PAH	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-8321A-NMED HEXP	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-CN(T)	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-GrossA/B	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-LL-8081A-HCB	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-LL-8151A-PCP	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-LL-8260B	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-LL-8270C	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-LL-H-3	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-RAD	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45757	WSP-TKN+TOC	INV	UF	11/14/2013	
			R-61 S2	CAMO-14-45742	WSP-8011-EDB_DBCP	FTB	UF	11/14/2013	
			R-61 S2	CAMO-14-45742	WSP-8260B-VOA	FTB	UF	11/14/2013	
			R-61 S2	CAMO-14-45742	WSP-LL-8260B	FTB	UF	11/14/2013	
			R-61 S2	CAMO-14-45773	WSP-All Metals	INV	F	11/14/2013	
			R-61 S2	CAMO-14-45773	WSP-CR52/53	INV	F	11/14/2013	
			R-61 S2	CAMO-14-45773	WSP-GENINORG+PerChlorate	INV	F	11/14/2013	
			R-61 S2	CAMO-14-45773	WSP-N15/O18-NO3	INV	F	11/14/2013	
			R-61 S2	CAMO-14-45773	WSP-NH3+NO3/NO2+PO4	INV	F	11/14/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464

Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Mortandad Canyon	W (Water)	WGR (Regional Groundwater)	R-61 S2	CAMO-14-45960	WSP-DRO	TEST	UF	11/14/2013	Sample collected at 1CV+DP; Sample collected 40' from running diesel generator
			R-61 S2	CAMO-14-45961	WSP-EES6-ALK	TEST	UF	11/14/2013	Sample collected at 3CV; Sample collected 40' from running diesel generator
			R-61 S2	CAMO-14-45961	WSP-EES6-TOC	TEST	UF	11/14/2013	
			R-61 S2	CAMO-14-45971	WSP-EES6-ANIONS	TEST	F	11/14/2013	
			R-61 S2	CAMO-14-45971	WSP-EES6-MET	TEST	F	11/14/2013	
			R-61 S2	CAMO-14-45962	WSP-EES6-ALK	TEST	UF	11/14/2013	Sample collected at 6CV; Sample collected 40' from running diesel generator
			R-61 S2	CAMO-14-45962	WSP-EES6-TOC	TEST	UF	11/14/2013	
			R-61 S2	CAMO-14-45972	WSP-EES6-ANIONS	TEST	F	11/14/2013	
			R-61 S2	CAMO-14-45972	WSP-EES6-MET	TEST	F	11/14/2013	
			R-61 S2	CAMO-14-45963	WSP-EES6-ALK	TEST	UF	11/14/2013	Sample collected at 9CV; Sample collected 40' from running diesel generator
			R-61 S2	CAMO-14-45963	WSP-EES6-TOC	TEST	UF	11/14/2013	
			R-61 S2	CAMO-14-45973	WSP-EES6-ANIONS	TEST	F	11/14/2013	
			R-61 S2	CAMO-14-45973	WSP-EES6-MET	TEST	F	11/14/2013	
			R-61 S2	CAMO-14-45964	WSP-EES6-ALK	TEST	UF	11/14/2013	Sample collected at 12CV; Sample collected 40' from running diesel generator
			R-61 S2	CAMO-14-45964	WSP-EES6-TOC	TEST	UF	11/14/2013	
			R-61 S2	CAMO-14-45974	WSP-EES6-ANIONS	TEST	F	11/14/2013	
			R-61 S2	CAMO-14-45974	WSP-EES6-MET	TEST	F	11/14/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464
Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-62	CAMO-14-45758	WSP-8011-EDB_DBCP	INV	UF	11/12/2013	Sample collected 50' from running diesel generator
			R-62	CAMO-14-45758	WSP-8082-PCB	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-8260B-VOA	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-8270C-SVOA	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-8290-D/F	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-8310-PAH	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-8321A-NMED HEXP	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-CN(T)	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-GrossA/B	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-LL-8081A-HCB	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-LL-8151A-PCP	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-LL-8260B	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-LL-8270C	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-LL-H-3	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-RAD	INV	UF	11/12/2013	
			R-62	CAMO-14-45758	WSP-TKN+TOC	INV	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-8011-EDB_DBCP	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-8082-PCB	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-8260B-VOA	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-8270C-SVOA	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-8290-D/F	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-8310-PAH	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-8321A-NMED HEXP	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-CN(T)	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-GrossA/B	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-LL-8081A-HCB	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-LL-8151A-PCP	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-LL-8260B	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-LL-8270C	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-LL-H-3	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-RAD	FD	UF	11/12/2013	
			R-62	CAMO-14-45724	WSP-TKN+TOC	FD	UF	11/12/2013	
			R-62	CAMO-14-45721	WSP-8011-EDB_DBCP	FB	UF	11/12/2013	
			R-62	CAMO-14-45721	WSP-8082-PCB	FB	UF	11/12/2013	
			R-62	CAMO-14-45721	WSP-8260B-VOA	FB	UF	11/12/2013	
			R-62	CAMO-14-45721	WSP-8270C-SVOA	FB	UF	11/12/2013	
			R-62	CAMO-14-45721	WSP-8290-D/F	FB	UF	11/12/2013	
			R-62	CAMO-14-45721	WSP-8310-PAH	FB	UF	11/12/2013	
			R-62	CAMO-14-45721	WSP-LL-8081A-HCB	FB	UF	11/12/2013	
			R-62	CAMO-14-45721	WSP-LL-8151A-PCP	FB	UF	11/12/2013	
			R-62	CAMO-14-45721	WSP-LL-8260B	FB	UF	11/12/2013	
			R-62	CAMO-14-45721	WSP-LL-8270C	FB	UF	11/12/2013	
			R-62	CAMO-14-45741	WSP-8011-EDB_DBCP	FTB	UF	11/12/2013	
			R-62	CAMO-14-45741	WSP-8260B-VOA	FTB	UF	11/12/2013	
			R-62	CAMO-14-45741	WSP-LL-8260B	FTB	UF	11/12/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464
Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-62	CAMO-14-45720	WSP-8011-EDB_DBCP	PEB	UF	11/12/2013	Sample collected 50' from running diesel generator
			R-62	CAMO-14-45720	WSP-8082-PCB	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-8260B-VOA	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-8270C-SVOA	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-8290-D/F	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-8310-PAH	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-8321A-NMED HEXP	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-All Metals	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-CN(T)	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-GENINORG+PerChlorate	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-GrossA/B	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-H-3	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-LL-8081A-HCB	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-LL-8151A-PCP	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-LL-8260B	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-LL-8270C	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-LL-H-3	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-NH3+NO3/NO2+PO4	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-RAD	PEB	UF	11/12/2013	
			R-62	CAMO-14-45720	WSP-TKN+TOC	PEB	UF	11/12/2013	
			R-62	CAMO-14-45774	WSP-All Metals	INV	F	11/12/2013	
			R-62	CAMO-14-45774	WSP-CR52/53	INV	F	11/12/2013	
			R-62	CAMO-14-45774	WSP-GENINORG+PerChlorate	INV	F	11/12/2013	
			R-62	CAMO-14-45774	WSP-N15/O18-NO3	INV	F	11/12/2013	
			R-62	CAMO-14-45774	WSP-NH3+NO3/NO2+PO4	INV	F	11/12/2013	
			R-62	CAMO-14-45727	WSP-All Metals	FD	F	11/12/2013	
			R-62	CAMO-14-45727	WSP-CR52/53	FD	F	11/12/2013	
			R-62	CAMO-14-45727	WSP-GENINORG+PerChlorate	FD	F	11/12/2013	
			R-62	CAMO-14-45727	WSP-N15/O18-NO3	FD	F	11/12/2013	
			R-62	CAMO-14-45727	WSP-NH3+NO3/NO2+PO4	FD	F	11/12/2013	
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGI (Intermediate Groundwater)	SCI-1	CASA-14-45710	WSP-CN(T)	INV	UF	11/19/2013	None
			SCI-1	CASA-14-45710	WSP-GrossA/B	INV	UF	11/19/2013	
			SCI-1	CASA-14-45710	WSP-H-3	INV	UF	11/19/2013	
			SCI-1	CASA-14-45710	WSP-RAD	INV	UF	11/19/2013	
			SCI-1	CASA-14-45710	WSP-TKN+TOC	INV	UF	11/19/2013	
			SCI-1	CASA-14-45718	WSP-All Metals	INV	F	11/19/2013	
			SCI-1	CASA-14-45718	WSP-CR52/53	INV	F	11/19/2013	
			SCI-1	CASA-14-45718	WSP-GENINORG+PerChlorate	INV	F	11/19/2013	
			SCI-1	CASA-14-45718	WSP-N15/O18-NO3	INV	F	11/19/2013	
			SCI-1	CASA-14-45718	WSP-NH3+NO3/NO2+PO4	INV	F	11/19/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464

Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGI (Intermediate Groundwater)	~~SCI-2~~	~~CASA-14-45711~~	~~WSP-8011-EDB_DBCP~~	~~INV~~	~~UF~~	Not Collected; CPL	None
			~~SCI-2~~	~~CASA-14-45711~~	~~WSP-8260B-VOA~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45711~~	~~WSP-8270C-SVOA~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45711~~	~~WSP-8310-PAH~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45711~~	~~WSP-CN(T)~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45711~~	~~WSP-GrossA/B~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45711~~	~~WSP-H-3~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45711~~	~~WSP-LL-8081A-HCB~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45711~~	~~WSP-LL-8151A-PCP~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45711~~	~~WSP-LL-8260B~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45711~~	~~WSP-LL-8270C~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45711~~	~~WSP-RAD~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45711~~	~~WSP-TKN+TOC~~	~~INV~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45697~~	~~WSP-8011-EDB_DBCP~~	~~FTB~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45697~~	~~WSP-8260B-VOA~~	~~FTB~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45697~~	~~WSP-LL-8260B~~	~~FTB~~	~~UF~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45719~~	~~WSP-All Metals~~	~~INV~~	~~F~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45719~~	~~WSP-CR52/53~~	~~INV~~	~~F~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45719~~	~~WSP-GENINORG+PerChlorate~~	~~INV~~	~~F~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45719~~	~~WSP-N15/O18-NO3~~	~~INV~~	~~F~~	Not Collected; CPL	
			~~SCI-2~~	~~CASA-14-45719~~	~~WSP-NH3+NO3/NO2+PO4~~	~~INV~~	~~F~~	Not Collected; CPL	
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-11	CASA-14-45704	WSP-CN(T)	INV	UF	11/5/2013	Sample collected 50' from running diesel generator off Truck Route Road
			R-11	CASA-14-45704	WSP-LL-H-3	INV	UF	11/5/2013	
			R-11	CASA-14-45704	WSP-TKN+TOC	INV	UF	11/5/2013	
			R-11	CASA-14-45712	WSP-All Metals	INV	F	11/5/2013	
			R-11	CASA-14-45712	WSP-GENINORG+PerChlorate	INV	F	11/5/2013	
			R-11	CASA-14-45712	WSP-NH3+NO3/NO2+PO4	INV	F	11/5/2013	
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-35a	CASA-14-45705	WSP-8011-EDB_DBCP	INV	UF	11/13/2013	Sample collected 40' from running diesel generator and 60' from Truck Route Road
			R-35a	CASA-14-45705	WSP-8260B-VOA	INV	UF	11/13/2013	
			R-35a	CASA-14-45705	WSP-8270C-SVOA	INV	UF	11/13/2013	
			R-35a	CASA-14-45705	WSP-8310-PAH	INV	UF	11/13/2013	
			R-35a	CASA-14-45705	WSP-CN(T)	INV	UF	11/13/2013	
			R-35a	CASA-14-45705	WSP-LL-8081A-HCB	INV	UF	11/13/2013	
			R-35a	CASA-14-45705	WSP-LL-8151A-PCP	INV	UF	11/13/2013	
			R-35a	CASA-14-45705	WSP-LL-8260B	INV	UF	11/13/2013	
			R-35a	CASA-14-45705	WSP-LL-8270C	INV	UF	11/13/2013	
			R-35a	CASA-14-45705	WSP-LL-H-3	INV	UF	11/13/2013	
			R-35a	CASA-14-45705	WSP-TKN+TOC	INV	UF	11/13/2013	
			R-35a	CASA-14-45698	WSP-8011-EDB_DBCP	FTB	UF	11/13/2013	
			R-35a	CASA-14-45698	WSP-8260B-VOA	FTB	UF	11/13/2013	
			R-35a	CASA-14-45698	WSP-LL-8260B	FTB	UF	11/13/2013	
			R-35a	CASA-14-45713	WSP-All Metals	INV	F	11/13/2013	
			R-35a	CASA-14-45713	WSP-GENINORG+PerChlorate	INV	F	11/13/2013	
			R-35a	CASA-14-45713	WSP-NH3+NO3/NO2+PO4	INV	F	11/13/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464
Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Sandia Canyon	WG	WGR (Regional Groundwater)	R-35b	CASA-14-45706	WSP-8011-EDB_DBCP	INV	UF	11/13/2013	Sample collected 50' from 2 running diesel generators and off Truck Route Road
			R-35b	CASA-14-45706	WSP-8260B-VOA	INV	UF	11/13/2013	
			R-35b	CASA-14-45706	WSP-8270C-SVOA	INV	UF	11/13/2013	
			R-35b	CASA-14-45706	WSP-8310-PAH	INV	UF	11/13/2013	
			R-35b	CASA-14-45706	WSP-CN(T)	INV	UF	11/13/2013	
			R-35b	CASA-14-45706	WSP-LL-8081A-HCB	INV	UF	11/13/2013	
			R-35b	CASA-14-45706	WSP-LL-8151A-PCP	INV	UF	11/13/2013	
			R-35b	CASA-14-45706	WSP-LL-8260B	INV	UF	11/13/2013	
			R-35b	CASA-14-45706	WSP-LL-8270C	INV	UF	11/13/2013	
			R-35b	CASA-14-45706	WSP-LL-H-3	INV	UF	11/13/2013	
			R-35b	CASA-14-45706	WSP-TKN+TOC	INV	UF	11/13/2013	
			R-35b	CASA-14-45699	WSP-8011-EDB_DBCP	FTB	UF	11/13/2013	
			R-35b	CASA-14-45699	WSP-8260B-VOA	FTB	UF	11/13/2013	
			R-35b	CASA-14-45699	WSP-LL-8260B	FTB	UF	11/13/2013	
			R-35b	CASA-14-45714	WSP-All Metals	INV	F	11/13/2013	
			R-35b	CASA-14-45714	WSP-GENINORG+PerChlorate	INV	F	11/13/2013	
			R-35b	CASA-14-45714	WSP-NH3+NO3/NO2+PO4	INV	F	11/13/2013	
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-36	CASA-14-45707	WSP-8011-EDB_DBCP	INV	UF	11/13/2013	Sample collected 50' from running diesel generator
			R-36	CASA-14-45707	WSP-8260B-VOA	INV	UF	11/13/2013	
			R-36	CASA-14-45707	WSP-8270C-SVOA	INV	UF	11/13/2013	
			R-36	CASA-14-45707	WSP-8310-PAH	INV	UF	11/13/2013	
			R-36	CASA-14-45707	WSP-CN(T)	INV	UF	11/13/2013	
			R-36	CASA-14-45707	WSP-LL-8081A-HCB	INV	UF	11/13/2013	
			R-36	CASA-14-45707	WSP-LL-8151A-PCP	INV	UF	11/13/2013	
			R-36	CASA-14-45707	WSP-LL-8260B	INV	UF	11/13/2013	
			R-36	CASA-14-45707	WSP-LL-8270C	INV	UF	11/13/2013	
			R-36	CASA-14-45707	WSP-LL-H-3	INV	UF	11/13/2013	
			R-36	CASA-14-45707	WSP-TKN+TOC	INV	UF	11/13/2013	
			R-36	CASA-14-45700	WSP-8011-EDB_DBCP	FTB	UF	11/13/2013	
			R-36	CASA-14-45700	WSP-8260B-VOA	FTB	UF	11/13/2013	
			R-36	CASA-14-45700	WSP-LL-8260B	FTB	UF	11/13/2013	
			R-36	CASA-14-45715	WSP-All Metals	INV	F	11/13/2013	
			R-36	CASA-14-45715	WSP-GENINORG+PerChlorate	INV	F	11/13/2013	
			R-36	CASA-14-45715	WSP-NH3+NO3/NO2+PO4	INV	F	11/13/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464
Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-43 S1	CASA-14-45708	WSP-8011-EDB_DBCP	INV	UF	11/19/2013	Sample collected 50' from running diesel generator
			R-43 S1	CASA-14-45708	WSP-8260B-VOA	INV	UF	11/19/2013	
			R-43 S1	CASA-14-45708	WSP-8270C-SVOA	INV	UF	11/19/2013	
			R-43 S1	CASA-14-45708	WSP-8310-PAH	INV	UF	11/19/2013	
			R-43 S1	CASA-14-45708	WSP-CN(T)	INV	UF	11/19/2013	
			R-43 S1	CASA-14-45708	WSP-LL-8081A-HCB	INV	UF	11/19/2013	
			R-43 S1	CASA-14-45708	WSP-LL-8151A-PCP	INV	UF	11/19/2013	
			R-43 S1	CASA-14-45708	WSP-LL-8260B	INV	UF	11/19/2013	
			R-43 S1	CASA-14-45708	WSP-LL-8270C	INV	UF	11/19/2013	
			R-43 S1	CASA-14-45708	WSP-LL-H-3	INV	UF	11/19/2013	
			R-43 S1	CASA-14-45708	WSP-TKN+TOC	INV	UF	11/19/2013	
			R-43 S1	CASA-14-45701	WSP-8011-EDB_DBCP	FTB	UF	11/19/2013	
			R-43 S1	CASA-14-45701	WSP-8260B-VOA	FTB	UF	11/19/2013	
			R-43 S1	CASA-14-45701	WSP-LL-8260B	FTB	UF	11/19/2013	
			R-43 S1	CASA-14-45716	WSP-All Metals	INV	F	11/19/2013	
			R-43 S1	CASA-14-45716	WSP-CR52/53	INV	F	11/19/2013	
			R-43 S1	CASA-14-45716	WSP-GENINORG+PerChlorate	INV	F	11/19/2013	
			R-43 S1	CASA-14-45716	WSP-N15/O18-NO3	INV	F	11/19/2013	
			R-43 S1	CASA-14-45716	WSP-NH3+NO3/NO2+PO4	INV	F	11/19/2013	
Chromium Monitoring - Sandia Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-43 S2	CASA-14-45709	WSP-8011-EDB_DBCP	INV	UF	11/19/2013	Sample collected 50' from running diesel generator
			R-43 S2	CASA-14-45709	WSP-8260B-VOA	INV	UF	11/19/2013	
			R-43 S2	CASA-14-45709	WSP-8270C-SVOA	INV	UF	11/19/2013	
			R-43 S2	CASA-14-45709	WSP-8310-PAH	INV	UF	11/19/2013	
			R-43 S2	CASA-14-45709	WSP-CN(T)	INV	UF	11/19/2013	
			R-43 S2	CASA-14-45709	WSP-LL-8081A-HCB	INV	UF	11/19/2013	
			R-43 S2	CASA-14-45709	WSP-LL-8151A-PCP	INV	UF	11/19/2013	
			R-43 S2	CASA-14-45709	WSP-LL-8260B	INV	UF	11/19/2013	
			R-43 S2	CASA-14-45709	WSP-LL-8270C	INV	UF	11/19/2013	
			R-43 S2	CASA-14-45709	WSP-LL-H-3	INV	UF	11/19/2013	
			R-43 S2	CASA-14-45709	WSP-TKN+TOC	INV	UF	11/19/2013	
			R-43 S2	CASA-14-45702	WSP-8011-EDB_DBCP	FTB	UF	11/19/2013	
			R-43 S2	CASA-14-45702	WSP-8260B-VOA	FTB	UF	11/19/2013	
			R-43 S2	CASA-14-45702	WSP-LL-8260B	FTB	UF	11/19/2013	
			R-43 S2	CASA-14-45717	WSP-All Metals	INV	F	11/19/2013	
			R-43 S2	CASA-14-45717	WSP-CR52/53	INV	F	11/19/2013	
			R-43 S2	CASA-14-45717	WSP-GENINORG+PerChlorate	INV	F	11/19/2013	
			R-43 S2	CASA-14-45717	WSP-N15/O18-NO3	INV	F	11/19/2013	
			R-43 S2	CASA-14-45717	WSP-NH3+NO3/NO2+PO4	INV	F	11/19/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464
Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
MDA C Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-14 S1	CAMO-14-45689	WSP-8011-EDB_DBCP	INV	UF	11/5/2013	Sample collected 50' from running diesel generator
			R-14 S1	CAMO-14-45689	WSP-8260B-VOA	INV	UF	11/5/2013	
			R-14 S1	CAMO-14-45689	WSP-8270C-SVOA	INV	UF	11/5/2013	
			R-14 S1	CAMO-14-45689	WSP-8310-PAH	INV	UF	11/5/2013	
			R-14 S1	CAMO-14-45689	WSP-CN(T)	INV	UF	11/5/2013	
			R-14 S1	CAMO-14-45689	WSP-GrossA/B	INV	UF	11/5/2013	
			R-14 S1	CAMO-14-45689	WSP-LL-8081A-HCB	INV	UF	11/5/2013	
			R-14 S1	CAMO-14-45689	WSP-LL-8151A-PCP	INV	UF	11/5/2013	
			R-14 S1	CAMO-14-45689	WSP-LL-8260B	INV	UF	11/5/2013	
			R-14 S1	CAMO-14-45689	WSP-LL-8270C	INV	UF	11/5/2013	
			R-14 S1	CAMO-14-45689	WSP-LL-H-3	INV	UF	11/5/2013	
			R-14 S1	CAMO-14-45689	WSP-RAD	INV	UF	11/5/2013	
			R-14 S1	CAMO-14-45689	WSP-TKN+TOC	INV	UF	11/5/2013	
			R-14 S1	CAMO-14-45686	WSP-8011-EDB_DBCP	FTB	UF	11/5/2013	
			R-14 S1	CAMO-14-45686	WSP-8260B-VOA	FTB	UF	11/5/2013	
			R-14 S1	CAMO-14-45686	WSP-LL-8260B	FTB	UF	11/5/2013	
			R-14 S1	CAMO-14-45693	WSP-GENINORG+PerChlorate	INV	F	11/5/2013	
			R-14 S1	CAMO-14-45693	WSP-NH3+NO3/NO2+PO4	INV	F	11/5/2013	
MDA C Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-46	CAMO-14-45691	WSP-8011-EDB_DBCP	INV	UF	11/18/2013	Sample collected 40' from running diesel generator
			R-46	CAMO-14-45691	WSP-8260B-VOA	INV	UF	11/18/2013	
			R-46	CAMO-14-45691	WSP-8270C-SVOA	INV	UF	11/18/2013	
			R-46	CAMO-14-45691	WSP-8310-PAH	INV	UF	11/18/2013	
			R-46	CAMO-14-45691	WSP-CN(T)	INV	UF	11/18/2013	
			R-46	CAMO-14-45691	WSP-GrossA/B	INV	UF	11/18/2013	
			R-46	CAMO-14-45691	WSP-LL-8081A-HCB	INV	UF	11/18/2013	
			R-46	CAMO-14-45691	WSP-LL-8151A-PCP	INV	UF	11/18/2013	
			R-46	CAMO-14-45691	WSP-LL-8260B	INV	UF	11/18/2013	
			R-46	CAMO-14-45691	WSP-LL-8270C	INV	UF	11/18/2013	
			R-46	CAMO-14-45691	WSP-LL-H-3	INV	UF	11/18/2013	
			R-46	CAMO-14-45691	WSP-RAD	INV	UF	11/18/2013	
			R-46	CAMO-14-45691	WSP-TKN+TOC	INV	UF	11/18/2013	
			R-46	CAMO-14-45687	WSP-8011-EDB_DBCP	FTB	UF	11/18/2013	
			R-46	CAMO-14-45687	WSP-8260B-VOA	FTB	UF	11/18/2013	
			R-46	CAMO-14-45687	WSP-LL-8260B	FTB	UF	11/18/2013	
			R-46	CAMO-14-45695	WSP-All Metals	INV	F	11/18/2013	
			R-46	CAMO-14-45695	WSP-GENINORG+PerChlorate	INV	F	11/18/2013	
			R-46	CAMO-14-45695	WSP-NH3+NO3/NO2+PO4	INV	F	11/18/2013	

Event IDs: 4455, 4457, 4459, 4460, 4464

Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Monitoring Group	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
MDA C Monitoring - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	R-60	CAMO-14-45692	WSP-8011-EDB_DBCP	INV	UF	11/14/2013	Sample collected 50' from running diesel generator
			R-60	CAMO-14-45692	WSP-8260B-VOA	INV	UF	11/14/2013	
			R-60	CAMO-14-45692	WSP-8270C-SVOA	INV	UF	11/14/2013	
			R-60	CAMO-14-45692	WSP-8310-PAH	INV	UF	11/14/2013	
			R-60	CAMO-14-45692	WSP-CN(T)	INV	UF	11/14/2013	
			R-60	CAMO-14-45692	WSP-GrossA/B	INV	UF	11/14/2013	
			R-60	CAMO-14-45692	WSP-LL-8081A-HCB	INV	UF	11/14/2013	
			R-60	CAMO-14-45692	WSP-LL-8151A-PCP	INV	UF	11/14/2013	
			R-60	CAMO-14-45692	WSP-LL-8260B	INV	UF	11/14/2013	
			R-60	CAMO-14-45692	WSP-LL-8270C	INV	UF	11/14/2013	
			R-60	CAMO-14-45692	WSP-LL-H-3	INV	UF	11/14/2013	
			R-60	CAMO-14-45692	WSP-RAD	INV	UF	11/14/2013	
			R-60	CAMO-14-45692	WSP-TKN+TOC	INV	UF	11/14/2013	
			R-60	CAMO-14-45688	WSP-8011-EDB_DBCP	FTB	UF	11/14/2013	
			R-60	CAMO-14-45688	WSP-8260B-VOA	FTB	UF	11/14/2013	
			R-60	CAMO-14-45688	WSP-LL-8260B	FTB	UF	11/14/2013	
			R-60	CAMO-14-45696	WSP-All Metals	INV	F	11/14/2013	
			R-60	CAMO-14-45696	WSP-GENINORG+PerChlorate	INV	F	11/14/2013	
			R-60	CAMO-14-45696	WSP-NH3+NO3/NO2+PO4	INV	F	11/14/2013	
General Surveillance - Mortandad Canyon	WG (Groundwater)	WGR (Regional Groundwater)	~~R-34~~	~~CAMO-14-45690~~	~~WSP-CN(T)~~	~~INV~~	~~UF~~	Not Collected; postponed	Sampled December 19th, 2013
			~~R-34~~	~~CAMO-14-45690~~	~~WSP-TKN+TOC~~	~~INV~~	~~UF~~	Not Collected; postponed	
			~~R-34~~	~~CAMO-14-45694~~	~~WSP-All Metals~~	~~INV~~	~~F~~	Not Collected; postponed	
			~~R-34~~	~~CAMO-14-45694~~	~~WSP-GENINORG+PerChlorate~~	~~INV~~	~~F~~	Not Collected; postponed	
			~~R-34~~	~~CAMO-14-45694~~	~~WSP-NH3+NO3/NO2+PO4~~	~~INV~~	~~F~~	Not Collected; postponed	

Event IDs: 4455, 4457, 4459, 4460, 4464
Event Name: Mortandad/Sandia (Chromium Investigation, MDAC, and General Surveillance) MY2014 Q1 Watershed Sampling

Other Field Activities	Field Matrix	Media	Location ID	Field Sample ID	Analytical Group	Sample Purpose*	Field Prep Code**	Date Collected***	Comments
Discharge Permit Sampling	Mortandad	WGA (Alluvial Groundwater)	CDBO-6	CAMO-14-45670	Anions-W	INV	UF	Not Collected; Dry	None
			CDBO-6	CAMO-14-45670	GrossA	INV	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45670	MSGP-Hg	INV	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45670	NH3+NO2NO3+TKN	INV	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45670	Ra226+228	INV	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45670	TDS	INV	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45670	WSP-8082-PCB	INV	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45670	WSP-8260B-VOA	INV	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45670	WSP-8270C-SVOA	INV	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45670	WSP-CL04	INV	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45900	Anions-W	FD	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45900	GrossA	FD	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45900	MSGP-Hg	FD	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45900	NH3+NO2NO3+TKN	FD	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45900	Ra226+228	FD	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45900	TDS	FD	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45900	WSP-8082-PCB	FD	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45900	WSP-8260B-VOA	FD	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45900	WSP-8270C-SVOA	FD	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45900	WSP-CL04	FD	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45900	WSP-Fluoride	FD	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45669	WSP-8260B-VOA	FTB	UF	Not Collected; Dry	
			CDBO-6	CAMO-14-45675	Tal Metals	INV	F	Not Collected; Dry	
			CDBO-6	CAMO-14-45675	WSP-CN(T)	INV	F	Not Collected; Dry	
			CDBO-6	CAMO-14-45675	WSP-Molybdenum	INV	F	Not Collected; Dry	
			CDBO-6	CAMO-14-45899	Tal Metals	FD	F	Not Collected; Dry	
			CDBO-6	CAMO-14-45899	WSP-CN(T)	FD	F	Not Collected; Dry	
			CDBO-6	CAMO-14-45899	WSP-Molybdenum	FD	F	Not Collected; Dry	
			MCO-3	CAMO-14-45676	NH3+NO2NO3+TKN	INV	F	Not Collected	Well destroyed in previous flood
			MCO-3	CAMO-14-45676	TDS	INV	F	Not Collected	
			MCO-3	CAMO-14-45676	WSP-CL04	INV	F	Not Collected	
			MCO-3	CAMO-14-45676	WSP-Fluoride	INV	F	Not Collected	
			MCO-4B	CAMO-14-45677	NH3+NO2NO3+TKN	INV	F	11/20/2013	None
			MCO-4B	CAMO-14-45677	TDS	INV	F	11/20/2013	
			MCO-4B	CAMO-14-45677	WSP-CL04	INV	F	11/20/2013	
			MCO-4B	CAMO-14-45677	WSP-Fluoride	INV	F	11/20/2013	
			MCO-6	CAMO-14-45678	NH3+NO2NO3+TKN	INV	F	11/20/2013	None
			MCO-6	CAMO-14-45678	TDS	INV	F	11/20/2013	
			MCO-6	CAMO-14-45678	WSP-CL04	INV	F	11/20/2013	
			MCO-6	CAMO-14-45678	WSP-Fluoride	INV	F	11/20/2013	
			MCO-7	CAMO-14-45679	NH3+NO2NO3+TKN	INV	F	11/21/2013	Extremely low pumping rate; field crew recommends that pump is replaced.
			MCO-7	CAMO-14-45679	TDS	INV	F	11/21/2013	
			MCO-7	CAMO-14-45679	WSP-CL04	INV	F	11/21/2013	
			MCO-7	CAMO-14-45679	WSP-Fluoride	INV	F	11/21/2013	

*EQB = equipment rinsate blank, FD = field duplicate, FB = field blank, FTB = field trip blank, INV = investigative sample, PEB = performance evaluation blank
** F = filtered, UF = unfiltered

Appendix B

Well Completion and Pump Information

Watershed	Location Name	Land Surface Datum (ft msl)	Completion Depth (ft bgs)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Screen Length (ft)	Inner Diameter (in)	Pump Type
Mortandad	CDBO-6	6817.20	49.0	34.0	44.0	10	2	Bladder
Mortandad	MCO-3	7052.6	12	2	12	10	3	Bladder
Mortandad	MCO-4B	6886.75	33.9	8.9	28.9	20	2	Bladder
Mortandad	MCO-6	6849.48	47	27	47	20	4	Bladder
Mortandad	MCO-7	6827.31	69	39	69	30	3	Bladder
Mortandad	MCOI-5	6819.7	702.7	689.04	699	9.96	4.5	Bennet
Mortandad	MCOI-6	6811.1	713.2	686	708.3	22.3	4.5	Gear Driven Submersible
Mortandad	R-1	6881.21	1080.1	1031.12	1057.42	26.3	4.5	Gear Driven Submersible
Mortandad	R-13	6673.05	1029.4	958.33	1018.72	60.39	4.5	Gear Driven Submersible
Mortandad	R-14	7062.08	1315.6	1200.6	1233.2	32.6	4.5	Gear Driven Submersible
Mortandad	R-15	6820	1030.6	958.6	1020.3	61.7	4.5	Gear Driven Submersible
Mortandad	R-28	6728.61	980.3	934.3	958.1	23.8	4.47	Gear Driven Submersible
Mortandad	R-34	6629.99	920.7	883.7	906.6	22.9	4.5	Gear Driven Submersible
Mortandad	R-42	6759.02	973.5	931.8	952.9	21.1	5	Gear Driven Submersible
Mortandad	R-44 Scr 1	6714.91	1016	895	905	10	5	Gear Driven Submersible
Mortandad	R-44 Scr 2	6714.91	1016	985.3	995.2	9.9	5	Gear Driven Submersible
Mortandad	R-45 Scr 1	6704.02	1016	880	890	10	5	Gear Driven Submersible
Mortandad	R-45 Scr 2	6704.02	1016	974.9	994.9	20	5	Gear Driven Submersible
Mortandad	R-46	7213.33	1383.8	1340	1360.7	20.7	5	Gear Driven Submersible
Mortandad	R-50 Scr 1	6904.11	1217.5	1077	1087	10	5	Gear Driven Submersible
Mortandad	R-50 Scr 2	6904.11	1217.5	1185.0	1205.6	20.6	5	Gear Driven Submersible
Mortandad	R-61 Scr 1	6940.12	1162.3	1125.0	1135.0	10	5	Gear Driven Submersible
Mortandad	R-61 Scr 2	6940.12	1251.6	1220.4	1241	20.6	5	Gear Driven Submersible
Mortandad	R-60	7228.17	1360.9	1330.0	1350.9	20.9	5	Gear Driven Submersible
Mortandad	R-62	6984.88	1251.6	1158.4	1179.1	20.7	5	Gear Driven Submersible
Sandia	R-11	6673.72	901.7	855	877.9	22.9	4.46	Gear Driven Submersible
Sandia	R-35a	6623.06	1086.2	1013.1	1062.2	49.1	4.375	Gear Driven Submersible
Sandia	R-35b	6625.21	872.2	825.4	848.5	23.1	4.375	Gear Driven Submersible

Watershed	Location Name	Land Surface Datum (ft msl)	Completion Depth (ft bgs)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Screen Length (ft)	Inner Diameter (in)	Pump Type
Sandia	R-36	6591.37	803.7	766.9	789.9	23	4.375	Gear Driven Submersible
Sandia	R-43 Scr 1	6732.65	990.4	903.9	924.6	20.7	5	Gear Driven Submersible
Sandia	R-43 Scr 2	6732.65	990.4	969.1	979.1	10	5	Gear Driven Submersible
Sandia	SCI-1	6738.27	377.9	358.4	377.9	19.5	3.8	Bennet
Sandia	SCI-2	6735.7	570	548	568	20	2	Bennet

Appendix C

Time-Series Purge Data

NOTES:

* Unless otherwise noted, The following parameters have been logged on the YSI meters and digitally imported into Appendix C: time, pH, temperature, specific conductance, dissolved oxygen, and oxidation reduction potential (ORP).

* The following parameters are manually entered from data recorded on the Groundwater Sampling Log and reviewed by field team members: turbidity, water level, discharge, and notes.

* Parameters are recorded on the YSI meters in 5 minute intervals. Manually entered data is recorded in 5, 10, 15, 30, or 60 minute intervals on the groundwater sampling log, per SOPs. Dashes (-) indicate times when YSI data were recorded but not manual data were not.

ABBREVIATIONS:

* CV = casing volume
* °C = degrees Celsius
* DO = Dissolved Oxygen
* DST = Daylight Savings Time
* ft BGS = feet below ground surface
* ft BTIC = feet below top of inner casing
* ft BTOC = feet below top of casing
* ft BTOM = feet below top of manhole
* ft MSL = feet above mean sea level
* Gal = gallons
* gpm = gallons per minute
* in = inches
* mg/L = milligrams per liter
* MST = Mountain Standard Time
* mV = millivolts
* NA = parameters are not applicable
* NC = parameters were not collected, see notes for details
* ND = YSI initializing, no valid data available
* NTU = nephelometric turbidity units
* pH = pH in standard units
* SC = Specific Conductance
* TIC= top of inner casing
* TOC = top of outer casing
* µS/cm = microSiemens per centimeter

Well Name: MCO-4B
Well Inside Diameter (in): NC
Well Depth (ft BGS): 33.9
Casing/Tubing Type: nC
Date: 11/20/2013
Initial Water Level (ft BTOC): 20.46
Brass Cap (ft MSL): 6886.75

1 Casing Volume (Gal): 2.44
3 Casing Volume (Gal): 7.34
Drop Pipe (Gal): NA
3 CVs plus DP (Gal): 7.34
Total Purge Water (Gal): 2.5
Measuring point height (ft BTOC): 2.47

Pump On: 11:00
Water at Surface: 11:00
Begin Sampling: 11:23
End Sampling: 11:27
Pump Off: 11:27
Final Water Level (ft BTOC): 20.57
Total Waste Water (Gal): 3

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft BTOC)	Discharge Rate (gpm)	Notes
11:03	NC	NC	NC	NC	NC	NC	20.60	0.13	some floating particles in water
11:05	6.44	11.52	1016	6.8	5.8	129	20.60	0.13	clear, no odor
11:08	6.43	11.55	1148	7.45	2.4	126	20.60	0.13	clear, no odor
11:11	6.46	11.54	1199	7.53	1.8	124	20.56	0.13	clear, no odor
11:14	6.48	11.51	1206	7.59	1.2	124	20.56	0.13	clear, no odor
11:17	6.48	11.52	1207	7.61	1.0	124	20.58	0.13	clear, no odor
11:20	6.49	11.54	1207	7.62	0.9	124	20.61	0.13	clear, no odor

Additional Notes

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: MCO-6
Well Inside Diameter (in): 4
Well Depth (ft BGS): 47
Casing/Tubing Type: PVC
Date: 11/20/2013
Initial Water Level (ft BTOC): 43.17
Brass Cap (ft MSL): 6849.38

1 Casing Volume (Gal): 5.18
3 Casing Volume (Gal): 15.5
Drop Pipe (Gal): NA
3 CVs plus DP (Gal): 15.5
Total Purge Water (Gal): 5.20
Measuring point height (ft BTOC): 2.66

Pump On: 11:59
Water at Surface: 11:59
Begin Sampling: 12:40
End Sampling: 12:43
Pump Off: 12:43
Final Water Level (ft BTOC): 39.37
Total Waste Water (Gal): 5.5

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft BTOC)	Discharge Rate (gpm)	Notes
12:03	NC	NC	NC	NC	NC	NC	39.30	0.05	clear, odorless
12:08	6.81	10.07	560	8.51	4.4	123	39.35	0.13	clear, odorless
12:13	6.73	9.91	602	8.51	1.7	123	-	-	-
12:18	6.71	9.89	605	8.45	1.2	123	39.38	0.13	clear, odorless
12:23	6.7	9.91	605	8.38	1.2	122	-	-	-
12:28	6.71	9.92	605	8.35	1.2	122	39.38	0.13	clear, odorless
12:33	6.71	9.91	605	8.34	1.2	122	39.39	0.13	clear, odorless
12:38	6.71	9.93	605	8.32	1.2	122	39.40	0.13	clear, odorless

Additional Notes

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: MCO-7
Well Inside Diameter (in): 3
Well Depth (ft BGS): 69
Casing/Tubing Type: PVC
Date: 11/21/2013
Initial Water Level (ft BTOC): 43.92
Brass Cap (ft MSL): 6827.31

1 Casing Volume (Gal): 10
3 Casing Volume (Gal): 30
Drop Pipe (Gal): NA
3 CVs plus DP (Gal): 30
Total Purge Water (Gal): 12.50
Measuring point height (ft BTOC): 2.18

Pump On: 10:52; 13:51
Water at Surface: 10:54
Begin Sampling: 14:08
End Sampling: 14:15
Pump Off: 14:15
Final Water Level (ft BTOC): 47.55
Total Waste Water (Gal): 13

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft BTOC)	Discharge Rate (gpm)	Notes
10:57:47	NC	NC	NC	NC	NC	NC	45.03	0.15	very silty, brown
11:02:47	6.89	10.29	440	8.11	36.4	164	-	-	-
11:07:47	6.85	10.24	427	8.14	77.0	162	46.27	0.15	very silty, brown
11:12:47	6.81	10.22	437	8.11	130.3	162	-	-	-
11:17:47	6.77	10.23	448	8.15	191.2	163	47.45	0.12	more turbid, brown
11:22:47	6.75	10.22	456	8.02	343.7	163	-	-	-
11:27:47	6.75	10.22	459	7.96	401.6	163	47.77	0.12	even cloudier
11:32:47	6.75	10.23	460	7.93	435.4	162	-	-	-
11:37:47	6.74	10.23	460	7.91	401.0	162	47.73	0.03	cloudy, brown silty
11:42:47	6.75	10.24	461	7.88	365.7	161	-	-	-
11:47:47	6.75	10.30	462	7.84	310.7	161	47.61	0.05	cloudy, brown silty
11:52:47	6.76	10.34	464	7.75	216.1	160	-	-	-
11:57:47	6.76	10.33	466	7.68	150.4	160	47.55	0.05	cloudy, brown silty
12:02:47	6.76	10.38	467	7.61	101.1	159	-	-	-
12:07:47	6.76	10.37	468	7.60	74.9	159	-	-	-
12:12:47	6.77	10.45	468	7.58	59.2	158	-	-	-
12:17:47	6.77	10.45	469	7.58	47.2	158	-	-	-
12:22:47	6.78	10.43	469	7.58	41.2	157	-	-	-
12:27:47	6.78	10.46	469	7.59	36.6	157	47.57	0.05	less cloudy
12:32:47	6.78	10.43	470	7.60	30.7	156	-	-	-
12:37:47	6.78	10.43	470	7.60	28.0	156	-	-	-
12:42:47	6.79	10.42	470	7.60	24.5	156	-	-	-
12:47:47	6.79	10.46	470	7.60	18.2	155	-	-	-
12:52:47	6.80	10.45	471	7.60	17.6	155	-	-	-
12:57:47	6.80	10.46	471	7.58	17.8	154	-	-	-
13:02:47	6.81	10.47	471	7.57	17.9	154	-	-	-

MCO-7 continued

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft BTOC)	Discharge Rate (gpm)	Notes
13:07:47	6.81	10.33	470	7.64	29.2	154	46.71	0.16	slightly cloudy
13:12:47	6.80	10.36	471	7.61	33.8	154	47.41	0.11	slightly cloudy
13:17:47	6.80	10.35	472	7.64	65.9	153	47.62	0.07	cloudy
13:22:47	6.80	10.37	472	7.65	87.8	153	47.61	0.07	cloudy
13:27:47	6.81	10.35	472	7.66	102.0	153	47.56	0.07	cloudy
13:32:47	6.81	10.34	471	7.65	100.0	153	47.58	0.07	cloudy
13:37:47	6.81	10.31	471	7.67	82.4	152	47.51	0.05	cloudy
13:42:47	6.81	10.32	470	7.67	57.0	152	47.55	0.05	cloudy
13:47:47	6.82	10.30	470	7.66	40.3	152	47.50	0.05	cloudy
13:52:47	7.06	9.79	1	8.88	16.1	160	-	-	-
13:57:47	6.85	10.30	471	7.72	17.4	152	47.61	0.04	cloudy
14:02:47	6.83	10.28	471	7.69	15.8	151	47.54	0.04	cloudy
14:07:47	6.82	10.30	472	7.69	15.4	151	47.54	0.04	cloudy

Additional Notes

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: MCOI-5
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 702.7
Casing/Tubing Type: SS
Date: 11/8/2013
Initial Water Level (ft MSL): 6133.25
Measuring Point (ft MSL): 6819.1

1 Casing Volume (Gal): 13.9
3 Casing Volume (Gal): 41.7
Drop Pipe (Gal): 4.1
3 CVs plus DP (Gal): 45.8
Total Purge Water (Gal): 45.0

Pump On: 11:06
Water at Surface: 11:06
Begin Sampling: 12:29
End Sampling: 12:56
Pump Off: 12:56
Final Water Level (ft MSL): 6120.13
Total Waste Water (Gal): 53

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
11:14:00	NC	NC	NC	NC	NC	NC	6130.19	0.65	clear, odorless
11:19:00	8.13	13.99	196	6.49	2.0	173	-	-	-
11:24:00	8.50	14.11	197	6.55	2.0	170	6129.13	0.75	clear, odorless
11:29:00	8.57	14.16	200	6.28	1.4	171	-	-	-
11:34:00	8.57	14.38	203	5.87	1.8	171	6127.32	0.75	clear, odorless
11:39:00	8.55	14.49	207	5.20	2.4	171	-	-	-
11:44:00	8.50	14.41	210	4.89	5.2	172	5125.79	0.75	clear, odorless
11:49:00	8.58	14.47	209	5.30	5.9	172	-	-	-
11:54:00	8.69	14.43	207	5.69	5.1	173	6124.88	0.75	clear, odorless
11:59:00	8.72	14.14	205	5.92	4.0	174	-	-	-
12:04:00	8.66	14.04	205	6.07	3.2	174	6124.62	0.75	clear, odorless
12:09:00	8.58	14.31	205	6.13	2.4	175	-	-	-
12:14:00	8.47	13.58	204	6.58	2.9	176	6124.24	0.66	clear, odorless
12:19:00	8.34	14.23	203	6.90	3.0	175	6123.60	0.66	clear, odorless
12:24:00	8.24	14.32	202	6.99	5.0	175	6122.80	0.66	clear, odorless
12:29:00	8.21	14.35	203	7.10	7.6	176	6121.95	0.66	clear, odorless

Additional Notes

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: MCOI-6
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 713.2
Casing/Tubing Type: SS
Date: 11/7/2013
Initial Water Level (ft MSL): 6152.41
Measuring Point (ft MSL): 6811.10

1 Casing Volume (Gal): 45
3 Casing Volume (Gal): 135.1
Drop Pipe (Gal): 27.0
3 CVs plus DP (Gal): 162.1
Total Purge Water (Gal): 136

Pump On: 11:21
Water at Surface: 11:21
Begin Sampling: 13:19
End Sampling: 13:42
Pump Off: 13:42
Final Water Level (ft MSL): 6137.23
Total Waste Water (Gal): 175

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
11:42:38	NC	NC	NC	NC	NC	NC	6135.68	1.38	clear, no odor
11:47:38	6.95	13.70	592	2.28	3.2	143	-	-	-
11:52:38	7.23	14.09	591	5.94	5.8	128	-	-	-
11:57:38	7.41	14.45	592	6.57	5.5	118	6135.02	1.38	clear, no odor
12:02:38	7.43	14.73	593	6.72	4.9	115	-	-	-
12:07:38	7.38	14.75	595	6.79	4.4	114	-	-	-
12:12:38	7.34	14.82	595	6.82	4.2	112	6134.95	1.38	clear, no odor
12:17:38	7.32	14.93	594	6.84	3.6	110	-	-	-
12:22:38	7.31	14.85	594	6.86	2.6	107	-	-	-
12:27:38	7.30	14.98	593	6.85	2.1	103	6134.89	1.38	clear, no odor
12:32:38	7.29	15.07	592	6.85	1.6	103	-	-	-
12:37:38	7.29	15.05	593	6.86	1.4	104	-	-	-
12:42:38	7.29	15.02	593	6.87	1.2	104	6134.91	1.38	clear, no odor
12:47:38	7.28	15.10	593	6.88	1.1	103	-	-	-
12:52:38	7.28	14.95	593	6.89	1.0	103	-	-	-
12:57:38	7.28	14.97	593	6.90	0.9	105	6135.01	1.38	clear, no odor
13:02:38	7.28	15.05	592	6.89	0.8	106	-	-	-
13:07:38	7.27	14.98	592	6.90	0.7	107	6135.01	1.38	clear, no odor
13:12:38	7.27	14.94	592	6.91	0.7	108	6135.03	1.38	clear, no odor
13:17:38	7.27	15.00	592	6.90	0.6	108	6135.04	1.38	clear, no odor

Additional Notes

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: SCI-1
Well Inside Diameter (in): 3.75
Well Depth (ft BGS): 378.5
Casing/Tubing Type: PVC
Date: 11/19/2013
Initial Water Level (ft MSL): 6370.10
Measuring Point (ft MSL): 6738.27

1 Casing Volume (Gal): 6.7
3 Casing Volume (Gal): 20.2
Drop Pipe (Gal): 2.2
3 CVs plus DP (Gal): 22.4
Total Purge Water (Gal): 40.5

Pump On: 10:46; 11:43
Water at Surface: 10:46; 11:43
Begin Sampling: 12:33
End Sampling: 12:47
Pump Off: 10:56; 12:47
Final Water Level (ft MSL): 6365.99
Total Waste Water (Gal): 50.5

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
11:47:16	NC	NC	NC	NC	NC	NC	6367.15	0.88	clear, odorless
11:51:00	6.97	10.24	706	8.96	19.4	64	6365.95	0.88	clear, odorless
11:53:14	6.96	10.24	707	8.94	21.1	65	6365.93	0.88	clear, odorless
11:56:14	6.84	10.22	718	8.78	4.6	76	6365.94	0.88	clear, odorless
11:59:14	6.84	10.21	714	11.49	4.4	79	6365.94	0.88	clear, odorless
12:02:14	6.92	10.18	709	12.40	15.6	81	6365.94	0.88	clear, odorless
12:05:14	7.02	10.14	705	10.85	6.3	83	6365.99	0.88	clear, odorless
12:08:14	7.10	10.16	701	10.89	5.2	85	6365.99	0.88	clear, odorless
12:11:14	7.17	10.18	705	11.66	3.9	87	6365.98	0.88	clear, odorless
12:14:14	7.16	10.37	703	10.43	2.4	90	6365.99	0.88	clear, odorless
12:17:14	7.18	10.48	704	10.80	2.3	92	6365.99	0.88	clear, odorless
12:20:14	7.20	10.55	705	10.53	2.0	94	6365.99	0.88	clear, odorless
12:23:14	7.20	10.63	705	10.90	2.1	95	6365.99	0.88	clear, odorless
12:26:14	7.21	10.68	705	11.22	1.8	97	6365.99	0.88	clear, odorless
12:29:14	7.23	10.78	704	11.26	1.5	98	6365.99	0.88	clear, odorless
12:32:14	7.24	10.81	705	11.57	1.6	99	6365.99	0.88	clear, odorless

Additional Notes
Field crew noted higher DO than past sampling events.

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-11
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 901.7
Casing/Tubing Type: SS
Date: 11/5/2013
Initial Water Level (ft MSL): 5834.38
Measuring Point (ft MSL): 6673.72

1 Casing Volume (Gal): 51.5
3 Casing Volume (Gal): 154.5
Drop Pipe (Gal): 34.4
3 CVs plus DP (Gal): 188.9
Total Purge Water (Gal): 155

Pump On: 11:41
Water at Surface: 11:41
Begin Sampling: 12:35
End Sampling: 12:46
Pump Off: 12:46
Final Water Level (ft MSL): 5834.28
Total Waste Water (Gal): 190

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
11:53:03	NC	NC	NC	NC	NC	NC	5834.24	2.88	clear, odorless
11:58:03	7.99	16.95	234	6.80	1.5	182	5834.27	2.88	clear, odorless
12:03:03	8.12	17.99	229	7.57	0.8	179	5834.27	2.88	clear, odorless
12:08:03	8.17	19.14	229	7.33	0.5	177	5831.27	2.88	clear, odorless
12:13:03	8.23	20.06	230	7.30	0.5	176	5834.27	2.88	clear, odorless
12:18:03	8.25	20.37	235	7.20	0.4	175	5834.27	2.88	clear, odorless
12:23:03	8.25	20.36	237	7.15	0.4	175	5834.28	2.88	clear, odorless
12:28:03	8.24	20.43	237	7.13	0.4	175	5834.28	2.88	clear, odorless
12:33:03	8.22	20.82	238	7.10	0.6	175	5834.28	2.88	clear, odorless

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-13
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 1029.4
Casing/Tubing Type: SS
Date: 11/8/2013
Initial Water Level (ft MSL): 5832.19
Measuring Point (ft MSL): 6673.05

1 Casing Volume (Gal): 155.7
3 Casing Volume (Gal): 467.2
Drop Pipe (Gal): 34.5
3 CVs plus DP (Gal): 501.7
Total Purge Water (Gal): 468

Pump On: 9:57
Water at Surface: 10:02
Begin Sampling: 11:19
End Sampling: 11:25
Pump Off: 11:25
Final Water Level (ft MSL): 5831.50
Total Waste Water (Gal): 510

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:08:02	NC	NC	NC	NC	1.47	NC	5831.60	5.66	clear, odorless
10:13:02	7.80	14.51	143	6.17	-	128.0	-	-	-
10:18:02	7.94	14.89	143	6.39	-	124.0	-	-	-
10:23:02	8.05	15.38	143	6.42	0.85	120.0	5831.54	5.66	clear, odorless
10:28:02	8.13	15.73	143	6.55	-	117.0	-	-	-
10:33:02	8.21	16.02	143	6.52	-	114.0	-	-	-
10:38:02	8.22	17.54	141	6.41	0.40	112.0	5831.47	6.52	clear, odorless
10:43:02	8.31	19.28	143	6.43	-	108.0	-	-	-
10:48:02	8.35	20.30	144	6.40	0.34	107.0	5831.52	6.52	clear, odorless
10:53:02	8.35	20.27	144	6.44	-	105.0	-	-	-
10:58:02	8.36	20.45	144	6.44	0.30	103.0	5831.46	6.52	clear, odorless
11:03:02	8.35	20.39	144	6.46	-	102.0	-	-	-
11:08:02	8.33	20.55	144	6.51	0.33	102.0	5831.58	6.98	clear, odorless
11:13:02	8.34	19.80	144	6.57	0.29	100.0	5831.51	6.98	clear, odorless
11:18:02	8.33	20.42	144	6.48	0.30	99.0	5831.47	6.98	clear, odorless

Additional Notes:
HACH Turbidimeter #1 used for turbidity due to negative value on YSI

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-14
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 1315.6
Casing/Tubing Type: SS
Date: 11/5/2013
Initial Water Level (ft MSL): 5877.85
Measuring Point (ft MSL): 7062.08

1 Casing Volume (Gal): 49.9
3 Casing Volume (Gal): 149.8
Drop Pipe (Gal): 48.6
3 CVs plus DP (Gal): 198.4
Total Purge Water (Gal): 150

Pump On: 11:05
Water at Surface: 11:05
Begin Sampling: 11:33
End Sampling: 11:43
Pump Off: 11:43
Final Water Level (ft MSL): 5870.62
Total Waste Water (Gal): 300

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate	Notes
11:12:03	NC	NC	NC	NC	NC	NC	5870.60	7.1	clear, no odor
11:17:03	7.84	18.11	128	5.19	1.1	111	5870.59	7.1	clear, no odor
11:22:03	8.10	20.83	129	5.69	0.7	98	5870.60	7.1	clear, no odor
11:27:03	8.20	22.03	129	5.70	0.4	94	5870.60	7.1	clear, no odor
11:32:03	8.27	22.47	130	5.64	0.3	88	5870.61	7.1	clear, no odor

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-15
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 1030.6
Casing/Tubing Type: SS
Date: 11/7/2013
Initial Water Level (ft MSL): 5844.29
Measuring Point (ft MSL): 6820.00

1 Casing Volume (Gal): 56
3 Casing Volume (Gal): 168
Drop Pipe (Gal): 40
3 CVs plus DP (Gal): 208
Total Purge Water (Gal): 220.0

Pump On: 14:26
Water at Surface: 14:26
Begin Sampling: 14:52
End Sampling: 15:07
Pump Off: 15:07
Final Water Level (ft MSL): 5838.33
Total Waste Water (Gal): 370

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
14:30:02	NC	NC	NC	NC	NC	NC	5839.62	10.3	clear, odorless, some particles
14:33:02	7.90	11.68	158	6.25	1.5	110	5839.09	10.3	clear, odorless
14:36:02	8.12	13.31	157	6.43	1.0	97	5838.80	10.3	clear, odorless
14:39:02	8.24	14.78	157	6.32	2.6	91	5838.63	10.3	clear, odorless
14:42:02	8.37	16.07	157	6.91	4.1	87	5838.56	10.3	clear, odorless
14:45:02	8.44	17.08	156	7.17	3.9	84	5838.49	10.3	clear, odorless
14:48:02	8.44	17.73	156	7.16	3.7	84	5838.44	10.3	clear, odorless
14:51:02	8.45	18.04	157	7.27	3.3	84	5838.38	10.3	clear, odorless

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-35a
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 1086.2
Casing/Tubing Type: SS
Date: 11/13/2013
Initial Water Level (ft MSL): 5827.69
Measuring Point (ft MSL): 6623.06

1 Casing Volume (Gal): 240.3
3 Casing Volume (Gal): 720.9
Drop Pipe (Gal): 32.6
3 CVs plus DP (Gal): 753.5
Total Purge Water (Gal): 722

Pump On: 10:30
Water at Surface: 10:31
Begin Sampling: 13:51
End Sampling: 14:02
Pump Off: 14:02
Final Water Level (ft MSL): 5820.28
Total Waste Water (Gal): 794

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:40:10	NC	NC	NC	NC	NC	NC	5819.84	3.8	clear, odorless
10:45:10	7.79	20.06	239	2.62	87.6	162	-	-	-
10:50:10	8.04	21.90	238	4.00	11.0	160	-	-	-
10:55:10	8.10	22.69	240	4.71	6.3	159	-	-	-
11:00:10	8.10	22.93	241	4.81	7.1	157	-	-	-
11:05:10	8.09	23.11	242	4.95	6.0	155	-	-	-
11:10:10	8.09	23.24	242	4.98	5.4	154	5819.95	3.8	clear, odorless
11:15:10	8.09	23.19	242	5.01	4.9	153	-	-	-
11:20:10	8.09	23.35	242	5.01	6.7	152	-	-	-
11:25:10	8.09	23.42	242	5.00	7.5	151	-	-	-
11:30:10	8.09	23.45	242	5.01	6.0	150	-	-	-
11:35:10	8.08	23.54	242	5.08	6.9	150	-	-	-
11:40:10	8.08	23.55	242	4.98	7.3	149	5820.08	3.8	clear, odorless
11:45:10	8.08	23.58	242	4.99	9.3	148	-	-	-
11:50:10	8.08	23.72	242	4.98	10.7	147	-	-	-
11:55:10	8.08	23.73	242	4.96	11.9	146	-	-	-
12:00:10	8.08	23.71	242	4.97	11.3	145	-	-	-
12:05:10	8.08	23.82	242	4.97	10.7	145	-	-	-
12:10:10	8.08	23.88	242	5.04	9.7	144	5820.11	3.8	clear, odorless
12:15:10	8.08	23.95	242	4.97	8.2	143	-	-	-
12:20:10	8.08	23.96	242	4.97	7.0	142	-	-	-
12:25:10	8.07	24.00	242	4.96	6.2	142	-	-	-
12:30:10	8.07	24.03	242	4.97	6.1	141	-	-	-
12:35:10	8.07	23.91	242	4.97	4.1	140	-	-	-
12:40:10	8.07	24.02	242	4.98	4.0	140	5820.13	3.8	clear, odorless
12:45:10	8.07	23.92	242	4.98	3.4	139	-	-	-

Well Name: R-35a continued

Time (MST)	pH	Temperature (ºC)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
12:50:10	8.07	23.94	242	4.98	3.2	138	-	-	-
12:55:10	8.07	23.99	242	5.02	3.2	138	-	-	-
13:00:10	8.07	24.06	242	4.98	2.8	137	-	-	-
13:05:10	8.07	24.12	242	4.98	2.4	136	-	-	-
13:10:10	8.07	24.06	242	4.97	2.3	136	5820.13	3.8	clear, odorless
13:15:10	8.07	23.98	242	4.99	9.6	135	-	-	-
13:20:10	8.07	24.06	242	4.99	2.1	134	-	-	-
13:25:10	8.07	24.13	242	4.98	2.3	134	5820.16	3.8	clear, odorless
13:30:10	8.05	24.07	242	4.98	2.5	134	-	-	-
13:35:10	8.06	24.13	242	5.08	1.6	133	5820.23	3.8	clear, odorless
13:40:10	8.06	24.13	242	4.98	1.6	132	5820.23	3.8	clear, odorless
13:45:10	8.06	24.17	242	5.00	1.7	132	5820.23	3.8	clear, odorless
13:50:10	8.06	24.18	243	4.99	1.4	131	5820.23	3.8	clear, odorless

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-35b
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 872.2
Casing/Tubing Type: SS
Date: 11/13/2013
Initial Water Level (ft MSL): 5834.14
Measuring Point (ft MSL): 6625.21

1 Casing Volume (Gal): 67
3 Casing Volume (Gal): 201
Drop Pipe (Gal): 32.4
3 CVs plus DP (Gal): 233.4
Total Purge Water (Gal): 203

Pump On: 10:23
Water at Surface: 10:24
Begin Sampling: 11:38
End Sampling: 11:51
Pump Off: 11:51
Final Water Level (ft MSL): 5833.57
Total Waste Water (Gal): 250

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:35:00	NC	NC	NC	NC	NC	NC	5833.34	3.23	clear, odorless
10:40:00	7.72	18.98	167	6.62	0.7	141	-	-	-
10:45:00	7.92	19.99	169	6.89	0.5	129	5833.39	3.23	clear, odorless
10:50:00	7.97	20.14	170	6.87	0.4	117	-	-	-
10:55:00	7.98	20.35	169	6.96	0.4	108	5833.41	3.23	clear, odorless
11:00:00	7.99	20.54	170	6.79	0.4	99	-	-	-
11:05:00	7.96	20.50	170	6.53	0.9	92	5833.42	3.23	clear, odorless
11:10:00	7.83	20.62	170	6.84	1.5	91	-	-	-
11:15:00	7.69	20.67	171	6.26	1.3	89	5833.44	3.23	clear, odorless
11:20:00	7.60	20.73	171	6.44	1.0	86	-	-	-
11:25:00	7.54	20.89	171	6.06	0.7	83	5833.44	3.23	clear, odorless
11:30:00	7.49	20.86	171	6.03	0.8	80	5833.45	3.23	clear, odorless
11:35:00	7.48	20.79	171	6.06	0.6	76	5833.46	3.23	clear, odorless

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-36
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 803.7
Tubing Type: SS
Date: 11/13/2013
Initial Water Level (ft MSL): 5838.33
Measuring Point (ft MSL): 6591.37

1 Casing Volume (Gal): 41.8
3 Casing Volume (Gal): 125.4
Drop Pipe (Gal): 30.9
3 CVs plus DP (Gal): 156.3
Total Purge Water (Gal): 126

Pump On: 13:09
Water at Surface: 13:09
Begin Sampling: 13:56
End Sampling: 14:07
Pump Off: 14:07
Final Water Level (ft MSL): 5838.08
Total Waste Water (Gal): 170

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
13:19:00	NC	NC	NC	NC	NC	NC	5837.98	3.4	clear, odorless
13:24:00	7.87	18.91	192	6.26	1.0	111	5838.02	3.4	clear, odorless
13:29:00	8.00	19.69	193	6.68	2.3	106	5838.04	3.4	clear, odorless
13:34:00	7.52	19.99	194	6.21	2.0	107	5838.05	3.4	clear, odorless
13:39:00	7.32	20.13	193	5.93	1.3	99	5838.05	3.4	clear, odorless
13:44:00	7.22	20.34	193	5.83	0.9	92	5838.06	3.4	clear, odorless
13:49:00	7.20	20.31	194	5.83	1.0	84	5838.06	3.4	clear, odorless
13:54:00	7.17	19.96	193	5.81	0.9	79	5838.05	3.4	clear, odorless

Additional Notes

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-42
Well Inside Diameter (in): 5
Well Depth (ft BGS): 973.5
Tubing Type: SS
Date: 11/7/2013
Initial Water Level (ft MSL): 5836.30
Measuring Point (ft MSL): 6759.02

1 Casing Volume (Gal): 51.8
3 Casing Volume (Gal): 155.4
Drop Pipe (Gal): 150.4
3 CVs plus DP (Gal): 305.8
Total Purge Water (Gal): 155.5

Pump On: 10:28
Water at Surface: 10:28
Begin Sampling: 11:09
End Sampling: 11:29
Pump Off: 11:29
Final Water Level (ft MSL): 5830.60
Total Waste Water (Gal): 437

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:49:00	NC	NC	NC	NC	NC	NC	5830.85	7.05	green tint, clear, odorless
10:52:00	7.84	14.45	487	6.83	0.9	189	5830.85	7.05	green tint, clear, odorless
10:55:00	7.84	16.18	478	6.74	0.9	190	5830.72	7.05	green tint, clear, odorless
10:58:00	7.89	18.24	485	7.02	0.5	187	5830.65	7.05	green tint, clear, odorless
11:01:00	7.90	19.20	489	7.01	0.4	186	5830.75	7.05	green tint, clear, odorless
11:04:00	7.90	19.60	492	7.14	0.2	186	5830.61	7.05	green tint, clear, odorless
11:07:00	7.90	19.79	494	7.12	0.2	186	5830.65	7.05	green tint, clear, odorless

Additional Notes
Sampled using a temporary sampling system installed for LANL pump test. Calculated volumes and purge rate vary from past sampling events. LANL personnel were on-site to operate pump and collect additional samples.

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-43 S1
Well Inside Diameter (in): 5
Well Depth (ft BGS): 960.7
Casing/Tubing Type: SS
Date: 11/19/2013
Initial Water Level (ft MSL): 5836.29
Measuring Point (ft MSL): 6732.65

1 Casing Volume (Gal): 65.6
3 Casing Volume (Gal): 196.8
Drop Pipe (Gal): 36.7
3 CVs plus DP (Gal): 233.5
Total Purge Water (Gal): 197

Pump On: 9:51
Water at Surface: 9:52
Begin Sampling: 13:06
End Sampling: 13:22
Pump Off: 13:22
Final Water Level (ft MSL): 5835.38
Total Waste Water (Gal): 300

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:22:36	NC	NC	NC	NC	NC	NC	5835.20	1.2	clear, odorless
10:27:36	8.24	14.67	186	0.90	0.4	133	-	-	-
10:32:36	7.99	15.47	183	1.56	0.3	130	-	-	-
10:37:36	8.07	16.05	180	4.38	0.3	125	-	-	-
10:42:36	8.14	16.87	179	5.76	0.2	123	-	-	-
10:47:36	8.18	17.67	178	6.41	0.2	122	-	-	-
10:52:36	8.23	18.34	177	6.62	0.2	121	5835.23	1.2	clear, odorless
10:57:36	8.25	18.62	178	6.66	0.2	121	-	-	-
11:02:36	8.26	18.86	179	6.73	0.2	120	-	-	-
11:07:36	8.27	18.98	180	6.81	0.2	120	-	-	-
11:12:36	8.27	19.07	181	6.84	0.2	120	-	-	-
11:17:36	8.28	19.15	181	6.84	0.2	120	-	-	-
11:22:36	8.27	19.28	181	6.89	0.2	119	5835.53	1.2	clear, odorless
11:27:36	8.27	19.35	182	6.92	0.2	119	-	-	-
11:32:36	8.27	19.44	182	6.94	0.2	119	-	-	-
11:37:36	8.27	19.46	182	6.93	0.2	118	-	-	-
11:42:36	8.27	19.57	182	6.94	0.2	118	-	-	-
11:47:36	8.27	19.55	182	6.94	0.2	118	-	-	-
11:52:36	8.27	19.58	182	6.95	0.2	118	5835.58	1.2	clear, odorless
11:57:36	8.26	19.55	182	6.95	0.2	117	-	-	-
12:02:36	8.26	19.60	182	6.98	0.2	117	-	-	-
12:07:36	8.26	19.68	182	6.98	0.2	117	-	-	-
12:12:36	8.26	19.61	183	6.97	0.2	116	-	-	-
12:17:36	8.26	19.76	183	6.99	0.2	116	-	-	-
12:22:36	8.26	19.67	183	6.98	0.2	116	5835.28	1.2	clear, odorless
12:27:36	8.26	19.92	183	7.01	0.2	116	-	-	-

Well Name: R-43 S1, continued

12:32:36	8.26	19.97	183	7.00	0.1	115	-	-	-
12:37:36	8.26	19.98	183	7.02	0.2	115	-	-	-
12:42:36	8.25	20.04	183	7.01	0.2	115	-	-	-
12:47:36	8.25	19.86	184	7.02	0.2	114	-	-	-
12:52:36	8.25	19.92	184	7.00	0.2	114	5835.29	1.2	clear, odorless
12:57:36	8.25	20.01	184	6.97	0.2	114	5835.30	1.2	clear, odorless
13:02:36	8.25	20.01	184	6.96	0.2	114	5835.30	1.2	clear, odorless

Additional Notes

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-1
Well Inside Diameter (in): 4.5
Well Depth (ft BGS): 1080.1
Casing/Tubing Type: SS
Date: 11/18/2013
Initial Water Level (ft MSL): 5876.90
Measuring Point (ft MSL): 6881.21

1 Casing Volume (Gal): 62.6
3 Casing Volume (Gal): 187.8
Drop Pipe (Gal): 41.2
3 CVs plus DP (Gal): 229
Total Purge Water (Gal): 189

Pump On: 12:32
Water at Surface: 12:32
Begin Sampling: 13:39
End Sampling: 13:47
Pump Off: 13:47
Final Water Level (ft MSL): 5874.52
Total Waste Water (Gal): 220

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
12:44:01	NC	NC	NC	NC	NC	NC	5874.34	3.41	clear, organic odor
12:49:01	7.22	15.49	142	1.05	17.4	-56	-	-	-
12:54:01	7.53	17.26	142	4.13	5.1	-46	5874.37	3.41	clear, organic odor
12:59:01	7.75	19.38	141	4.90	1.6	-29	-	-	-
13:04:01	7.88	20.47	142	5.32	0.6	-15	5874.38	3.41	clear, organic odor
13:09:01	7.94	20.93	144	5.43	0.3	-3	-	-	-
13:14:01	7.97	21.13	145	5.46	0.2	6	5874.40	3.41	clear, organic odor
13:19:01	7.99	21.24	145	5.49	0.3	13	-	-	-
13:24:01	7.99	21.24	145	5.52	1.3	19	5874.38	3.41	clear, organic odor
13:29:01	7.98	21.30	145	5.56	0.1	24	5874.41	3.41	clear, organic odor
13:34:01	7.98	21.21	145	5.59	0.6	29	5874.40	3.41	clear, organic odor
13:39:01	7.97	21.46	145	5.65	0.1	32	5874.41	3.41	clear, organic odor

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-43 S2
Well Inside Diameter (in): 5
Well Depth (ft BGS): 990.1
Casing/Tubing Type: SS
Date: 11/19/2013
Initial Water Level (ft MSL): 2835.38
Measuring Point (ft MSL): 6732.65

1 Casing Volume (Gal): 25.5
3 Casing Volume (Gal): 76.5
Drop Pipe (Gal): 39.6
3 CVs plus DP (Gal): 116.1
Total Purge Water (Gal): 77

Pump On: 13:34
Water at Surface: 13:34
Begin Sampling: 15:03
End Sampling: 15:18
Pump Off: 15:18
Final Water Level (ft MSL): 5834.54
Total Waste Water (Gal): 90

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
14:04:03	NC	NC	NC	NC	NC	NC	5834.44	1.3	clear, no odor
14:09:03	8.26	19.45	186	7.03	0.4	110	-	-	-
14:14:03	8.96	19.70	188	2.20	0.2	100	5834.46	1.3	clear, no odor
14:19:03	9.02	19.69	190	1.71	0.3	100	-	-	-
14:24:03	8.97	19.68	189	1.98	0.2	102	5834.42	1.3	clear, no odor
14:29:03	8.89	19.74	191	2.30	0.2	103	-	-	-
14:34:03	8.83	19.89	195	2.68	0.2	103	5834.43	1.3	clear, no odor
14:39:03	8.78	19.85	198	2.96	0.2	104	-	-	-
14:44:03	8.77	19.60	198	3.00	0.2	103	5834.41	1.3	clear, no odor
14:49:03	8.74	19.67	197	3.09	0.2	103	5834.44	1.3	clear, no odor
14:54:03	8.73	19.69	197	3.07	0.2	103	5834.45	1.3	clear, no odor
14:59:03	8.71	19.68	197	3.08	0.2	103	5834.40	1.3	clear, no odor

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-44 S1
Well Inside Diameter (in): 5
Well Depth (ft BGS): 936.3
Casing/Tubing Type: SS
Date: 11/6/2013
Initial Water Level (ft MSL): 5833.18
Measuring Point (ft MSL): 6714.90

1 Casing Volume (Gal): 56.68
3 Casing Volume (Gal): 170.04
Drop Pipe (Gal): 36.1
3 CVs plus DP (Gal): 206.14
Total Purge Water (Gal): 173.4

Pump On: 12:47
Water at Surface: 12:47
Begin Sampling: 13:49
End Sampling: 14:01
Pump Off: 14:01
Final Water Level (ft MSL): 5832.89
Total Waste Water (Gal): 251.6

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
12:58:00	NC	NC	NC	NC	NC	NC	5832.87	3.4	water clear, no odor
13:03:00	7.88	18.27	144	7.07	0.1	114	-	-	-
13:08:00	7.78	18.30	140	6.33	0.3	115	5832.88	3.4	water clear, no odor
13:13:00	7.77	18.32	138	5.81	0.2	116	-	-	-
13:18:00	7.79	18.37	137	5.80	0.1	116	5832.88	3.4	water clear, no odor
13:23:00	7.79	18.46	136	6.01	0.0	116	-	-	-
13:28:00	7.81	18.59	136	6.02	0.0	116	5832.87	3.4	water clear, no odor
13:33:00	7.80	18.49	136	6.10	0.0	117	-	-	-
13:38:00	7.78	18.55	135	6.12	0.0	119	5832.89	3.4	water clear, no odor
13:43:00	7.80	18.65	135	6.21	0.0	119	5832.89	3.4	water clear, no odor
13:48:00	7.82	18.87	135	6.20	0.0	118	5832.89	3.4	water clear, no odor

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-44 S2
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1016
Casing/Tubing Type: SS
Date: 11/6/2013
Initial Water Level (ft MSL): 5832.88
Measuring Point (ft MSL): 6714.91

1 Casing Volume (Gal): 76.4
3 Casing Volume (Gal): 229.2
Drop Pipe (Gal): 38.6
3 CVs plus DP (Gal): 267.8
Total Purge Water (Gal): 307.2

Pump On: 10:30
Water at Surface: 10:30
Begin Sampling: 12:06
End Sampling: 12:17
Pump Off: 12:17
Final Water Level (ft MSL): 5831.96
Total Waste Water (Gal): 383

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:54:00	NC	NC	NC	NC	0.88	NC	5831.93	3.2	water clear, no odor
10:59:00	7.87	19.22	147	6.83	-	65	-	-	-
11:04:00	7.88	19.92	146	6.82	0.44	75	5831.92	3.2	water clear, no odor
11:09:00	7.90	20.21	146	7.03	-	81	-	-	-
11:14:00	7.90	20.32	145	7.11	1.31	85	5831.94	3.2	water clear, no odor
11:19:00	7.90	20.31	146	7.13	-	89	-	-	-
11:24:00	7.90	20.23	145	7.16	0.55	91	5831.92	3.2	water clear, no odor
11:29:00	7.89	19.92	145	7.07	-	94	-	-	-
11:34:00	7.88	20.02	145	7.00	0.42	97	5831.93	3.2	water clear, no odor
11:39:00	7.88	19.99	145	6.96	-	98	-	-	-
11:44:00	7.88	20.00	145	6.93	0.33	99	5831.92	3.2	water clear, no odor
11:49:00	7.88	18.82	146	7.00	-	101	-	-	-
11:54:00	7.88	19.16	145	7.05	0.31	102	5831.94	3.2	water clear, no odor
11:59:00	7.88	20.29	144	7.08	0.20	103	5831.93	3.2	water clear, no odor
12:04:00	7.90	20.47	145	7.13	0.25	103	5831.93	3.2	water clear, no odor

Additional Notes:
HACH Turbidimeter used because YSI showed negative turbidity

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-45 S1
Well Inside Diameter (in): 5
Well Depth (ft BGS): 921.3
Casing/Tubing Type: SS
Date: 11/6/2013
Initial Water Level (ft MSL): 5832.89
Measuring Point (ft MSL): 6704.02

1 Casing Volume (Gal): 51.2
3 Casing Volume (Gal): 153.5
Drop Pipe (Gal): 35.7
3 CVs plus DP (Gal): 189.2
Total Purge Water (Gal): 154

Pump On: 12:21
Water at Surface: 12:21
Begin Sampling: 13:15
End Sampling: 13:30
Pump Off: 13:30
Final Water Level (ft MSL): 5832.44
Total Waste Water (Gal): 220

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
12:31:00	NC	NC	NC	NC	NC	NC	5832.42	3.5	clear, no odor
12:41:00	7.89	19.84	184	6.39	0.2	64.4	5832.42	3.5	clear, no odor
12:51:00	7.93	20.08	183	7.09	0.0	82.0	5832.42	3.5	clear, no odor
13:01:00	7.95	20.11	183	7.17	0.0	82.0	5832.42	3.5	clear, no odor
13:06:00	7.95	20.21	183	7.21	0.0	81.6	5832.42	3.5	clear, no odor
13:11:00	7.96	20.23	183	7.22	0.0	82.6	5832.42	3.5	clear, no odor

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-45 S2
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1016
Casing/Tubing Type: SS
Date: 11/6/2013
Initial Water Level (ft MSL): NA
Measuring Point (ft MSL): 6704.02

1 Casing Volume (Gal): 91.8
3 Casing Volume (Gal): 275.4
Drop Pipe (Gal): 38.0
3 CVs plus DP (Gal): 313.4
Total Purge Water (Gal): 276

Pump On: 10:21
Water at Surface: 10:21
Begin Sampling: 11:48
End Sampling: 12:01
Pump Off: 12:01
Final Water Level (ft MSL): NA
Total Waste Water (Gal): 320

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:29:00	NC	NC	NC	NC	NC	NC	NA	3.5	clear, odorless
10:44:00	7.99	18.58	170	6.42	0.1	138	NA	3.5	clear, odorless
10:59:00	8.14	20.14	171	6.61	0.0	131	NA	3.5	clear, odorless
11:04:00	8.14	20.26	172	6.63	0.0	127	NA	3.5	clear, odorless
11:34:00	8.13	20.13	171	6.65	0.0	124	NA	3.5	clear, odorless
11:39:00	8.13	20.13	172	6.65	0.0	123	NA	3.5	clear, odorless
11:44:00	8.15	20.30	172	6.64	0.0	121	NA	3.5	clear, odorless

Additional Notes
No water level taken because crew unable to connect with transducer with two Rugged Readers.
Rugged Readers connected to screen 1 transducer.

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-50 S1
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1118.11
Casing/Tubing Type: SS
Date: 11/12/2013
Initial Water Level (ft MSL): 5834.32
Measuring Point (ft MSL): 6904.11

1 Casing Volume (Gal): 49.3
3 Casing Volume (Gal): 147.8
Drop Pipe (Gal): 43.9
3 CVs plus DP (Gal): 191.7
Total Purge Water (Gal): 161

Pump On: 14:43
Water at Surface: 14:43
Begin Sampling: 16:02
End Sampling: 16:12
Pump Off: 16:12
Final Water Level (ft MSL): 5830.62
Total Waste Water (Gal): 220

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
15:00:54	NC	NC	NC	NC	0.76	NC	5834.15	2.60	very effervescent
15:05:54	7.97	20.07	139	8.23	-	120	-	-	-
15:10:54	7.94	20.13	169	5.29	0.52	121	5830.13	2.60	less effervescent
15:15:54	8.02	19.91	173	3.98	-	121	-	-	-
15:20:54	8.03	20.06	174	4.29	0.67	121	5830.12	2.60	slight effervescence
15:25:54	8.03	20.13	172	4.56	-	120	-	-	-
15:30:54	8.03	20.26	171	4.78	0.63	121	5830.11	2.60	slight effervescence
15:35:54	8.01	21.05	171	5.08	-	120	-	-	-
15:40:54	8.00	21.04	171	5.25	0.45	120	5830.11	2.60	slight effervescence
15:45:54	8.00	20.94	170	5.39	0.39	120	5830.11	2.60	slight effervescence
15:50:54	7.99	20.88	170	5.69	0.43	120	5830.10	2.60	slight effervescence
15:55:54	7.99	20.83	170	5.73	0.39	120	5830.10	2.60	slight effervescence
16:00:54	7.97	20.85	171	5.80	0.43	120	5830.11	2.60	slight effervescence

Additional Notes:
HACH Turb meter was used. YSI reading negative.

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-50 S2
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1217.5
Casing/Tubing Type: SS
Date: 11/12/2013
Initial Water Level (ft MSL): NC
Measuring Point (ft MSL): 6904.11

1 Casing Volume (Gal): 96.5
3 Casing Volume (Gal): 289.5
Drop Pipe (Gal): 46.0
3 CVs plus DP (Gal): 335.5
Total Purge Water (Gal): 294

Pump On: 10:29; 10:32
Water at Surface: 10:29; 10:32
Begin Sampling: 14:18
End Sampling: 14:26
Pump Off: 14:26
Final Water Level (ft MSL): NC
Total Waste Water (Gal): 360

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
11:02:17	NC	NC	NC	NC	2.43	NC	NC	1.50	effervescent, no odor *Hach
11:07:17	7.52	15.32	133	6.55	-	131	-	-	-
11:12:17	7.59	15.77	132	4.00	-	120	-	-	-
11:17:17	7.79	16.17	129	6.43	-	120	-	-	-
11:22:17	7.91	16.72	128	7.60	-	117	-	-	-
11:27:17	7.94	17.54	127	7.74	-	115	-	-	-
11:32:17	7.98	18.41	126	7.70	1.04	113	NC	1.50	very effervescent
11:37:17	7.99	18.99	125	7.52	-	113	-	-	-
11:42:17	8.00	19.25	124	7.59	-	114	-	-	-
11:47:17	8.00	19.40	125	7.56	-	114	-	-	-
11:52:17	8.02	19.64	126	7.61	-	114	-	-	-
11:57:17	8.02	19.66	124	7.64	-	115	-	-	-
12:02:17	8.02	19.74	123	7.51	1.96	115	NC	1.50	very effervescent
12:07:17	8.01	19.11	133	7.75	-	116	-	-	-
12:12:17	8.03	19.50	132	7.76	-	116	-	-	-
12:17:17	8.03	19.61	131	7.72	-	116	-	-	-
12:22:17	8.04	19.73	130	7.63	-	116	-	-	-
12:27:17	8.04	19.85	129	7.85	-	116	-	-	-
12:32:17	8.03	19.85	133	7.67	3.39	117	NC	1.50	very effervescent
12:37:17	8.03	19.95	132	8.13	-	117	-	-	-
12:42:17	8.04	19.94	132	7.84	-	117	-	-	-
12:47:17	8.04	19.93	131	8.94	-	117	-	-	-
12:52:17	8.04	20.09	131	8.07	-	118	-	-	-
12:57:17	8.05	20.10	130	7.82	-	118	-	-	-
13:02:17	8.04	20.04	130	7.95	0.43	118	NC	1.50	very effervescent

Well Name: R-50 S2, continued

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
13:07:17	8.04	20.07	132	7.72	-	118	-	-	-
13:12:17	8.04	20.10	131	8.00	-	118	-	-	-
13:17:17	8.04	20.19	131	8.21	-	118	-	-	-
13:22:17	8.04	20.23	130	8.24	-	118	-	-	-
13:27:17	8.04	20.25	130	8.80	-	118	-	-	-
13:32:17	8.04	20.26	129	8.00	0.48	118	NC	1.50	very effervescent
13:37:17	8.04	20.21	129	7.85	-	118	-	-	-
13:42:17	8.04	20.27	128	7.82	-	118	-	-	-
13:47:17	8.04	20.44	128	7.77	-	118	-	-	-
13:52:17	8.03	20.54	128	7.75	-	118	-	-	-
13:57:17	8.04	20.53	127	7.95	-	118	-	-	-
14:02:17	8.04	20.35	133	7.75	0.50	118	NC	1.50	very effervescent
14:07:17	8.05	20.38	132	7.55	0.48	118	NC	1.50	effervescence cleaned from flow-through cell before DO reading
14:12:17	8.02	20.42	133	7.63	1.49	119	NC	1.50	effervescence cleaned from flow-through cell before DO reading
14:17:17	8.01	20.20	133	7.99	0.35	120	NC	1.50	effervescence cleaned from flow-through cell before DO reading

Additional Notes:

HACH Turbidimeter used because of negative turbidity on YSI

Unable to connect with transducer with two rugged readers, use historical waterlevel per STR

Entered by: Andrew Stocker

Reviewed by : M. Shendo

Well Name: R-46
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1385.01
Casing/Tubing Type: SS
Date: 11/18/2013
Initial Water Level (ft MSL): 5882.92
Measuring Point (ft MSL): 7213.3

1 Casing Volume (Gal): 52.8
3 Casing Volume (Gal): 158.5
Drop Pipe (Gal): 54.6
3 CVs plus DP (Gal): 213.1
Total Purge Water (Gal): 160

Pump On: 10:42
Water at Surface: 10:42
Begin Sampling: 11:28
End Sampling: 11:38
Pump Off: 11:38
Final Water Level (ft MSL): 5881.59
Total Waste Water (Gal): 230

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
10:54:03	NC	NC	NC	NC	NC	NC	5881.44	4.69	clear, odorless
10:59:03	7.28	16.76	121	5.23	1.3	107	5881.53	4.69	clear, odorless
11:04:03	7.79	18.46	120	5.95	0.4	92	5881.58	4.69	clear, odorless
11:09:03	7.98	19.65	120	6.24	0.1	89	5881.59	4.69	clear, odorless
11:14:03	8.02	20.12	122	6.43	0.0	89	5881.59	4.69	clear, odorless
11:19:03	8.03	20.24	122	6.46	0.0	90	5881.6	4.69	clear, odorless
11:24:03	8.03	20.33	122	6.50	0.1	90	5881.59	4.69	clear, odorless

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-60
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1360.9
Casing/Tubing Type: SS
Date: 11/14/2013
Initial Water Level (ft MSL): 5907.29
Measuring Point (ft MSL): 7228.2

1 Casing Volume (Gal): 40.8
3 Casing Volume (Gal): 122.5
Drop Pipe (Gal): 54.2
3 CVs plus DP (Gal): 176.7
Total Purge Water (Gal): 123

Pump On: 8:58
Water at Surface: 8:58
Begin Sampling: 10:12; 11:14
End Sampling: 10:12; 11:34
Pump Off: 11:34
Final Water Level (ft MSL): 5898.32
Total Waste Water (Gal): 200

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
9:40:03	NC	NC	NC	NC	5.4	NC	5900.48	1.30	very effervescent, clear
9:45:03	7.41	17.30	126	4.34	-	45	-	-	-
9:50:03	7.88	17.60	127	4.75	-	51	-	-	-
9:55:03	8.08	18.12	127	5.06	4.0	53	5900.10	1.30	very effervescent, clear
10:00:03	8.16	18.70	127	5.33	-	54	-	-	-
10:05:03	8.19	19.18	126	5.53	-	52	-	-	-
10:10:03	8.20	19.82	126	5.62	1.8	50	5899.92	1.30	very effervescent, clear
10:15:03	8.22	20.55	125	5.65	-	47	-	-	-
10:20:03	8.25	21.37	128	5.52	-	44	-	-	-
10:25:03	8.26	21.96	128	5.56	2.0	39	5899.83	1.30	very effervescent, clear
10:30:03	8.27	22.36	127	5.56	-	36	-	-	-
10:35:03	8.28	22.61	127	5.57	-	32	-	-	-
10:40:03	8.27	22.91	127	5.58	1.6	31	5899.76	1.30	very effervescent, clear
10:45:03	8.27	23.06	125	5.60	-	28	-	-	-
10:50:03	8.26	23.27	126	5.59	-	28	-	-	-
10:55:03	8.25	23.40	125	5.60	2.6	19	5899.75	1.30	very effervescent, clear
11:00:03	8.24	23.56	126	5.49	1.3	12	5899.74	1.30	very effervescent, clear
11:05:03	8.25	23.61	126	5.54	1.0	7	5899.74	1.30	very effervescent, clear
11:10:03	8.24	23.66	125	5.54	1.2	3	5899.72	1.30	very effervescent, clear

Additional Notes:
HACH Turbidimeter used because of effervescence affecting YSI Turbidity

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-61 S1
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1162.3
Casing/Tubing Type: SS
Date: 11/15/2013
Initial Water Level (ft MSL): 5836.50
Measuring Point (ft MSL): 6940.1

1 Casing Volume (Gal): 59.9
3 Casing Volume (Gal): 179.6
Drop Pipe (Gal): 45.3
3 CVs plus DP (Gal): 224.9
Total Purge Water (Gal): 360

Pump On: 8:04
Water at Surface: 8:04
Begin Sampling: 9:00; 9:57; 11:23; 12:49; 14:15
End Sampling: 9:00; 9:57; 12:01; 12:49; 14:19
Pump Off: 14:19
Final Water Level (ft MSL): 5833.16
Total Waste Water (Gal): 775

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
8:31:06	NC	NC	NC	NC	NC	NC	5833.11	2.1	clear, light organic odor, effervescent
8:36:06	6.63	16.40	163	2.09	4.6	-97	-	-	-
8:41:06	6.84	16.87	156	3.82	8.0	-48	-	-	-
8:46:06	6.86	17.00	150	3.83	2.8	-24	5833.04	2.1	clear, slight organic odor, effervescent
8:51:06	6.87	17.56	149	4.91	3.9	-9	-	-	-
8:56:06	6.88	18.06	148	5.00	3.7	4	-	-	-
9:01:06	6.87	18.41	148	4.99	3.8	14	5832.99	2.1	0900 1CV+DP DRO sample taken
9:06:06	6.88	18.70	147	5.20	3.5	22	-	-	-
9:11:06	6.87	18.85	147	5.43	3.2	30	-	-	-
9:16:06	6.89	18.93	146	5.57	3.1	35	5833.01	2.1	clear, slight organic odor, effervescent
9:21:06	6.89	19.25	146	4.96	12.3	41	-	-	-
9:26:06	6.89	19.38	149	4.95	2.9	46	-	-	-
9:31:06	6.89	19.33	149	4.91	2.7	51	5832.99	2.1	clear, slight organic odor, effervescent
9:36:06	6.88	19.32	149	4.97	3.3	55	-	-	-
9:41:06	6.88	19.35	149	5.02	3.1	59	-	-	-
9:46:06	6.87	19.24	149	5.10	3.4	63	5833.01	2.1	clear, slight organic odor, effervescent
9:51:06	6.87	19.24	148	5.00	3.1	67	-	-	-
9:56:06	6.86	19.13	148	5.20	3.3	71	-	-	-
10:01:06	6.85	19.78	147	4.94	34.4	74	5833.00	2.1	clear, slight organic odor, effervescent
10:06:06	6.86	19.33	150	5.22	2.3	76	-	-	-
10:11:06	6.87	19.29	150	5.83	1.5	79	-	-	-
10:16:06	6.86	19.52	149	5.69	1.4	82	5833.01	2.1	clear, slight organic odor, effervescent

Well Name: R-61 S1, continued

10:21:06	6.87	19.66	149	5.80	1.4	84	-	-	-
10:26:06	6.89	19.65	149	5.76	1.4	85	-	-	-
10:31:06	6.88	19.77	149	5.84	1.4	88	5833.02	2.1	clear, slight organic odor, effervescent
10:36:06	6.87	19.79	149	5.80	1.4	91	-	-	-
10:41:06	6.86	19.73	149	5.83	1.4	94	-	-	-
10:46:06	6.86	19.66	148	6.04	1.3	96	5833.01	2.1	clear, slight organic odor, effervescent
10:51:06	6.85	19.49	148	5.92	1.3	98	-	-	-
10:56:06	6.85	19.56	148	6.11	1.3	101	-	-	-
11:01:06	6.84	19.69	148	5.89	1.4	103	5833.03	2.1	clear, slight organic odor, effervescent
11:06:06	6.84	19.65	148	6.13	1.4	105	-	-	-
11:11:06	6.84	19.69	148	5.39	1.4	107	5833.03	2.1	clear, slight organic odor, effervescent
11:16:06	6.84	19.65	148	5.63	1.4	108	5833.02	2.1	clear, slight organic odor, effervescent
11:21:06	6.84	19.64	148	5.92	1.4	110	5833.05	2.1	clear, slight organic odor, effervescent
11:26:06	6.83	19.77	147	5.72	2.0	112	-	-	-
11:31:06	6.84	19.97	147	5.37	1.4	113	-	-	-
11:36:06	6.83	19.97	147	5.35	1.5	115	-	-	-
11:41:06	6.83	20.11	146	5.41	1.7	116	-	-	-
11:46:06	6.84	20.05	146	5.37	1.6	118	5833.06	2.1	clear, organic odor, effervescent
11:51:06	6.83	20.16	149	5.40	1.3	117	-	-	-
11:56:06	6.83	20.39	149	5.42	1.8	116	-	-	-
12:01:06	6.85	20.00	148	5.43	1.2	117	5833.06	2.1	clear, organic odor, effervescent
12:06:06	6.85	19.81	148	6.21	1.0	119	-	-	-
12:11:06	6.84	19.71	147	5.86	0.9	121	-	-	-
12:16:06	6.84	19.74	147	6.29	0.9	123	5833.11	2.1	clear, organic odor, effervescent
12:21:06	6.84	19.75	147	6.46	0.9	125	-	-	-
12:26:06	6.84	19.61	147	5.66	1.3	126	-	-	-
12:31:06	6.83	19.78	146	5.50	0.9	128	5833.09	2.1	clear, organic odor, effervescent
12:36:06	6.83	19.88	148	5.48	1.1	129	-	-	-
12:41:06	6.86	19.85	148	5.54	1.0	128	-	-	-
12:46:06	6.86	19.83	147	5.60	0.9	130	5833.09	2.1	clear, organic odor, effervescent
12:51:06	6.85	19.76	147	5.61	1.0	132	-	-	-

Well Name: R-61 S1, continued

12:56:06	6.85	19.84	147	5.61	1.0	132	-	-	-
13:01:06	6.84	19.77	147	5.61	0.9	134	5833.12	2.1	clear, organic odor, effervescent
13:06:06	6.83	19.68	146	5.49	1.1	136	-	-	-
13:11:06	6.83	19.66	146	5.53	1.4	137	-	-	-
13:16:06	6.83	19.48	146	5.51	1.3	138	5833.14	2.1	clear, organic odor, effervescent
13:21:06	6.82	19.41	145	5.58	0.9	139	-	-	-
13:26:06	6.82	19.44	146	5.58	0.9	140	-	-	-
13:31:06	6.83	19.33	146	5.66	1.0	141	5833.12	2.1	clear, organic odor, effervescent
13:36:06	6.82	19.25	146	5.66	1.1	143	-	-	-
13:41:06	6.82	19.36	147	5.63	1.1	144	-	-	-
13:46:06	6.79	19.57	149	5.50	1.4	135	5833.12	2.1	clear, organic odor, effervescent
13:56:46	6.81	19.59	148	0.00	1353.3	127	-	-	DO and Turbidity off because of effervescence
14:01:02	6.80	19.69	147	5.55	1.1	122	5833.13	2.1	clear, organic odor, effervescent
14:06:02	6.80	19.72	148	5.62	1.1	112	5833.13	2.1	clear, organic odor, effervescent
14:11:02	6.80	19.66	148	5.63	1.2	106	5833.15	2.1	clear, organic odor, effervescent

Additional Notes:

Entered by: Andrew Stocker
Reviewed by M. Shendo

Well Name: R-61 S2
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1162.3
Casing/Tubing Type: SS
Date: 11/14/2013
Initial Water Level (ft MSL): 5836.35
Measuring Point (ft MSL): 6940.12

1 Casing Volume (Gal): 86.3
3 Casing Volume (Gal): 258.9
Drop Pipe (Gal): 47.9
3 CVs plus DP (Gal): 306.8
Total Purge Water (Gal): 518

Pump On: 7:37
Water at Surface: 7:38
Begin Sampling: 8:42; 10:06; 12:11; 14:16; 16:21
End Sampling: 8:42; 10:06; 12:29; 14:17; 16:25
Pump Off: 16:25
Final Water Level (ft MSL): 5833.99
Total Waste Water (Gal): 1090

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
8:01:01	NC	NC	NC	NC	NC	NC	5833.82	2.08	clear, smells strong organic odor
8:06:01	6.68	14.84	163	0.44	92.8	-165	-	-	-
8:11:01	6.52	15.18	216	0.26	18.0	-149	-	-	-
8:16:01	6.45	15.57	225	0.17	1037.6	-120	-	-	-
8:21:01	6.46	16.26	221	0.16	3.5	-101	5833.84	2.08	clear, effervescent, organic odor
8:26:01	6.48	16.95	220	0.16	3.1	-89	-	-	-
8:31:01	6.49	17.36	212	0.21	3.2	-77	-	-	-
8:36:01	6.49	17.64	206	0.27	3.1	-67	-	-	-
8:41:01	6.50	17.83	202	0.29	3.0	-61	5833.82	2.08	clear, effervescent, organic odor
8:46:01	6.49	18.21	208	0.25	2.9	-55	-	-	-
8:51:01	6.50	18.01	208	0.33	2.5	-57	-	-	-
8:56:01	6.49	17.97	207	0.42	2.4	-56	-	-	-
9:01:01	6.49	17.91	206	0.43	2.3	-55	5833.82	2.08	clear, effervescent, organic odor
9:06:01	6.49	17.91	206	0.48	2.2	-54	-	-	-
9:11:01	6.49	17.99	205	0.55	2.1	-53	-	-	-
9:16:01	6.49	18.14	204	0.59	1.9	-52	-	-	-
9:21:01	6.49	18.26	202	0.67	1.9	-51	5833.83	2.08	clear, effervescent, organic odor
9:26:01	6.50	18.41	201	0.75	1.8	-50	-	-	-
9:31:01	6.50	18.37	199	0.81	1.7	-48	-	-	-
9:36:01	6.50	18.36	198	0.83	1.6	-47	-	-	-
9:41:01	6.50	18.36	196	0.87	1.6	-45	5833.85	2.1	clear, effervescent, organic odor
9:46:01	6.50	18.42	195	0.99	1.5	-44	-	-	-
9:51:01	6.51	19.50	191	0.81	1.6	-39	-	-	-

Well Name: R-61 S2, continued

9:56:01	6.51	18.97	190	0.98	1.6	-39	-	-	-
10:01:01	6.49	18.74	201	1.07	1.6	-40	5833.84	2.08	clear, effervescent, organic odor
10:06:01	6.52	18.97	198	1.00	1.5	-41	-	-	-
10:11:01	6.52	19.46	196	0.98	1.7	-39	-	-	-
10:16:01	6.52	19.01	198	1.19	1.4	-38	-	-	-
10:21:01	6.52	18.96	197	1.13	1.4	-36	5833.83	2.08	clear, effervescent, organic odor
10:26:01	6.52	18.71	196	1.27	1.4	-37	-	-	-
10:31:01	6.52	18.67	194	1.44	1.4	-36	-	-	-
10:36:01	6.53	18.69	193	1.44	1.3	-35	-	-	-
10:41:01	6.53	18.91	192	1.43	1.3	-34	5833.84	2.08	clear, effervescent, organic odor
10:46:01	6.53	19.00	190	1.52	1.3	-33	-	-	-
10:51:01	6.54	19.10	190	1.55	1.3	-32	-	-	-
10:56:01	6.54	19.26	189	1.49	1.3	-31	-	-	-
11:01:01	6.54	19.59	192	1.39	1.6	-31	5833.84	2.08	clear, effervescent, organic odor
11:06:01	6.55	19.59	191	1.44	1.0	-31	-	-	-
11:11:01	6.55	19.50	190	1.55	1.0	-31	-	-	-
11:16:01	6.55	19.56	190	1.67	1.0	-30	-	-	-
11:21:01	6.55	19.61	188	1.75	1.0	-29	5833.86	2.08	clear, effervescent, organic odor
11:26:01	6.56	19.76	187	1.64	1.1	-28	-	-	-
11:31:01	6.56	19.78	186	1.64	1.0	-27	-	-	-
11:36:01	6.57	19.62	185	1.81	1.0	-26	-	-	-
11:41:01	6.57	19.57	184	1.87	1.0	-25	5833.86	2.08	clear, effervescent, organic odor
11:46:01	6.57	19.55	183	1.90	0.9	-24	-	-	-
11:51:01	6.57	19.62	182	1.91	1.0	-23	-	-	-
11:56:01	6.57	19.76	181	1.95	1.0	-22	-	-	-
12:01:01	6.58	19.61	181	1.95	1.0	-21	5833.88	2.08	clear, effervescent, organic odor
12:06:01	6.58	19.77	180	2.00	1.0	-20	5833.90	2.1	clear, effervescent, organic odor
12:11:01	6.57	19.97	183	1.82	1.0	-21	5833.90	2.1	clear, effervescent, organic odor
12:16:01	6.58	20.48	182	1.74	1.5	-19	-	-	-
12:21:01	6.58	20.26	181	1.90	0.9	-20	5833.92	2.08	clear, effervescent, organic odor
12:26:01	6.59	20.26	179	1.88	0.9	-20	-	-	-

Well Name: R-61 S2, continued

12:31:01	6.59	20.03	178	1.92	0.9	-19	-	-	-
12:36:01	6.59	20.20	178	1.86	1.3	-19	-	-	-
12:41:01	6.60	20.40	178	1.97	1.0	-19	5833.91	2.08	clear, effervescent, organic odor
12:46:01	6.60	20.50	177	2.05	1.0	-18	-	-	-
12:51:01	6.60	20.39	177	2.04	1.0	-18	-	-	-
12:56:01	6.60	20.41	175	2.13	1.2	-16	-	-	-
13:01:01	6.60	20.53	175	2.10	1.1	-16	5833.92	2.08	clear, effervescent, organic odor
13:06:01	6.61	20.63	174	2.13	1.0	-15	-	-	-
13:11:01	6.61	20.60	174	2.15	1.3	-15	-	-	-
13:16:01	6.61	20.56	173	2.09	1.7	-15	-	-	-
13:21:01	6.61	20.49	172	2.16	1.2	-15	5833.92	2.08	clear, effervescent, organic odor
13:26:01	6.61	20.55	171	2.15	1.0	-14	-	-	-
13:31:01	6.61	20.43	171	2.19	1.0	-13	-	-	-
13:36:01	6.60	20.42	170	2.26	1.0	-12	-	-	-
13:41:01	6.61	20.45	169	2.29	1.0	-10	5833.94	2.08	clear, effervescent, organic odor
13:46:01	6.62	20.37	168	2.28	1.0	-8	-	-	-
13:51:01	6.62	20.40	168	2.34	1.7	-8	-	-	-
13:56:01	6.62	20.40	167	2.32	1.0	-8	-	-	-
14:01:01	6.62	20.34	167	2.35	1.0	-8	5833.94	2.08	clear, effervescent, organic odor
14:06:01	6.62	20.36	166	2.41	1.2	-7	-	-	-
14:11:01	6.62	20.32	165	2.39	1.0	-7	-	-	-
14:16:01	6.62	20.35	165	2.33	1.7	-5	-	-	-
14:21:01	6.63	20.61	164	2.19	2.2	-7	5833.95	2.08	clear, effervescent, organic odor
14:26:01	6.63	20.49	163	2.27	2.3	-6	-	-	-
14:31:01	6.63	20.22	163	2.30	2.9	-6	-	-	-
14:36:01	6.64	20.10	163	2.38	1.9	-5	-	-	-
14:41:01	6.64	20.04	162	2.39	1.8	-4	5833.96	2.08	clear, effervescent, organic odor
14:46:01	6.64	20.00	162	2.34	3.2	-3	-	-	-
14:51:01	6.64	20.03	162	2.36	2.5	-3	-	-	-
14:56:01	6.64	20.02	161	2.44	3.2	-2	-	-	-
15:01:01	6.64	20.03	161	2.44	3.0	-2	5833.94	2.08	clear, effervescent, organic odor

Well Name: R-61 S2, continued

15:06:01	6.65	19.99	160	2.47	2.7	-1	-	-	-
15:11:01	6.65	19.99	160	2.45	1.9	0	-	-	-
15:16:01	6.65	19.94	159	2.50	2.8	1	-	-	-
15:21:01	6.65	19.89	158	2.50	2.1	2	5833.96	2.1	clear, effervescent, organic odor
15:26:01	6.65	19.90	158	2.45	3.1	2	-	-	-
15:31:01	6.65	20.03	157	2.41	3.6	1	-	-	-
15:36:01	6.66	20.06	157	2.46	4.5	1	-	-	-
15:41:01	6.66	20.01	156	2.48	3.1	2	5833.97	2.08	clear, effervescent, organic odor
15:46:01	6.66	19.95	156	2.53	1.8	5	-	-	-
15:51:01	6.66	19.90	155	2.54	2.3	8	-	-	-
15:56:01	6.66	19.83	154	2.55	2.7	10	-	-	-
16:01:01	6.66	19.73	153	2.57	3.0	10	5833.97	2.08	clear, effervescent, organic odor
16:06:01	6.67	19.74	153	2.59	2.40	9	-	-	-
16:11:01	6.67	19.81	152	2.63	2.20	9	-	-	-
16:16:01	6.67	19.87	152	2.60	2.80	10	-	-	-
16:21:01	6.67	19.93	152	2.67	2.80	11	5833.97	2.08	clear, effervescent, organic odor

Additional Notes:

Entered by: Andrew Stocker
Reviewed by: M. Shendo

Well Name: R-62
Well Inside Diameter (in): 5
Well Depth (ft BGS): 1189.7
Casing/Tubing Type: SS
Date: 11/12/2013
Initial Water Level (ft MSL): 5838.90
Measuring Point (ft MSL): 6984.93

1 Casing Volume (Gal): 44.5
3 Casing Volume (Gal): 133.5
Drop Pipe (Gal): 46.9
3 CVs plus DP (Gal): 180.4
Total Purge Water (Gal): 133.5

Pump On: 11:02
Water at Surface: 11:02
Begin Sampling: 13:15
End Sampling: 13:41
Pump Off: 13:41
Final Water Level (ft MSL): 5828.66
Total Waste Water (Gal): 200

Time (MST)	pH	Temperature (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Water Level (ft MSL)	Discharge Rate (gpm)	Notes
11:33:00	NC	NC	NC	NC	0.50	NC	5831.14	1.3	effervescent, clear, odorless
11:38:00	7.80	12.93	190	4.09	-	143	-	-	-
11:43:00	7.73	13.33	187	2.43	11.30	125	5831.03	1.3	effervescent, clear, odorless
11:48:00	8.40	13.66	173	1.84	-	86	-	-	-
11:53:00	8.80	13.97	167	2.17	1.90	71	5830.99	1.3	effervescent, clear, odorless
11:58:00	8.84	14.39	171	2.82	-	73	-	-	-
12:03:00	8.78	14.92	174	3.32	1.50	78	5830.96	1.3	effervescent, clear, odorless
12:08:00	8.76	15.51	181	3.75	-	78	-	-	-
12:13:00	8.74	16.22	185	4.21	2.52	77	5830.92	1.3	effervescent, clear, odorless
12:18:00	8.71	16.92	187	4.45	-	77	-	-	-
12:23:00	8.68	17.39	188	4.67	1.57	77	5830.90	1.3	effervescent, clear, odorless
12:28:00	8.65	17.95	188	4.65	-	77	-	-	-
12:33:00	8.63	18.25	189	4.81	1.35	77	5830.87	1.3	78.5gal purged, effervescent, clear, odorless
12:38:00	8.60	18.43	189	4.93	-	78	-	-	-
12:43:00	8.59	18.54	189	4.99	1.13	78	5830.83	1.3	effervescent, clear, odorless
12:48:00	8.57	18.59	189	5.12	-	78	-	-	-
12:53:00	8.55	18.85	189	5.33	0.97	80	5830.82	1.3	effervescent, clear, odorless
12:58:00	8.53	18.88	189	5.21	-	80	-	-	-
13:03:00	8.51	18.86	189	5.29	0.00	81	5830.76	1.3	effervescent, clear, odorless
13:08:00	8.50	18.90	193	5.30	0.90	80	5830.75	1.3	effervescent, clear, odorless
13:13:00	8.50	19.03	193	5.38	1.07	80	5830.74	1.3	effervescent, clear, odorless

Additional Notes:

Entered by: Andrew Stocker
Reviewed by M. Shendo

Appendix D

Field Parameter Summary Table

Well	Depth (ft bgs)	MY	Qtr	Date	Drop pipe (DP) vol (calc)	1CV (calc)	3CV (calc)	DP + 3CV (calc)	Reported Purge Vol (gal)	Calc CVs purged	pH	Temp (◦C)	Sp Cond (uS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Discharge Rate (gpm)	Notes at start of purge	Notes at end of purge
MCO-4B	8.90	2010	4	5/16/2011	N/A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		Dry	N/A
MCO-4B	8.90	2010	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Dry	N/A
MCO-4B	8.90	2011	1	11/8/2011	0.00	1.90	5.70	5.70	2.00	1.05	6.86	9.39	431.00	8.90	6.22	177.00		Clear, odorless	Clear, odorless
MCO-4B	8.90	2011	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		NA	N/A
MCO-4B	8.90	2014	1	11/20/2013	N/A	2.44	7.34	7.34	2.50	1.02	6.49	11.54	1207.00	7.62	0.90	124.00	0.13	Some floaties in water	clear, no odor
MCO-6	27.00	2010	4	5/18/2011	0.00	3.30	9.90	9.90	3.75	1.14	6.88	9.45	494.00	8.38	4.86	238.00		Clear;odorless	Clear;odorless
MCO-6	27.00	2011	1	11/9/2011	0.00	3.30	9.90	9.90	8.50	2.60	6.94	9.25	480.00	8.90	5.28	206.00		Clear, odorless	Clear, odorless
MCO-6	27.00	2011	2	3/23/2012	N/A	3.20	9.60	9.60	3.80	1.19	6.98	9.37	420.00	8.35	4.85	33.00		clear, odorless	Clear, odorless
MCO-6	27.00	2011	4	8/15/2012	N/A	2.63	7.89	7.89	2.50	0.95	6.85	17.88	488	7.74	11.8	213		Clear, odorless	Clear, odorless
MCO-6	27.00	2014	1	11/20/2013	NA	5.18	15.50	15.50	5.20	1.00	6.71	9.93	605	8.32	1.2	122	0.13	clear, odorless	clear, odorless
MCO-7	39.00	2010	4	5/18/2011	0.00	3.40	10.20	10.20	7.25	2.13	6.77	11.28	558.00	7.55	5.02	251.00		Clear;odorless	Clear;odorless
MCO-7	39.00	2010	5	8/3/2011	0	3.49	10.47	10.47	6.50	1.86	6.74	11.02	587.00	8.03	3.00	295.00		Clear, odorless	Clear, odorless
MCO-7	39.00	2011	1	11/10/2011	0	2.90	8.70	8.70	2.18	0.75	6.88	9.95	534.00	7.80	2.80	208.00		Clear, odorless	Clear, odorless
MCO-7	39.00	2011	2	3/22/2012	N/A	10.20	30.60	30.60	12.70	1.25	6.77	9.80	526.00	8.26	6.01	211.00		clear, odorless	Clear, odorless.
MCO-7	39.00	2011	4	8/14/2012	NA	9.9	29.70	89.10	10.00	1.01	6.73	11.34	478	7.87	2.98	249		clear, odorless	clear, odorless
MCO-7	39.00	2014	1	11/21/2013	N/A	10	30.00	30.00	12.50	1.25	6.82	10.30	472	7.69	15.40	151	0.04	very silty, brown	cloudy
MCOI-5	702.70	2010	3	2/28/2011	6.90	18.50	55.50	62.40	37.00	2.00	8.35	13.69	160.00	7.32	0.10	217.00		Clear, no odor	Clear, no odor
MCOI-5	702.70	2010	4	5/26/2011	6.90	17.90	53.80	60.70	27.00	1.51	8.05	13.65	184.00	7.10	0.55	139.00		Clear, no odor	Clear, no odor
MCOI-5	702.70	2010	5	8/10/2011	6.96	16.98	50.94	57.90	17.00	1.00	8.42	13.80	199.00	7.01	0.34	236.00		Clear, odorless	Clear, odorless
MCOI-5	702.70	2011	3	6/4/2012	4.10	15.32	45.96	50.06	15.50	1.01	8.49	14.41	182.00	7.49	0.66	234.10		clear, no odor	clear, no odor
MCOI-5	702.70	2013	1	10/30/2012	4.10	14.70	44.10	48.20	15.20	1.03	8.63	13.10	196.00	6.83	0.33	199.00	0.40	clear, no odor	clear, no odor
MCOI-5	702.70	2013	3	5/7/2013	4.1	13.8	41.40	45.50	27.0	1.96	8.49	13.72	208	5.33	0.99	234	0.45	clear, odorless	clear, odorless
MCOI-5	702.70	2014	1	11/8/2013	4.1	13.9	41.70	45.80	45.0	3.24	8.21	14.35	203	7.10	7.60	176	0.66	clear, odorless	clear, odorless
MCOI-6	686.00	2010	4	5/31/2011	26.86	48.05	144.15	171.01	148.00	3.08	7.13	16.16	621.00	6.90	0.58	208.00		Clear, odorless	Clear, odorless
MCOI-6	686.00	2010	5	8/10/2011	26.83	48.70	146.10	172.93	172.93	3.55	7.11	16.69	650.00	6.87	0.39	151.00		Clear, odorless	Clear, odorless
MCOI-6	686.00	2011	1	11/9/2011	26	47.20	141.60	167.60	142.00	3.01	7.11	14.42	618.00	6.65	0.79	181.00		Clear, odorless	Clear, odorless
MCOI-6	686.00	2011	2	3/5/2012	26.94	46.33	138.99	165.93	140.00	3.02	7.25	15.63	602.00	7.10	0.54	211.60		Clear, odorless	Clear, odorless
MCOI-6	686.00	2011	4	8/17/2012	27	45.4	136.20	163.20	137	3.02	8.32	15.98	593	7.10	0.53	105		Clear & no odor	Clear & no odor
MCOI-6	686.00	2013	1	11/2/2012	27	45.3	135.90	162.90	175	3.86	7.18	15.45	623	7.02	0.43	111	1.50	clear, no odor	clear, no odor
MCOI-6	686.00	2013	2	2/5/2013	27	56.25	168.75	195.75	173.6	3.09	7.16	14.81	565	7.14	0.45	127	1.40	particulates, no odor	no particulates, no odor
MCOI-6	686.00	2013	3	5/8/2013	27.0	45	135.00	162.00	136	3.02	7.22	16.01	595	7.49	3.8	160	1.66	water cloudy, odorless	clear, odorless
MCOI-6	686.00	2013	4	7/9/2013	27.0	45.4	136.20	163.20	136.5	3.01	7.02	17.19	594	6.95	-0.7	111	1.30	clear, no odor	clear, no odor
MCOI-6	686.00	2014	1	11/7/2013	27.0	45	135.10	162.10	136	3.02	7.27	15.00	592	6.90	0.6	108	1.38	clear, no odor	clear, no odor
R-1	1080.1	2010	4	6/3/2011	41.2	63.3	189.90	231.10	212.6	3.36	7.5	21.47	143	5.35	1.03	166		strong sulfurous odor	clear, no odor
R-1	1080.1	2010	5	8/2/2011	41.16	62.92	188.76	229.92	191	3.04	7.2	20.71	143	5.42	1.61	184.2		clear, sulfur odor?	clear, no odor
R-1	1080.1	2011	1	11/18/2011	41	63.4	190.00	231.00	190	3.00	7.39	20.4	143	5.35	1.48	136.8		clear, sulfur odor	clear, no odor
R-1	1080.1	2013	1	10/30/2012	41.16	62.95	188.85	230.01	191.4	3.04	7.76	21.26	146	5.53	0.54	-14	3.30	clear, organic odor	clear, no odor
R-1	1080.1	2014	1	11/18/2013	41.2	62.6	187.80	229.00	189	3.02	7.97	21.46	145	5.65	0.10	32	3.41	clear, organic odor	clear, organic odor

Well	Depth (ft bgs)	MY	Qtr	Date	Drop pipe (DP) vol (calc)	1CV (calc)	3CV (calc)	DP + 3CV (calc)	Reported Purge Vol (gal)	Calc CVs purged	pH	Temp (◦C)	Sp Cond (uS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Discharge Rate (gpm)	Notes at start of purge	Notes at end of purge
R-11	855.00	2010	4	5/23/2011	34.4	52.70	158.10	192.50	207.00	3.93	7.91	21.95	222.00	7.48	0.22	189.00		Clear; odorless	Clear; odorless
R-11	855.00	2010	5	8/12/2011	34.37	52.42	157.26	191.63	158.00	3.01	7.98	21.99	224.00	7.54	0.42	213.00		Clear, odorless	Clear, odorless
R-11	855.00	2011	1	11/16/2011	34.4	52.40	157.20	191.60	159.00	3.03	7.99	21.22	224.00	7.58	0.24	169.00		Clear, odorless	Clear, odorless
R-11	855.00	2011	2	3/7/2012	34.4	52.80	158.40	192.80	194.00	3.67	7.98	20.57	223.00	7.33	0.46	131.00		Clear, odorless	Clear, odorless
R-11	855.00	2011	4	8/17/2012	34.38	52.1	156.30	190.68	159	3.05	7.98	21.38	234	7.54	0.17	227		clear, odorless	clear, odorless
R-11	855.00	2013	1	11/5/2012	34.39	51.95	155.85	190.24	156	3.00	8.04	21.39	226	7.14	0.39	100	3.00	clear, no odor	clear, no odor
R-11	855.00	2013	2	2/4/2013	34.38	52.14	156.42	190.80	174	3.34	7.95	21.15	227	7.48	0.28	95	2.90	clear, no odor	clear, no odor
R-11	855.00	2013	3	5/13/2013	34.4	51.9	155.70	190.10	156	3.01	7.96	22.55	237	7.45	0.4	191	3.09	clear, odorless	clear, odorless
R-11	855.00	2013	4	7/12/2013	34.4	51.8	155.40	189.80	159	3.07	8.02	22.27	240	7.60	0.7	158	3.00	clear, no odor	clear, no odor
R-11	855.00	2014	1	11/5/2013	34.4	51.5	154.50	188.90	155	3.01	8.22	20.82	238	7.10	0.6	175	2.88	clear, odorless	clear, odorless
R-13	1029.40	2010	3	2/18/2011	34.4	157.70	473.10	507.50	522.00	3.31	8.24	21.87	132.00	6.65	0.11	191.00		Clear, odorless	Clear, odorless
R-13	1029.40	2010	4	5/25/2011	34.4	157.00	471.00	505.40	493.80	3.15	8.24	22.08	140.00	6.55	0.31	203.60		Clear, odorless	Clear, odorless
R-13	1029.40	2010	5	8/1/2011	34.4	156.80	470.40	504.80	471.00	3.00	8.21	22.01	143.00	6.59	0.28	83.00		Clear, odorless	Clear, odorless
R-13	1029.40	2011	1	11/22/2011	34.4	158.00	474.00	508.40	474.00	3.00	8.29	20.78	141.00	6.29	0.42	194.90		clear, odorless	clear, odorless
R-13	1029.40	2011	3	6/5/2012	34.4	156.80	470.40	504.80	473.00	3.02	8.23	21.85	143.00	6.34	0.24	250.70		clear, odorless	clear, odorless
R-13	1029.40	2013	1	10/31/2012	34.4	156.60	469.80	504.20	470.00	3.00	8.21	21.41	146.00	6.37	0.29	217.00	6.90	clear, no odor	clear, no odor
R-13	1029.40	2013	3	5/6/2013	34.4	156.6	469.80	504.20	470	3.00	7.95	21.08	143	6.58	0.26	271.0	7.14	clear, odorless	clear, odorless
R-13	1029.40	2014	1	11/8/2013	34.5	155.7	467.10	501.60	468	3.01	8.33	20.42	144	6.48	0.30	99.0	6.98	clear, odorless	clear, odorless
R-14	1315.60	2011	3	2/22/2011	48.5	51.07	153.21	201.71	246.00	4.82	8.39	23.67	135.00	4.84	0.63	116.00		Clear, odorless	Clear, odorless
R-14	1315.60	2011	4	5/18/2011	48.48	51.34	154.02	202.50	215.00	4.19	8.40	22.88	131.00	5.11	0.51	156.00		Clear, very slight odor	Clear
R-14	1315.60	2011	5	8/3/2011	48.5	50.50	151.50	200.00	154.00	3.05	8.37	23.75	133.00	5.26	0.36	139.00		Clear, odorless	Clear, odorless
R-14	1315.60	2011	1	11/8/2011	48.5	51.02	153.06	201.56	179.40	3.52	8.43	23.17	130.00	5.17	0.51	167.10		clear, no odor	clear, no odor
R-14	1315.60	2011	3	5/29/2012	48.53	50.51	151.53	200.06	174.20	3.45	8.31	23.63	131.00	5.51	0.50	167.10		clear, no odor	clear, no odor
R-14	1315.60	2013	1	11/5/2012	48.55	49.90	149.70	198.25	170.00	3.41	8.26	22.09	134.00	5.64	0.51	185.00	6.80	clear, odorless, slightly effervescent\	clear, odorless
R-14	1315.60	2013	3	5/14/2013	48.6	49.9	149.70	198.30	153	3.07	8.13	22.27	129	5.45	0.65	231	6.97	clear, odorless	clear, odorless
R-14	1315.60	2014	1	11/5/2013	48.6	49.9	149.70	198.30	150	3.01	8.27	22.47	130	5.64	0.30	88	7.10	clear, no odor	clear, no odor
R-15	1030.60	2011	3	2/28/2011	40	61.20	183.60	223.60	266.00	4.35	8.21	20.03	156.00	7.20	1.50	185.00		murky, odorless	Clear, odorless
R-15	1030.60	2011	4	5/31/2011	39.8	61.20	183.60	223.40	185.00	3.02	8.30	20.35	158.00	6.89	1.71	176.00		Clear, odorless	Clear, odorless
R-15	1030.60	2011	5	8/15/2011	39.98	59.02	177.06	217.04	221.50	3.75	8.60	20.24	185.00	6.59	2.93	38.00		Clear, odorless	Clear, odorless
R-15	1030.60	2011	1	11/10/2011	39.8	60.30	180.90	220.70	196.00	3.25	8.24	18.75	157.00	7.16	2.33	225.40		clear, odorless	clear, odorless
R-15	1030.60	2011	3	5/29/2012	39.8	61.10	183.30	223.10	184.00	3.01	8.02	20.25	152.00	7.18	2.78	189.70		rust and white particles, no odor	clear, no odor
R-15	1030.60	2013	1	10/31/2012	39.8	60.20	180.60	220.40	187.00	3.11	8.23	16.44	150.00	7.05	2.31	120.00	8.50	rust particles, odorless, clear	rust particles, odorless, clear
R-15	1030.60	2013	3	5/6/2013	39.9	60.1	180.30	220.20	216.0	3.59	8.20	19.28	156	7.01	1.2	229	10.30	clear, odorless	clear, odorless
R-15	1030.60	2014	1	11/7/2013	40	56	168.00	208.00	220.0	3.93	8.45	18.04	157	7.27	3.3	84	10.30	clear, odorless, some particles	clear, odorless
R-35a	1086.20	2010	3	2/24/2011	32.60	240.20	720.60	753.20	725.00	3.02	8.00	23.22	246.00	4.40	1.34	164.00		Cloudy, odorless	Clear, odorless
R-35a	1086.20	2010	4	5/23/2011	32.77	237.08	711.24	744.01	714.00	3.01	7.98	24.27	248.00	5.04	2.75	218.00		Cloudy, odorless	Clear, odorless
R-35a	1086.20	2010	5	8/17/2011	33.12	229.88	689.64	722.76	703.00	3.06	8.00	24.23	247.00	5.12	0.66	226.00		Clear, odorless	Clear, odorless
R-35a	1086.20	2011	1	11/17/2011	32.73	237.74	713.24	745.97	746.00	3.14	8.02	23.44	243.00	4.71	0.95	169.20		clear, odorless	clear, odorless
R-35a	1086.20	2011	3	6/5/2012	33.02	231.91	695.73	728.75	703.00	3.03	7.97	24.36	242.00	4.93	1.90	312.50		cloudy, yellow tint	clear, no odor
R-35a	1086.20	2013	1	11/13/2012	32.60	239.60	718.80	751.40	720.00	3.01	8.08	22.66	241.00	4.90	1.08	170.00	3.60	fine particles, odorless, clear	clear, odorless
R-35a	1086.20	2013	3	5/16/2013	32.7	238.2	714.60	747.30	718.20	3.02	8.05	24.66	242	5.03	1.97	81.4	3.80	clear, odorless	clear, odorless
R-35a	1086.20	2014	1	11/13/2013	32.6	240.3	720.90	753.50	722.00	3.00	8.06	24.18	243	4.99	1.4	131	3.80	clear, odorless	clear, odorless

Well	Depth (ft bgs)	MY	Qtr	Date	Drop pipe (DP) vol (calc)	1CV (calc)	3CV (calc)	DP + 3CV (calc)	Reported Purge Vol (gal)	Calc CVs purged	pH	Temp (◦C)	Sp Cond (uS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Discharge Rate (gpm)	Notes at start of purge	Notes at end of purge
R-35b	872.20	2011	3	2/28/2011	32.39	67.80	203.40	235.79	215.00	3.17	7.67	20.30	167.00	6.80	0.90	170.00		Clear, no odor	Clear, no odor
R-35b	872.20	2011	4	6/1/2011	32.51	65.53	196.59	229.10	198.00	3.02	7.67	22.10	179.00	6.09	0.46	286.00		Clear, no odor	Clear, no odor
R-35b	872.20	2011	5	8/12/2011	32.50	65.30	195.90	228.40	196.00	3.00	7.69	21.79	177.00	5.93	0.42	67.00		Clear, no odor	Clear, no odor
R-35b	872.20	2011	1	11/9/2011	32.40	67.10	201.40	233.80	202.00	3.01	7.62	20.54	176.00	6.27	0.56	191.70		no odor, clear, effervescent	no odor, clear, effervescent
R-35b	872.20	2011	3	6/6/2012	32.40	67.40	202.20	234.60	206.00	3.06	7.50	22.09	174.00	6.06	0.41	232.70		clear, odorless	Clear, odorless, slight effervescence
R-35b	872.20	2013	1	11/14/2012	32.40	67.10	201.30	233.70	201.00	3.00	7.66	21.07	170.00	6.14	0.51	189.00	3.66	clear, odorless	clear, odorless
R-35b	872.20	2013	3	5/10/2013	32.4	67	201.00	233.40	205	3.06	7.47	21.23	172	5.85	0.44	239	3.10	clear, odorless	clear, odorless
R-35b	872.20	2014	1	11/13/2013	32.4	67	201.00	233.40	203	3.03	7.48	20.79	171	6.06	0.60	76	3.23	clear, odorless	clear, odorless
R-36	766.90	2010	4	6/2/2011	30.8	43.10	129.30	160.10	133.00	3.09	7.37	21.31	192.00	6.16	0.80	208.00		Clear; odorless	Clear; odorless
R-36	766.90	2010	5	8/15/2011	30.9	42.30	126.90	157.80	129.00	3.05	7.37	21.02	195.00	6.17	0.67	176.00		Clear; odorless	Clear; odorless
R-36	766.90	2011	1	11/16/2011	30.9	43.10	129.30	160.20	130.00	3.02	7.37	20.44	194.00	6.22	1.00	165.00		Clear; odorless	Clear; odorless
R-36	766.90	2011	2	3/8/2012	30.87	42.01	126.03	156.90	128.70	3.06	7.32	19.29	192.00	6.15	0.80	167.20		Clear, odorless	Clear, odorless
R-36	766.90	2013	1	11/14/2012	30.87	41.98	125.94	156.81	128.70	3.07	7.33	19.84	195.00	5.98	0.89	209.00	3.30	clear, no odor, no effervescence	clear, no odor, no effervescence
R-36	766.90	2013	3	5/17/2013	30.9	42	126.00	156.90	142.80	3.40	7.27	21.40	192	5.77	1.08	106	3.40	clear, odorless	clear, odorless
R-36	766.90	2014	1	11/13/2013	30.9	41.8	125.40	156.30	126.00	3.01	7.17	19.96	193	5.81	0.90	79	3.40	clear, odorless	clear, odorless
R-42	931.80	2010	4	5/31/2011	37.8	52.14	156.42	194.22	157.70	3.02	7.47	20.41	480.00	6.74	0.71	250.00		Yellow brown tint; odorless	Slightly yellowish
R-42	931.80	2010	5	8/2/2011	37.8	53.10	159.30	197.10	160.00	3.01	7.54	20.43	486.00	6.79	1.37	82.00		Clear; odorless	Clear; odorless
R-42	931.80	2011	1	11/10/2011	37.8	52.90	158.70	196.50	160.40	3.03	7.38	18.77	486.00	6.96	0.81	193.00		Clear, odorless	Yellow tint, odorless
R-42	931.80	2011	2	3/9/2012	37.8	53.00	159.10	196.90	162.00	3.06	7.49	18.42	483.00	6.96	0.84	74.00		Clear, odorless	Yellow tint, odorless
R-42	931.80	2011	4	8/8/2012	37.78	53	160.10	197.88	160	3.02	7.37	21.17	488	6.82	0.66	227		clear,no odor,no effervescence	clear,no odor,no effervescence
R-42	931.80	2013	1	10/31/2012	37.8	52.8	158.40	196.20	158.4	3.00	7.48	19.48	481	6.99	1.79	114	2.20	odorless, green tint	odorless, green tint
R-42	931.80	2013	2	2/1/2013	37.8	52.8	158.40	196.20	159	3.01	7.75	19.72	495	7.20	0.58	208	2.60	odorless, green tint	odorless, green tint
R-42	931.80	2013	3	5/6/2013	37.8	53.1	159.30	197.10	160	3.01	7.37	19.48	502	6.84	1.05	275	2.40	green tint, odorless	green tint, odorless
R-42	931.80	2014	1	11/7/2013	150.4	51.8	155.40	305.80	155.5	3.00	7.90	19.79	494	7.12	0.20	186	7.05	green tint, clear, odorless	green tint, clear, odorless
R-43 S1	903.90	2010	4	5/18/2011	36.7	67.60	202.80	239.50	204.00	3.02	8.34	20.70	175.00	6.97	1.40	197.00		Clear; odorless	Clear; odorless
R-43 S1	903.90	2010	5	8/16/2011	36.7	66.80	200.40	237.10	200.00	2.99	8.27	20.94	177.00	7.01	0.50	119.00		Clear; odorless	Clear; odorless
R-43 S1	903.90	2011	1	11/15/2011	36	66.97	200.91	236.91	203.00	3.03	8.30	20.16	177.00	7.06	0.34	158.00		Clear, odorless	Clear, odorless
R-43 S1	903.90	2011	2	3/9/2012	36.71	66.66	199.98	236.69	200.20	3.00	8.33	19.70	177.00	7.03	0.33	151.00		Clear, slight odor	Clear, odorless
R-43 S1	903.90	2011	4	8/14/2012	36.73	66.26	198.78	235.51	200.20	3.02	8.08	20.37	181	6.91	0.35	245		no: color,odor,effervescence	no: color,odor,effervescence
R-43 S1	903.90	2013	1	11/7/2012	36.74	65.9	197.70	234.44	199.00	3.02	8.23	20.20	176	6.88	0.51	83	1.25	no: color,odor,effervescence	no: color,odor,effervescence
R-43 S1	903.90	2013	2	2/6/2013	36.7	66.3	198.90	235.60	200.00	3.02	8.22	18.91	180	7.07	0.39	166	1.25	odorless, clear	odorless, clear
R-43 S1	903.90	2013	3	5/15/2013	36.7	66.5	199.50	236.20	200.00	3.01	8.17	20.16	183	6.81	1.88	224	1.31	clear, odorless	clear, odorless
R-43 S1	903.90	2013	4	7/16/2013	36.7	65.9	197.70	234.40	199	3.02	8.20	20.87	183	7.01	-0.50	166	1.33	clear, odorless	clear, odorless
R-43 S1	903.90	2014	1	11/19/2013	36.7	65.6	196.80	233.50	197	3.00	8.25	20.01	184	6.96	0.20	114	1.20	clear, odorless	clear, odorless
R-43 S2	969.10	2010	4	5/18/2011	39.6	25.50	76.50	116.10	78.00	3.06	8.80	20.08	189.00	2.83	0.35	103.00		Clear; odorless	Clear; odorless
R-43 S2	969.10	2010	5	8/16/2011	39.6	25.50	76.50	116.10	77.00	3.02	8.81	19.98	190.00	2.65	0.39	25.00		Clear, odorless	Clear, odorless
R-43 S2	969.10	2011	1	11/15/2011	39.58	25.50	76.50	116.08	76.53	3.00	8.86	19.57	188.00	2.93	0.44	111.00		Clear, odorless	Clear, odorless
R-43 S2	969.10	2011	2	3/12/2012	39.6	25.50	76.50	116.10	77.00	3.02	8.88	19.12	189.00	3.42	0.61	-147.30		Slightly yellow, odorless	Clear, odorless
R-43 S2	969.10	2011	4	8/13/2012	39.6	25.5	76.50	116.10	77	3.02	8.71	19.96	191	2.95	0.19	162		clear odorless	clear odorless
R-43 S2	969.10	2013	1	11/7/2012	39.6	25.5	76.50	116.10	77	3.02	8.78	20.17	183	3.07	0.38	61	1.35	no: color,odor,effervescence	no: color,odor,effervescence
R-43 S2	969.10	2013	2	2/7/2013	39.6	25.5	76.50	116.10	78	3.06	8.78	18.87	183	3.27	0.23	59	1.27	clear, odorless, no effervescence	clear, odorless, no effervescense
R-43 S2	969.10	2013	3	5/14/2013	39.6	25.5	76.50	116.10	77	3.02	8.50	20.22	193	4.79	0.19	160	1.22	clear, odorless	clear, odorless
R-43 S2	969.10	2013	4	7/18/2013	39.6	25.5	76.50	116.10	77	3.02	8.59	20.24	195	3.28	0.00	67	1.25	clear, odorless	clear, odorless
R-43 S2	969.10	2014	1	11/19/2013	39.6	25.5	76.50	116.10	77	3.02	8.71	19.68	197	3.08	0.20	103	1.30	clear, no odor	clear, no odor

Well	Depth (ft bgs)	MY	Qtr	Date	Drop pipe (DP) vol (calc)	1CV (calc)	3CV (calc)	DP + 3CV (calc)	Reported Purge Vol (gal)	Calc CVs purged	pH	Temp (◦C)	Sp Cond (uS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Discharge Rate (gpm)	Notes at start of purge	Notes at end of purge
R-44 S1	936.30	2010	3	2/25/2011	36.1	57.70	173.10	209.20	181.00	3.14	7.81	20.18	130.00	5.75	0.57	95.00		Clear, no odor	Clear, no odor
R-44 S1	936.30	2010	4	5/19/2011	36.1	58.00	174.00	210.10	178.00	3.07	7.80	20.11	134.00	5.34	0.45	151.00		Clear, no odor	Clear, no odor
R-44 S1	936.30	2010	5	8/5/2011	36.1	57.20	171.60	207.70	173.00	3.02	7.84	21.31	133.00	5.56	0.58	104.00		Clear, odorless	Clear, odorless
R-44 S1	936.30	2011	1	11/17/2011	36	57.29	171.87	207.87	184.00	3.21	7.75	16.57	137.00	5.23	0.42	226.60		clear, no odor	clear, no odor
R-44 S1	936.30	2011	3	5/24/2012	36.1	57.70	173.10	209.20	178.00	3.08	7.75	21.67	132.00	5.64	0.57	271.00		clear, odorless	clear, odorless
R-44 S1	936.30	2013	1	11/12/2012	36.12	56.47	169.41	205.53	170.00	3.01	7.78	18.66	134.00	6.70	0.43	101.00	3.40	clear, tiny particles, no effervescence	clear, particle-free, no effervescence
R-44 S1	936.30	2013	3	5/9/2013	36.1	56.9	170.70	206.80	171.60	3.02	7.73	20.39	135	6.89	0.20	182	3.30	clear, no odor	clear, no odor
R-44 S1	936.30	2014	1	11/6/2013	36.1	56.68	170.04	206.14	173.40	3.06	7.82	18.87	135	6.20	0.00	118	3.40	water clear, no odor	water clear, no odor
R-44 S2	1016.00	2010	3	2/25/2011	38.6	76.40	229.20	267.80	230.00	3.01	7.92	20.05	146.00	6.76	0.35	75.00		Clear, slight odor	Clear, no odor
R-44 S2	1016.00	2010	4	5/19/2011	39	76.40	229.20	268.20	242.40	3.17	7.90	20.43	147.00	6.80	0.33	123.00		Clear, no odor	Clear, no odor
R-44 S2	1016.00	2010	5	8/5/2011	38.6	76.40	229.20	267.80	234.00	3.06	7.93	21.38	146.00	7.16	0.26	95.00		Clear, odorless	Clear, odorless
R-44 S2	1016.00	2011	1	11/17/2011	38.6	76.40	229.20	267.80	230.00	3.01	7.86	20.72	151.00	7.20	0.29	240.20		clear, odorless	clear, odorless
R-44 S2	1016.00	2011	3	5/24/2012	38.6	76.40	229.20	267.80	231.00	3.02	7.86	21.23	148.00	6.95	1.10	275.90		clear, unknown odor (sharp)	clear, slight unknown odor
R-44 S2	1016.00	2013	1	11/12/2012	38.6	76.40	229.20	267.80	231.20	3.03	7.87	19.02	143.00	7.10	0.17	119.00	3.40	clear, no odor, no effervescence	clear, no odor, no effervescence
R-44 S2	1016.00	2013	3	5/9/2013	38.6	76.4	229.20	267.80	231.00	3.02	7.81	20.78	144	7.2	0.10	139.0	3.30	clear, no odor	clear, no odor
R-44 S2	1016.00	2014	1	11/6/2013	38.6	76.4	229.20	267.80	307.20	4.02	7.90	20.47	145	7.1	0.25	103.0	3.20	water clear, no odor	water clear, no odor
R-45 S1	921.30	2010	3	2/10/2011	35.6	53.00	159.00	194.60	164.00	3.09	7.83	20.06	179.00	7.29	0.23	73.00		Clear, odorless	Clear, odorless
R-45 S1	921.30	2010	4	5/20/2011	35.7	52.60	157.80	193.50	159.00	3.02	7.89	20.20	175.00	7.20	0.14	90.00		Clear, odorless	Clear, odorless
R-45 S1	921.30	2010	5	8/1/2011	35.7	52.60	157.80	193.50	165.00	3.14	7.81	21.48	178.00	7.08	0.25	119.00		Clear, odorless	Clear, odorless
R-45 S1	921.30	2011	1	11/16/2011	35.6	52.80	158.40	194.00	160.00	3.03	7.88	20.39	177.00	7.25	0.39	129.20		clear, odorless	clear, odorless
R-45 S1	921.30	2011	3	5/22/2012	35.7	52.80	158.40	194.10	160.00	3.03	7.73	21.38	176.00	7.18	0.38	186.50		clear, odorless	clear, odorless
R-45 S1	921.30	2013	1	11/6/2012	36	52.00	156.00	192.00	157.50	3.03	7.84	20.72	173.00	7.22	0.37	97.00	3.50	clear, odorless	clear, odorless
R-45 S1	921.30	2013	3	5/9/2013	35.7	52.4	157.20	192.90	157.2	3.00	7.67	19.50	179	7.15	0.39	304	3.59	clear, odorless	clear, odorless
R-45 S1	921.30	2014	1	11/6/2013	35.7	51.2	153.50	189.20	154	3.01	7.96	20.23	183	7.22	0.00	83	3.50	clear, no odor	clear, no odor
R-45 S2	1016.00	2010	3	2/11/2011	38	91.80	275.40	313.40	326.00	3.55	8.19	20.61	170.00	6.26	0.29	89.00		Clear, odorless	Clear, odorless
R-45 S2	1016.00	2010	4	5/20/2011	38	91.80	275.40	313.40	277.00	3.02	8.15	21.05	168.00	6.61	0.34	101.00		Clear, odorless	Clear, odorless
R-45 S2	1016.00	2010	5	8/1/2011	38	91.80	275.40	313.40	276.30	3.01	8.08	21.56	173.00	6.55	0.16	132.00		Clear, odorless	Clear, odorless
R-45 S2	1016.00	2011	1	11/16/2011	38	91.80	275.40	313.40	276.50	3.01	8.19	20.67	170.00	6.52	0.29	123.40		clear, odorless	clear, odorless
R-45 S2	1016.00	2011	3	5/22/2012	38	91.80	275.40	313.40	279.00	3.04	8.01	22.51	170.00	6.24	0.33	220.60		clear, odorless	clear, odorless
R-45 S2	1016.00	2013	1	11/6/2012	38	91.80	275.40	313.40	278.80	3.04	8.10	20.82	164.00	6.69	0.40	87.00	3.40	clear, odorless	clear, odorless
R-45 S2	1016.00	2013	3	5/9/2013	38.0	91.8	275.40	313.40	276.00	3.01	7.94	20.98	170	6.43	0.34	314	3.57	clear, odorless	clear, odorless
R-45 S2	1016.00	2014	1	11/6/2013	38.0	91.8	275.40	313.40	276.00	3.01	8.15	20.30	172	6.64	0.00	121	3.50	clear, odorless	clear, odorless
R-46	1385.01	2010	3	2/17/2011	54.45	55.11	165.33	219.78	168.00	3.05	7.75	20.45	125.00	6.49	1.57	61.00		Clear, no odor	Clear, no odor
R-46	1385.01	2010	4	5/17/2011	54.5	55.00	165.00	219.50	170.00	3.09	7.91	21.12	123.00	6.58	1.77	105.00		Clear, slight odor	Clear, odorless
R-46	1385.01	2010	5	8/3/2011	54.5	54.30	162.90	217.40	194.00	3.57	7.62	21.52	126.00	6.39	1.51	168.00		Clear, odorless	Clear, odorless
R-46	1385.01	2011	1	11/8/2011	54.5	54.90	164.70	219.20	165.00	3.01	8.02	21.41	122.00	6.49	1.23	130.40		clear, odorless	clear, odorless
R-46	1385.01	2011	3	5/21/2012	54.51	53.84	161.52	216.03	165.60	3.08	7.87	21.93	120.00	6.43	1.03	142.80		clear, no odor	clear, no odor
R-46	1385.01	2013	1	11/16/2012	54.5	53.30	159.90	214.40	160.00	3.00	8.01	18.60	121.00	6.50	0.50	176.00	4.76	clear, odorless	clear, odorless
R-46	1385.01	2013	3	5/21/2013	54.5	53.4	160.20	214.70	165	3.09	7.78	20.65	124	6.46	1.08	209	4.69	clear, odorless	clear, odorless
R-46	1385.01	2014	1	11/18/2013	54.8	52.8	158.50	213.10	160	3.03	8.03	20.33	122	6.50	0.10	90	4.69	clear, odorless	clear, odorless

Well	Depth (ft bgs)	MY	Qtr	Date	Drop pipe (DP) vol (calc)	1CV (calc)	3CV (calc)	DP + 3CV (calc)	Reported Purge Vol (gal)	Calc CVs purged	pH	Temp (◦C)	Sp Cond (uS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Discharge Rate (gpm)	Notes at start of purge	Notes at end of purge
R-50 S1	1077.00	2010	4	5/25/2011	43.8	51.40	154.20	198.00	156.00	3.04	7.90	21.36	140.00	5.02	1.52	221.00		Effervescent, odorless, clear	Clear, odorless
R-50 S1	1077.00	2010	5	8/4/2011	43.8	51.10	153.30	197.10	155.00	3.03	7.89	20.91	181.00	5.13	1.69	-1.00		Clear, odorless	Clear, odorless
R-50 S1	1077.00	2011	1	11/18/2011	43.77	51.51	154.53	198.30	163.30	3.17	7.93	20.65	176.00	5.22	2.57	108.00		Very effervescent, yellowish	Effervescent
R-50 S1	1077.00	2011	2	3/8/2012	43.8	51.30	154.00	197.80	156.00	3.04	7.93	19.41	182.00	5.48	0.76	-8.00		Effervescent,white particles	Effervescent, clear, odorless
R-50 S1	1077.00	2011	4	8/15/2012	43.8	51	155.00	198.80	155	3.04	8.03	20.70	175	5.27	0.82	156		slightly effervescent, no odor	slightly effervescent
R-50 S1	1077.00	2013	1	11/9/2012	43.74	50.96	152.88	196.62	155	3.04	8.04	18.03	185	5.58	0.63	81	2.50	Clear, no odor, effervescent	less effervescent, no odor, clear
R-50 S1	1077.00	2013	2	2/4/2013	43.8	50.9	152.70	196.50	155	3.05	7.91	19.01	185	5.49	0.40	155	2.50	effervescent, clear, odorless	Effervescent, clear, odorless
R-50 S1	1077.00	2013	3	5/10/2013	43.8	50.7	152.10	195.90	165	3.25	7.66	20.80	191	5.57	0.8	249	2.50	slight effervescent, clear, odorless	slight effervescent, clear, odorless
R-50 S1	1077.00	2013	4	7/9/2013	43.8	50.3	150.90	194.70	155	3.08	7.92	21.40	184	5.47	0.7	152	2.44	clear, odorless, slightly effervesecent	clear, odorless, effervescent
R-50 S1	1077.00	2014	1	11/12/2013	43.9	49.3	147.80	191.70	161	3.27	7.97	20.85	171	5.80	0.4	120	2.60	very effervescent	slight effervescence
R-50 S2	1185.00	2010	4	5/24/2011	46.0	96.49	289.47	335.47	300.90	3.12	8.09	21.26	125.00	6.28	1.30	130.00		Effervescent, clear	Effervescent, clear
R-50 S2	1185.00	2010	5	8/8/2011	46.0	96.50	289.50	335.50	291.00	3.02	8.15	21.96	132.00	6.83	0.95	134.00		Effervescent, clear, odorless	Effervescent, clear, odorless
R-50 S2	1185.00	2011	1	11/28/2011	46.0	96.50	289.50	335.50	290.00	3.01	8.19	20.86	115.00	6.57	0.81	134.00		Clear, odorless	Effervescent, clear, odorless
R-50 S2	1185.00	2011	2	3/7/2012	46.0	96.50	289.50	335.50	290.00	3.01	8.25	20.79	127.00	6.90	0.64	84.00		Effervescent, clear, odorless	Very effervescent, clear, odorless
R-50 S2	1185.00	2011	4	8/16/2012	46.0	96.5	289.50	335.50	290	3.01	8.05	21.64	127	6.93	0.43	202		Very slight effervescece	Very slight effervescent
R-50 S2	1185.00	2013	1	11/9/2012	46.0	96.49	289.47	335.51	306	3.17	8.13	18.57	139	7.04	1.24	77	1.70	clear/no odor, little effervescence	clear/no odor, little effervescence
R-50 S2	1185.00	2013	2	1/31/2013	46.0	96.49	289.47	335.51	290	3.01	8.10	19.45	135	7.27	1.83	-14	1.50	effervescent, no odor	slightly effervescent
R-50 S2	1185.00	2013	3	5/13/2013	46.0	96.49	289.47	335.51	319	3.31	8.07	22.84	131	7.28	1.00	117	1.45	water clear, odorless	water clear, effervescent, odorless
R-50 S2	1185.00	2013	4	7/10/2013	46.0	96.5	289.50	335.50	290	3.01	7.88	21.82	132	7.14	4.7	88	1.43	clear, odorless	clear, odorless, effervescent
R-50 S2	1185.00	2014	1	11/12/2013	46.0	96.5	289.50	335.50	294	3.05	8.01	20.20	133	7.99	0.4	120	1.50	effervescent, no odor *HACH	effervescent, clearer than before DO reading
R-60	1360.9	2010	5	7/26/2011	54.14	41.33	123.99	178.13	126	3.05	8.09	24.64	128	4.50	1.30	46		yellowish, sulfur odor	effervescent
R-60	1360.9	2011	1	11/22/2011	54.1	42.3	126.90	181.00	127.6	3.02	8.45	22.65	124	5.23	1.82	96		effervescent, clear, odor	Effervescent, clear, odorless
R-60	1360.9	2011	3	5/31/2012	54.1	42.1	126.20	180.30	127	3.02	8.35	24.39	131	5.51	2.77	203		very effervescent, no odor	very effervescent, no odor
R-60	1360.9	2013	1	11/1/2012	54.15	41.07	123.21	177.36	124	3.02	8.31	23.73	116	5.88	1.49	132	1.00	effervescent, no odor	effervescent, no odor
R-60	1360.9	2013	3	5/7/2013	54.2	40.9	122.70	176.90	123	3.01	8.03	24.30	127	5.78	1.09	192	1.25	clear, slight effervescence	effervescent, clear, odorless
R-60	1360.9	2014	1	11/14/2013	54.2	40.8	122.50	176.70	123	3.01	8.24	23.66	125	5.54	1.20	3	1.30	very effervescent, clear	very effervescent, clear

Well	Depth (ft bgs)	MY	Qtr	Date	Drop pipe (DP) vol (calc)	1CV (calc)	3CV (calc)	DP + 3CV (calc)	Reported Purge Vol (gal)	Calc CVs purged	pH	Temp (◦C)	Sp Cond (uS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Discharge Rate (gpm)	Notes at start of purge	Notes at end of purge
R-61 S1	1162.30	2011	1	11/15/2011	45.20	61.80	185.40	230.60	373.20	6.04	7.11	16.94	186.00	3.03	2.26	-76.10		effervescent, odor, yellow tint	effervescent, slight odor, clear
R-61 S1	1162.30	2011	1	11/21/2011	45.20	61.80	185.40	230.60	378.00	6.12	7.23	19.90	143.00	2.11	1.74	-72.30		slightly colored, slight odor, slightly effervescent	slight oder, slight color, slight effervescence
R-61 S1	1162.30	2011	2	2/7/2012	45.17	61.73	185.19	230.36	1178.00	19.08	7.08	18.59	139.00	3.80	4.35	-13.60		clear, hydrocarbon strong odor	clear, hydrocarbon less odor
R-61 S1	1162.30	2011	3	5/9/2012	45.20	61.60	123.20	168.40	125.00	2.03	7.00	21.28	157.00	1.51	1.29	-23.50		effervescent, odor, clear	effervescent, odor, clear
R-61 S1	1162.30	2013	1	11/15/2012	45.20	60.70	182.10	227.30	182.00	3.00	6.53	19.40	180.00	4.77	4.55	202.00	2.00	slightly effervescent, clear, no odor	effervescent, clear, no odor
R-61 S1	1162.30	2013	2	2/11/2013	45.20	61.00	183.00	228.20	190.00	3.11	6.65	17.57	170.00	5.49	4.81	15.00	2.00	clear, odor	clear, odor, slightly effervescent, see appendix C for 12 CVs EES samples
R-61 S1	1162.30	2013	3	5/16/2013	45.2	60.8	182.40	227.60	183.5	3.02	6.71	20.88	155	5.97	3.00	252	2.14	slightly effervescent, clear, odorless	effervescent, clear, odorless
R-61 S1	1162.30	2013	4	7/15/2013	45.2	60.4	181.20	226.40	727.2	12.04	6.75	20.47	141	6.39	0.00	130	2.12	clear, odor	clear, no odor
R-61 S1	1162.30	2014	1	11/15/2013	45.3	59.9	179.60	224.90	360	6.01	6.80	19.66	148	5.63	1.20	106	2.10	clear, light organic odor, effervescent	clear, organic odor, effervescent
R-61 S2	1251.60	2011	1	11/14/2011	47.80	86.30	259.00	306.80	480.20	5.56	6.88	18.67	156.00	1.43	1.11	-86.70		clear, grey tint	effervescent and sulfur odor
R-61 S2	1251.60	2011	1	11/18/2011	47.80	86.30	258.90	306.70	520.00	6.03	7.02	20.26	141.00	1.76	0.89	-80.30		small floaties, slight efferevescence, odorless	clear, slight odor, slightly effervescent
R-61 S2	1251.60	2011	2	2/8/2012	47.80	86.30	258.90	306.70	1214.10	14.07	7.21	20.80	154.00	2.11	0.79	-61.60		clear, slight odor	slightly yellow, effervescent, organic odor
R-61 S2	1251.60	2011	3	5/9/2012	47.80	86.30	172.60	220.40	174.00	2.02	6.81	20.96	175.00	0.42	0.84	-59.40		odor, clear	effervescent, odor, clear
R-61 S2	1251.60	2013	1	11/15/2012	47.80	86.30	258.90	306.70	259.00	3.00	6.46	19.28	199.00	3.34	6.19	-49.00	2.10	clear, odorless, slightly effervescent\	clear, sulfur odor, effervescent
R-61 S2	1251.60	2013	2	2/12/2013	47.80	84.60	253.80	301.60	258.00	3.05	6.47	18.96	204.00	1.86	4.63	-82.00	2.00	clear, organic odor	Effervescent, organic odor, see appendix C for 12 CVs EES samples
R-61 S2	1251.60	2013	3	5/22/2013	47.80	86.30	258.90	306.70	260.00	3.01	6.56	21.04	152	2.96	12.30	95	2.00	effervescent, clear, odorless	effervescent, cloudy, odorless
R-61 S2	1251.60	2013	4	7/16/2013	47.8	86.3	259.90	307.70	1056	12.24	6.59	20.92	147	3.52	3.20	-25	2.20	clear, slight odor	effervescent, odor
R-61 S2	1251.60	2014	1	11/14/2013	47.9	86.3	258.90	306.80	518	6.00	6.67	19.93	152	2.67	2.80	11	2.08	clear, smells strong organic odor	clear, effervescent, organic odor
R-62	1189.7	2011	2	3/26/2012	46.90	47.49	142.50	189.40	143.00	3.01	8.63	19.59	188.00	6.21	6.15	120.00		Particles in water, very effervescent. First full sampling suite.	Very effervescent, few particles
R-62	1189.7	2011	4	8/8/2012	46.9	46.7	143.50	190.40	420	8.99	8.30	21.81	166	5.88	0.65	73		effervescent	effervescent
R-62	1189.7	2013	1	11/8/2012	46.9	46.7	140.10	187.00	560	11.99	8.77	19.22	188	5.41	0.55	58	1.18	effervescent, clear, odorless	effervescent, clear, odor
R-62	1189.7	2013	2	2/5/2013	46.9	46.7	140.10	187.00	148	3.17	8.71	19.14	184	5.37	0.31	179	1.28	Clear, odorless, effervescent	Clear, odorless, effervescent
R-62	1189.7	2013	3	5/8/2013	46.9	44.2	132.60	179.50	136	3.08	8.52	19.66	178	5.03	4.50	192	1.6	clear, odorless, effervescent	clear, odorless, effervescent
R-62	1189.7	2013	4	7/19/2013	47	48	144.00	191.00	150	3.13	8.59	20.51	187	5.31	3.3	126	1.2	no odor, effervescent	no odor, effervescent
R-62	1189.7	2014	1	11/12/2013	46.9	44.5	133.50	180.40	133.5	3.00	8.50	19.03	193.00	5.38	1.07	80.0	1.3	effervescent, clear, odorless	effervescent, clear, odorless
SCI-1	378.50	2010	3	2/18/2011	2.03	6.36	19.08	21.11	15.47	2.43	7.18	10.50	733.00	8.75	2.00	189.00		Murky water	Clear, odorless
SCI-1	378.50	2010	4	5/24/2011	2.20	6.30	18.90	21.10	11.00	1.75	7.10	10.13	705.00	8.79	18.10	226.00		Slightly murky, odorless	Slightly murky, odorless
SCI-1	378.50	2010	5	8/16/2011	3.75	6.21	18.63	22.38	6.25	1.01	7.18	11.10	752.00	8.94	10.20	103.00		Clear, yellow tint, no odor	Clear, yellow tint, no odor
SCI-1	378.50	2011	1	11/16/2011	3.70	7.20	22.00	25.70	7.50	1.04	7.13	9.71	712.00	8.96	9.88	229.80		yellow hue, clear	yellow hue, clear
SCI-1	378.50	2011	3	5/21/2012	3.80	6.50	19.50	23.30	7.70	1.18	6.95	10.95	713.00	8.84	4.15	216.40		clear, odorless	clear, odorless
SCI-1	378.50	2013	1	11/2/2012	2.20	7.20	21.60	23.80	11.80	1.64	7.09	10.27	694.00	8.95	3.47	165.00	0.65	clear, odorless	odorless, clearing
SCI-1	378.50	2013	3	5/17/2013	2.2	6.5	19.50	21.70	12.60	1.94	7.09	11.39	719	8.69	0.8	67	0.60	clear, odorless	clear, odorless
SCI-1	378.50	2014	1	11/19/2013	2.2	6.7	20.20	22.40	40.50	6.04	7.24	10.81	705	11.57	1.6	99	0.88	clear, odorless	clear, odorless

Field Summary Report- Supplementary Documentation

Mortandad and Sandia Watershed (Chromium Investigation, MDA C, and General Surveillance Monitoring Groups) Quarterly Sampling Event 1, 2014 Interim Facility-Wide Groundwater Monitoring Plan

Other Field Activities from September 24- November 25, 2013

Prepared by TerranearPMC, LLC
Los Alamos, NM

CONTENTS

Appendices

Appendix E	Field Documentation	Page E-1
Appendix F	Photo Documentation- *not included in this report*	
Appendix G	Communications	Page G-1
Appendix H	Additional Sampling- *not included in this report*	
Appendix I	Groundwater Waste Summary	Page I-1

Appendix E

Field Documentation

Monitoring Group	Watershed	Media*	Location Name	QC Assignments **	Location Information	Sampled?	Sample or Cancellation Date	Cancellation Code*** (if applicable)	Samplers	Comments
Chromium Monitoring - Mortandad Canyon	Mortandad	WGI	MCOI-5	FTB		Yes	11/8/2013		DF, MS	NMED Split
			MCOI-6	FTB		Yes	11/7/2013		AS, MS	Pump tripped off repeatedly during purge
		WGR	R-1	FTB		Yes	11/18/2013		MS, AS, MG	
			R-13			Yes	11/8/2013		AS, GG	NMED Split
			R-15	FD, FB, FTB		Yes	11/7/2013		AS, MS	NMED Split
			R-28		Removed from plan because of ongoing pump tests	No	11/19/2013	CPL		
			R-42	FTB		Yes	11/7/2013		DF, MG	NMED split, various LANL personnel collected additional samples. Sampling coordinated through TA-64 Ops.
			R-44 S1	FTB		Yes	11/6/2013		DF, MS	NMED split
			R-44 S2	FTB		Yes	11/6/2013		DF, MS	NMED split
			R-45 S1	FTB		Yes	11/6/2013		AS, MG	NMED split
			R-45 S2	FTB		Yes	11/6/2013		AS, MG	NMED split
			R-50 S1	FTB		Yes	11/12/2013		AS, MG	NMED split
			R-50 S2	FTB		Yes	11/12/2013		AS, MG	NMED split
			R-61 S1	FD, FB, FTB	12 CV purge and time series sampling	Yes	11/15/2013		AS, MS, AV	Additional samples collected throughout purge for Hakim Boukhalfa.
			R-61 S2	FTB	12 CV purge and time series sampling	Yes	11/14/2013		AS, DF, MS	Additional samples collected throughout purge for Hakim Boukhalfa.
			R-62	FD, FB, FTB, PEB		Yes	11/12/2013		DF, TN	NMED split
Chromium Monitoring - Sandia Canyon	Sandia	WGI	SCI-1			Yes	11/19/2013		AS, MS	
			SCI-2	FTB	Removed from plan because of ongoing pump tests	No	11/19/2013	CPL		
		WGR	R-11			Yes	11/5/2013		AS, MS	NMED Split
			R-35a	FTB		Yes	11/13/2013		AS, MS	NMED Split
			R-35b	FTB		Yes	11/13/2013		DF, MG	NMED Split
			R-36	FTB		Yes	11/13/2013		DF, MG	
			R-43 S1	FTB		Yes	11/19/2013		DF, MG	NMED Split
			R-43 S2	FTB		Yes	11/19/2013		DF, MG	NMED Split
MDA C Monitoring	Mortandad	WGR	R-14	FTB		Yes	11/5/2012		DF, MG	
			R-46	FTB		Yes	11/18/2013		MS, AS, MG	
			R-60	FTB	sample for TPH-DRO at 1CV+DP	Yes	11/14/2013		MG, AV	
General Surveillance	Mortandad	WGR	R-34			No				Sampling postponed until San Ildefonso Pueblo re-opens in December.

Other Field Activities	Watershed	Media*	Location Name	QC Assignments **	Location Information	Sampled?	Sample or Cancellation Date	Cancellation Code*** (if applicable)	Samplers	Comments
Discharge Permit Sampling (FCN XX)	Mortandad	WGA	CDBO-6	FTB		No	11/14/2013	DRY	NA	
			MCO-3		**Destroyed in previous flood**	No	11/20/2013		NA	
			MCO-4B			Yes	11/20/2013		MG, MS, AV	
			MCO-6			Yes	11/20/2013		MG, MS, AV	
			MCO-7			Yes	11/21/2013		MG, MS, AV	Extremely low pumping rate, field crew recommends that pump is replaced.

*WS = baseflow, WGS = spring, WGA = alluvial groundwater, WGI = intermediate groundwater, WGR = regional groundwater.
**EQB = equipment rinsate blank, FB = field blank, FD = field duplicate, FTB = field trip blank, MS = matrix spike, PEB = performance evaluation blank.
***Shaded locations are not planned for the current sampling campaign (CANCS = no samples required during current sampling event; CANMY = sampling requirements are complete for the current monitoring year; CPL = cancelled by project lead; CRP = cancelled, removed from plan; INST = not installed; MECH = Mechanical Problem; OSTMP = out of service - temporary; OSPRM = out of service - permanent; AI = area inaccessible)

Status	Weather	Contact Information		Abbreviations
Date: 11/21/13	**Forecast:** 40s, cloudy	**Project Management Issues:**	**Westbay team lead:**	NS = No Sample Collected
		Kevin Reid: 663-7108, 412-3996		FCN = Field Change Notice
Prepared by: A. Stocker	**Fire Danger:** moderate	**Alluvial leads:**	**Waste Managements:**	AS = Abbreviated Sample Suite Collected
		Andrew Stocker: 500-6935	Zoe Duran	WB = Westbay Sampling System
Sampling Event:	**Wind:** moderate	**Regional/intermediate wells team leads:**	**Sample plan implementation:**	IS = Indicator Suite
Mortandad/Sandia Q1		David Fellenz: 412-5409,	P.Baucom 412-3998 or 663-7114	FAS = Full Analytical Suite
Status: Day 16	**Precipitation:**	David Woody: 412-7956		GDP = Groundwater Discharge Permit
All Activities COMPLETE	Light rain in afternoon	Megan Green: 663-7153		MS = Matrix Spike
				NMED = New Mexico Environmental Department

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45743

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/08/2013	**FIELD MATRIX:**	WG	OK
TIME COLLECTED (HH:MM):		1229	**MEDIA:**	UA	↓
PRS ID:		OK	**SAMPLE TECH CODE:**	UA	RSP
LOCATION ID:	MCOI-5	↓	**FIELD PREP:**	UF	OK
LOCATION TYPE:	MON	↓	**FIELD QC TYPE:**	REG	↓
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	3	ICE	↓	↓
↓	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-GrossA/B	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-H-3	250 ML AMBER GLASS	1	ICE	↓	↓
↓	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45743

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	Y	NA
↓	WSP-RAD	1 GAL POLY	1	HNO3	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 7.10 mg/L Oxidation-Reduction Potential 176.4 mV pH 8.24 SU

Specific Conductance 202 uS/cm Temperature 14.34 deg C Turbidity 7.6 NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature) David Fellenz	**Date/Time** 11/8/13 1400	**RECEIVED BY (Printed Name) (Signature)** K. Greene	**Date/Time** 11/8/13 2:00
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45759

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/08/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1229	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	RSP
LOCATION ID:	MCOI-5	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Shendo

RELINQUISHED BY (Printed Name) (Signature) David Fellenz	**Date/Time** 11/8/13 1400	**RECEIVED BY (Printed Name) (Signature)** K. Greene	**Date/Time** 11/8/13 2100
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45730

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/08/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1229	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	MCOI-5	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2/1	HCL DF 11/8/13	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2/1	HCL DF 11/8/13	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2/1	HCL DF 11/8/13	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
David Fellenz	11/8/13 1400	K. Green	11/8/13 2:00
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

86

MCOI-5

11/8/13

0700 M. Green conducts health and safety tailgate TA-64
0740 M. Shendo calibrates YSI #20 at TA-64, see calibration log book EP2011-0073 page 56 for details
1045 Crew (D. Fellenz, M. Shendo) on site at MCOI-5
Weather: 50's, Sunny, light breeze
2 Minute safety: Pressure system, trips, splashes
Objective: Purge and sample MCOI-5 per applicable documents on p.
1052 Connect to transducer (level troll) with Rugged Reader #2
Note: This is a single completion well with a dedicated RSP pump
Note: The following data is from historicals and well completion data
LSD = 6819.1' msl V = 6133.25' msl
TD = 702.7' bgs DTW = LSD - V = 685.85' bgs
DP = (0.006 gal/ft) DTW = 4.1 gal WC = TD - DTW = 16.85'
1CV = (0.826 gal/ft) WC = 13.9 gal
3CV = 3(1CV) = 41.7 gal
Note: Initial tank pressure = 2050 psi
1106 Pump on at 100 psi
1106 Water to surface; Q = 0.65 gpm
1114 DP clear (4.5 gal); Begin logging parameters on YSI #20
1124 Q = 0.75 gpm
1140 M. Dale (NMED) on site
Note: V level dropped into screen, per SOP will monitor to make sure V does not drop below bottom of screen
1205 Pump off to change tanks, final tank pressure = 150 psi
1209 Pump on at 100 psi; Initial tank pressure = 2150 psi; Q = 0.66 gpm
1229 Begin sampling; Q dropped to 0.3 gpm to avoid drawing below screen
1256 Sampling complete; Pump off; Final Tank pressure = 600 psi
1300 M. Dale off site
Note: M. Shendo preserves all samples; D. Fellenz QA's
Summary: Crew successfully samples MCOI-5
Note: See pages 87-88 of this log book for parameters, final V, final parameters, waste info, compliance checklist
1340 Crew off site
Note: M. Shendo Plunges well
1400 Relinquish samples to SMO c/o: K. Greene
Event ID: 4455; Sample ID's: CAMO-14-45743, 45759, 45730

11/8/13

David Fellenz

11/8/13 MCOI-5 Continued 87

David Fellenz 11/8/13

Groundwater Sampling Log

Project: FWGMP MY2013	LSD: 6819.1 ft. msl	Well Diameter: 4.5 inches	Date: 11/8/13	
Watershed: MCOI-5	Water Level: 6133.25 ft. msl	Top of Screw: 6130.10 ft msl	Notes:	
Well: Mortandad	*TD: 702.7' bgs	Bottom of Screw: 6120.10 ft msl	NA	
Sampling Device: RSP	*DTW: 685	Water Column: 16.85 ft.		
Measuring Point: LSD	Drop Pipe: 4.1 gal.	1CV: 13.9 gal.	Packer Pressure	
* Completion Depth: TD		3CV: 41.7 gal.	Before: NA psi	
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: NA psi	
DTW = (LSD - Water Level). Water Column = (TD - DTW). Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: NA psi	
1CV = (Water Column x Well Diameter Multiplier) 3 CV = (1CV x 3)			After: NA psi	

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance	~	± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1106	Pump on, water to surface								
1114	8.98	12.41	199	5.56	1.5	181.2	6130.19	0.65	clear, odorless
1124	8.50	14.11	197	6.55	2.0	170.3	6129.13	0.75	
1134	8.57	14.38	203	5.87	1.8	170.9	6127.32		
1144	8.50	14.41	210	4.89	5.2	172.0	6125.79		
1154	8.69	14.37	207	5.70	5.1	173.2	6124.88		
1204	8.66	14.03	206	6.08	3.1	174.4	6124.62		
1214	8.47	13.60	204	6.58	2.9	176.2	6124.24	0.66	
1219	8.34	14.23	203	6.90	3.0	175.1	6123.60		
1224	8.26	14.32	202	6.99	5.0	174.8	6122.80		
1229	8.24	14.34	202	7.10	7.6	176.4	6121.95		
1229	Begin sampling								
1256	Sampling complete, Pump off								

David Fellenz 11/8/13

WASTE			
Contact:	gal.	Drum#: TA-64	Final Water Level: 6120.13' msl
Purge Water: 45	gal.	Drum#'s: 10171884	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water: 53	gal.		

David Fellenz 11/8/13

88
11/8/13

MCOI-5 Continued

David Fellenz 11/8/13

DF 11/5/13
SOP-20032 ~~Rev. 4~~ Compliance Checklist
Rev 3

Well Name: MCOI-5
Date: 11/8/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 4.1 3 CVs: 41.7	4.5	45	3.2	Y N	DO was unstable at 3 CV's

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1219	8.34	203	6.90	3.0	NA
1224	8.26	202	6.99	5.0	
1229	8.24	202	7.10	7.6	
Calculations	Upper: 8.34 Lower: 8.24 Difference: 0.1	Median: 202 Upper: 208 Lower: 196	Upper: 7.10 Lower: 6.90 Difference: 0.2	Median: NA Upper: NA Lower: NA	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	NA

David Fellenz 11/8/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45744

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/07/2013	**FIELD MATRIX:**	WG	ok
TIME COLLECTED (HH:MM):		1319	**MEDIA:**	UA	
PRS ID:		ok	**SAMPLE TECH CODE:**	UA	GSP
LOCATION ID:	MCOI-6		**FIELD PREP:**	UF	ok
LOCATION TYPE:	MON		**FIELD QC TYPE:**	REG	
PORT:	SINGLE COMPLETION		**SAMPLE USAGE:**	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 2	ICE AS 11/7/13		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-H-3	250 ML AMBER GLASS	1	ICE		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45744

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	Y	NA
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: Sampled 40' from diesel generator

FIELD PARAMETERS:

Dissolved Oxygen 6.70 mg/L Oxidation-Reduction Potential 108.4 mV pH 7.28 SU

Specific Conductance 592 uS/cm Temperature 15.00 deg C Turbidity 0.6 NTU

COLLECTED BY (PRINT) M. Estrada

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrea Stalker	11/7/13 1625	S. Sherwood	11/7/13 1625
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45760

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/07/2013	**FIELD MATRIX:**	WG	✓
TIME COLLECTED (HH:MM):		1319	**MEDIA:**	UA	✓
PRS ID:		ok	**SAMPLE TECH CODE:**	UA	GSP
LOCATION ID:	MCOI-6	✓	**FIELD PREP:**	F	ok
LOCATION TYPE:	MON	✓	**FIELD QC TYPE:**	REG	✓
PORT:	SINGLE COMPLETION	✓	**SAMPLE USAGE:**	INV	✓

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-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE	✓	✓
✓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	✓	✓

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS: 11/7/13

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) M. Stenda

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrea Stoke	11/7/13 1625	S. Sherwood Sheri Sherwood	11/7/13 1625
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45731

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/07/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1319	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	RC
LOCATION ID:	MCOI-6		FIELD PREP:	UF	ok
LOCATION TYPE:			FIELD QC TYPE:	FTB	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL ok 11/7/13	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y 11/7/13	
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	NO ok	

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS: 11/7/13

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) M. Stenko

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stricker	11/7/13 1625	D. Sherwood	11/7/13 1625
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

11/7/2013 MCO1-6

0700 MST H+S tailgate performed by M. Green @ TA-64
0740 YSI #30 calibrated by A. Stocker @ TA-64
~~0930~~ 1010 pick up DI water for FB from M. Reavis EES-6
1100 crew arrive @ MCO1-6
crew: A. Stocker + M. Shenlo
weather: 40s, clear
Objectives: Purge + sample MCO1-6 per SOPs and referenced documents on pg. 3 using GSP
2-min-safety: road traffic, pinch points
1108 connect to level fall pressure transducer in Rugged Reel
~~TD: 6820.0 bgs~~ 6811.1 bgs ~~713.22 bgs~~ ~~1030.6 bgs~~
TD: 10 AS 11/7/13 AS 11/7/13
~~WC: 363.01 bgs~~ AS 11/7/13
~~DTW: 667.59 bgs~~ AS 11/7/13
DTW = 658.69 bgs WC = 54.53

1"SD DP: (0.041 gal/ft * DTW) = 27.0 gal
4.5"SD IC V = (0.826 gal/ft * WC) = 45.0 gal
3CV = = 135.1 gal

1118 ~~Pump on~~ attempt to turn on well but it trips off after a few seconds, after 6 tries it stays on
1121 Pump on + water to surface
1126 Manual rate = 1.38 gpm
1142 DP cleared, begin logging parameters on Groundwater Sampling log, see SOP Compliance Checklist for stability
1319 3CVs purged, stable parameters, Begin Sampling
1342 Sampling complete, pump off, Objectives Complete to purge + sample MCO1-6
1350 samples preserved by M. Shenlo, A. Stocker QA
1410 crew offsite to R-15
1625 submit samples to SMO Event SP: 4455; Sample SP: CAMO-14-45744, CAMO-14-45760, -45731,

AS 11/7/13

18

AS 11/7/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6811.1 ft. msl	Well Diameter: 4.5 inches	Date: 11/7/13
Watershed: Mortandad	Water Level: 6152.41 ft. msl	Top of Screen: 6125.1 ft. msl	Notes: NONE
Well: MCO1-6	*TD: 713.22' bgs	Bottom of Screen: 6102.87 ft. msl	
Sampling Device: GSP	*DTW: 658.69' bgs	Water Column: 54.53 ft.	
Measuring Point: LSD	Drop Pipe: 27.0 gal.	1CV: 45.0 gal.	Packer Pressure
* Completion Depth: TD		3CV: 135.1 gal.	Before: ____ psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: AS psi
			Opening: 11/7/13 psi
			After: ____ psi

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
AS 1121 ~~1118~~	Pump on / water to surface								
~~1141~~ 1142	6.98	13.40	594	4.09	0.8	139.2	6135.68	1.38	clear, No odor
1157	7.43	14.50	592	6.56	5.3	117.1	6135.02	1.38	clear, no odor
1212	7.32	14.90	594	6.82	4.1	111.6	6134.95	1.38	
1227	7.31	14.96	594	6.86	2.0	101.2	6134.89	1.38	
1242	7.29	15.01	593	6.88	1.2	103.5	6134.91	1.38	
1257	7.27	14.99	592	6.90	0.7	106.4	6135.01	1.38	
1307	7.27	14.98	592	6.90	0.7	106.6	6135.01	1.38	
1322	7.27	14.94	592	6.91	0.7	107.7	6135.03	1.38	
1337	7.28	15.00	592	6.90	0.6	108.4	6135.04	1.38	
1319	Begin Sampling, 3CVs purged, parameters stable								
1342	Sampling complete, pump off								
				AS 11/7/13					

WASTE				
Contact:	½ gal.	Drum#:	10171907	Final Water Level: 6137.23' msl
Purge Water:	136 gal.	Drum#'s:	10171883	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	175 gal.			

AS 11/7/13

AS 11/7/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: MC01-6

Date: 11/7/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 27.0 3 CVs: 135.1	27.5	136	3	(Y) N	NONE

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1307	7.27	592	6.90	0.7	NONE
1312	7.27	592	6.91	0.7	
1317	7.28	592	6.90	0.6	
Calculations:	Upper: 7.28 Lower: 7.27 Difference: 0.01	Median: 592 Upper: NA Lower: NA	Upper: 6.91 Lower: 6.90 Difference: 0.01	Median: 0.7 Upper: NA Lower: NA	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOPs met

AS 11/7/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45745

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/18/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1339	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	BSP
LOCATION ID:	R-1		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	3	ICE		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45745

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: diesel generator running 20' away

FIELD PARAMETERS:

Dissolved Oxygen 5.66 mg/L Oxidation-Reduction Potential 32.5 mV pH 7.97 SU

Specific Conductance 145 uS/cm Temperature 21.45 deg C Turbidity 0.1 NTU

COLLECTED BY (PRINT) M. Steele + M. Green

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Daly	11/18/13 1435	S. Sherwood Sheri Sherwood	11/18/13 1435
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45761

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/18/2013	FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):		1339	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-1		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	MS
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

AS 11/18/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) M. Shenk

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Ashley Hicke	11/18/13 1435	S. Sherwood	11/18/13 1435
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45732

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/18/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1339	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-1	↓	FIELD PREP:	UF	ok
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS: 11/18/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) M. Sherwood

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stokes	11/18/13 1435	S. Sherwood	11/18/13 1435
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

11/18/13 R-1

1215 crew onsite, see pg. 43 for morning activities @ R-46
crew: J. Stalker, M. Green, M. Shende
weather: $40s-50s$, overcast
Tailgate safety: trips, pinch points
Objectives: purge + sample R-1 per SOPs and referenced documents on pg. 3 using a GSP

1218 connect to, level to pressure transducer
TOC: 5876.90 ms, LSD: 6881.21 ms, TD: 1080.1 bgs
DTW: 1007.31 bgs WC = 75.79'

1 DP DP = (0.041 gal/gal × DTW) = 41.2 gal
4 SD IC = (0.826 gal/gal × WC) = 62.6 gal
3 CV = = 187.8 gal

1232 pump on, water to surface
1244 DP cleared, begin logging parameters on Groundwater Sampling Log, see SOP Compliance Checklist for stability
1339 3 CVs purged, parameters stable, Begin Sampling
1347 Sampling Complete, pump off, Objectives Complete to purge + sample R-1
1350 samples preserved by M. Green
1410 crew offsite
1435 submitted samples to SNL: Event ID: 4455 Sample ID: CAMO-14-45732, -45761, -45745

11/18/13

11/18/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6881.21 ft. msl	Well Diameter: 4.5 inches	Date: 11/18/13
Watershed: Mortandad	Water Level: 5876.90 ft. msl	Top of Screen: 5850.11 ft. msl	Notes:
Well: R-1	*TD: 1080.16 jp	Bottom of Screen: 5823.81 ft msl	NONE
Sampling Device: GSP	*DTW: 1004.31 6.js	Water Column: 75.79 ft.	
Measuring Point: LSD	Drop Pipe: 411.2 gal.	1CV: 62.6 gal.	Packer Pressure
* Completion Depth: TD		3CV: 187.8 gal.	Before: psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 11/18/13 psi
DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			Opening: psi After: psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1232	pump on, water to surface						5874.34		
1244	7.01	13.69	140	1.10	0.4	-50.5	~~5876.38~~ 11/18/13	3.41	clear organics odor
1254	7.53	17.49	142	4.16	5.2	-60.8	5874.37		
1304	7.88	20.44	142	5.34	0.5	-14.0	5874.38		
1314	7.98	21.12	145	5.46	0.2	6.8	5874.40		
1324	7.99	21.23	145	5.52	0.8	19.4	5874.38		
1329	7.98	21.36	145	5.56	0.1	24.6	5874.41		
1334	7.97	21.37	145	5.62	0.1	29.6	5874.40		
1339	7.97	21.45	145	5.66	0.1	32.5	5874.41		
1339	Begin Sampling, parameters stable, 3 cs purged								
1347	Sampling Complete, pump off								

11/18/13

WASTE				
Contact:	1/2 gal.	Drum#: Municipal	Final Water Level: 5874.52 msl
Purge Water:	189 gal.	Drum#'s: 10171903	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	220 gal.		

11/18/13

48

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-1

Date: 11/18/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 41.2 3 CVs: 187.8	41.2	189	3	(Y) N	NONE

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1329	7.98	145	5.56	0.1	NONE
1334	7.97	145	5.62	0.1	
1339	7.97	145	5.66	0.1	
Calculations:	Upper: 7.98 Lower: 7.97 Difference: 0.01	Median: 145 Upper: NA Lower: NA	Upper: 5.66 Lower: 5.56 Difference: 0.10	Median: 0.1 Upper: NA Lower: NA	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOPs met

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45746

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/08/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1119	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-13	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CN(T)	250 ML POLY	1	NAOH	Y	NA
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:
NA

LOCATION COMMENTS: diesel generator 40' away

FIELD PARAMETERS:
Dissolved Oxygen 6.49 mg/L Oxidation-Reduction Potential 97.6 mV pH 8.34 SU
Specific Conductance 143 uS/cm Temperature 20.41 deg C Turbidity 0.30 NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stokes	11/8/13 1215	S. Sherwood	11/8/13 1215
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45762

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/08/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1119	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-13	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS: AJ 11/8/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) (Signature)	**Date/Time** 11/8/13 1215	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time** 11/8/13 1215
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

11/8/13 R-13

0700 H&S tailgate performed by M. Green @ TA-64
0740 YSI #30 calibrated by M. Green @ TA-64
0730 crew onsite
11/8/13
crew: A. Stoker, M. Green
weather: 40°ish, clear
2-min-safety: beware of the water wagon + grader
Objectives: Purge + sample R-13 according to SOPs and referenced documents on pg. 3. using a BSP
0744 connect to level troll pressure transducer
TOC: 5832.19 msl LSD: 6673.05 msl TD: 1029.46 bgs
DTW = 840.86' bgs WC: 188.54'

1" SD	DP = 10.041 gal/ft + DTW	= 34.5 gal
4.5" SD	KV = 10.826 gal/ft × WC	= 155.7 gal
	3CV =	= 467.02 gal

0957 pump on
1002 water to surface
1008 DP cleared, parameters logging on Groundwater Sampling Log, see SOP Compliance checklist for stability, use HACH turbidimeter #1 because of negative turbidity
1038 manual rate increased to 6.52 gpm
1108 manual rate increased to
1112 M. Date onsite
1119 3CVs purged, parameters stable, Begin sampling
1125 Pump off, sampling complete
1137 M. Date offsite, samples preserved by M. Green, A. Stoker QA
Objectives Complete to purge + sample R-13
1148 crew offsite
1215 submit samples to SMO; Event ID: 4455; Sample ID: CAMO-14 - 45746, - 45762

AS 11/8/13

24

AS 11/8/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6673.65 ft. msl	Well Diameter: 4.5 inches	Date: 11/8/13
Watershed: Mortandad	Water Level: 5832.19 ft. msl	Top of Screen: 5714.75 ft msl	Notes:
Well: R-13	*TD: 1029.4' bgs	Bottom of Screen: 5654.35 ft msl	NONE
Sampling Device: GSP	*DTW: 840.86' bgs	Water Column: 188.54 ft.	
Measuring Point: LSD	Drop Pipe: 34.5 gal.	1CV: 155.7 gal.	Packer Pressure
* Completion Depth: TD		3CV: 467.2 gal.	Before: psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: AS psi
			Opening: 11/8/13 psi
			After: psi

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0957	Pump on								
1002	Water to surface								
1008	7.36	13.78	144	6.17	1.47*	150.3	5831.60	5.66	clear, odorless
1023	8.07	15.36	143	6.48	0.85*	119.6	5831.54	5.66	↓
1038	8.21	17.48	141	6.41	0.40*	111.4	5831.47	6.52	201 gal purged
AS 11/8/13 1048 1053	8.35	20.32	144	6.40	0.34*	105.6	5831.52	6.52	clear, odorless
1058	8.36	20.45	144	6.45	0.30*	103.0	5831.56	6.52	↓
1108	8.33	20.52	144	6.51	0.33*	101.9	5831.58	6.98	clear, odorless 397.2 gal
1113	8.34	19.80	144	6.54	0.25*	97.1	5831.51	6.98	clear, odorless
1118	8.34	20.41	143	6.49	0.30*	97.6	5831.47	6.98	↓
1119	Begin sampling, 3CVs purged, parameters stable								
1125	Sampling complete, pump off								

AS 11/8/13

WASTE

Contact:	12 gal.	Drum#: Municipal	Final Water Level: 5831.50 msl
Purge Water:	468 gal.	Drum#'s: 10 17 881 SSOgal tank	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	510 gal.		

* used HACH turbidimeter #1

AS 11/8/13

JS 11/8/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-13

Date: 11/8/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 34.5 3 CVs: 467.2	34.5	468	3	(Y) N	NONE

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1108	8.33	144	6.51	0.33	Stable
1113	8.34	144	6.54	0.29	
1118	8.34	143	6.49	0.30	
Calculations:	Upper: 8.34 Lower: 8.33 Difference: 0.01	Median: 144 Upper: NA Lower: NA	Upper: 6.54 Lower: 6.49 Difference: 0.05	Median: <10 Upper: <10 Lower: <10	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOPs met

JS 11/8/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45747

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/07/2013	**FIELD MATRIX:**	WG	ok
TIME COLLECTED (HH:MM):		1452	**MEDIA:**	UA	↓
PRS ID:		ok	**SAMPLE TECH CODE:**	UA	GSP
LOCATION ID:	R-15	↓	**FIELD PREP:**	UF	ok
LOCATION TYPE:	MON	↓	**FIELD QC TYPE:**	REG	↓
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	1 2	NS ICE NS	↓	↓
↓	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-GrossA/B	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	↓	↓

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455 **EVENT NAME:** Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45747 **WORK ORDER:** NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-H-3	1 LITER POLY	1	NONE	Y	NA
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen 7.26 mg/L Oxidation-Reduction Potential 80.3 mV pH 8.53 SU

Specific Conductance 157 uS/cm Temperature 18.24 deg C Turbidity 4.0 NTU

COLLECTED BY (PRINT) M. Steele + A. Stetka

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
	8/7/13 1625	S. Sherwood Sheri Sherwood	8/7/13 1625
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45763

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/07/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1452	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-15		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS: 11/7/13

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A Stockl

RELINQUISHED BY (Printed Name) (Signature)	**Date/Time** 11/7/13 1625	**RECEIVED BY (Printed Name) (Signature)** S Sherwood Sheri Sherwood	**Date/Time** 11/7/13 1625
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45725

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/07/2013	**FIELD MATRIX:**	WG	ok
TIME COLLECTED (HH:MM):		1452	**MEDIA:**	UA	
PRS ID:		ok	**SAMPLE TECH CODE:**	UA	GSP
LOCATION ID:	R-15		**FIELD PREP:**	UF	ok
LOCATION TYPE:			**FIELD QC TYPE:**	FD	
PORT:	SINGLE COMPLETION		**SAMPLE USAGE:**	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	1 NG 2	ICE 11/7/13		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45725

WORK ORDER:

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	WSP-LL-H-3	1 LITER POLY	1	NONE	Y	MA
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS: AS 11/7/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stocker + M. Sledo

RELINQUISHED BY (Printed Name) (Signature) A. Stocker	**Date/Time** 11/7/13 1625	**RECEIVED BY (Printed Name) (Signature)** S. Sherwood Sheri Sherwood	**Date/Time** 11/7/13 1625
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45728

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/07/2014	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1452	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-15		FIELD PREP:	F	ok
LOCATION TYPE:			FIELD QC TYPE:	FD	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

AS 11/7/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ µS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY (Printed Name) (Signature)	**Date/Time** 11/7/13 1625	**RECEIVED BY (Printed Name) (Signature)** S. Sherwood	**Date/Time** 11/7/13 1625
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45722

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/07/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1452	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-15		FIELD PREP:	UF	ok
LOCATION TYPE:			FIELD QC TYPE:	FB	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8082-PCB	1 LITER AMBER GLASS	~~2~~ 1	ICE MS 11/7/13		
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~2~~ 1	ICE MS 11/7/13		
	WSP-8290-D/F	1 LITER AMBER GLASS	~~2~~ 1	ICE MS 11/7/13		
	WSP-8310-PAH	1 LITER AMBER GLASS	~~2~~ 1	ICE MS 11/7/13		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	~~2~~ 1	ICE MS 11/7/13		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	~~2~~ 1	ICE MS 11/7/13		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45722

WORK ORDER:

SAMPLE COMMENTS:

LOCATION COMMENTS: AS 11/7/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) M. Stenko

RELINQUISHED BY (Printed Name) (Signature) Andrew Stoke	**Date/Time** 11/7/13 1625	**RECEIVED BY (Printed Name) (Signature)** S. Sherwood Sheri Sherwood	**Date/Time** 11/7/13 1625
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45733

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/07/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1452	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	RC
LOCATION ID:	R-15		FIELD PREP:	UF	ok
LOCATION TYPE:			FIELD QC TYPE:	FTB	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	3	MG HCL 11/7/13	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	3	MG HCL 11/7/13		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	3	MG HCL 11/7/13		

SAMPLE COMMENTS:

LOCATION COMMENTS: AS 11/7/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stroke

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
A. Stroke	11/7/13 1625	S. Sherwood	11/7/13 1625
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

20

11/7/2013 R-15

1412 crew onsite after sampling MCO1-6 see pg. 17 for sampling activities
crew: A. Stocker, M. Stenko
2-min-safety: slips + trips, pinch points
weather: 40s, clear
Objective: purge + sample R-15 per SOPs and referenced documents on pg. 3 using a GSP

1414 connected to level troll pressure transducer w/ Rugged Reader
∇: 5844.29 msl, LSD = 6820.0 msl, TD: 1030.6 'bgs
DTW = 975.71 'bgs WC = 54.89'

1st SD DP = (0.041 gal/ft × DTW) = 40.0 gal
5th SD 1CV = (1.020 gal/ft + WC) = 56.0 gal
3CV: = 168.0 gal

1426 Pump on, water to surface
1428 manual rate = 10.3 gpm
1430 DP cleared, begin logging parameters on Groundwater Sampling Log, see SOP compliance checklist for stability
1447 3CVs purged, DO not stable, keep purging
1452 DO stable, Begin sampling
1507 Pump off, sampling complete, samples preserved by A. Stocker, M. Stenko QA, Objectives Complete to purge + sample R-15
1545 crew offsite
1625 submit samples to SMO: Event ID: 4455;
Sample ID: CAMO-14-45747, -45763, -45725, -45728, -45722, -45733

11/7/13

AS 11/7/13 21

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6820.0 ft. msl	Well Diameter: 5 inches	Date: 11/7/13
Watershed: Mortandad	Water Level: 5844.29 ft. msl	Top of Screen: 5861.4 ft msl	Notes:
Well: R-15	*TD: 1030.6 bgs	Bottom of Screen: 5799.7 ft msl	NA
Sampling Device: GSP	*DTW: 975.71 bgs	Water Column: 54.69 ft.	
Measuring Point: LSD	Drop Pipe: 40.0 gal.	1CV: 56.0 gal.	Packer Pressure
* Completion Depth: TD		3CV: 168.0 gal.	Before: ____ psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: AS psi
DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: 11/7/13 psi
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: ____ psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1426	Pump on, water to surface								
1430	8.01	12.33	166	6.37	35.8	105.5	5839.62	10.3	clear, colorless some particles
1433	7.90	11.78	157	6.28	1.5	109.4	5839.07	10.3	clear, colorless
1436	8.15	13.34	157	6.46	1.0	94.6	5838.80	10.3	
1439	8.25	14.82	157	6.39	3.5	89.6	5838.63	10.3	
1442	8.42	16.13	157	6.89	4.1	82.5	5838.56	10.3	
1445	8.44	17.12	156	7.21	3.8	83.9	5838.49	10.3	
1448	8.44	17.78	157	7.20	3.5	83.8	5838.44	10.3	
1451	8.53	18.24	157	7.26	4.0	80.3	5838.38	10.3	
1452	Begin sampling, parameters stable								
1507	pump off, sampling complete								

AS 11/7/13

WASTE

Contact:	1 gal.	Drum#:	Municipal
Purge Water:	220 gal.	Drum#'s:	1017172S
Total Waste Water:	370 gal.		

Final Water Level: 5838.33 msl

*Purge: Formation water purged prior to sampling (excluding drop

AS 11/7/13

22

AS 11/7/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-15

Date: 11/7/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 40.0 3 CVs: 168.0	40.0	220	3.9	(Y) N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1445	8.44	156	7.21	3.8	All stable
1448	8.44	157	7.20	3.5	
1451	8.53	157	7.26	4.0	
Calculations:	Upper: 8.53 Lower: 8.44 Difference: 0.09	Median: 157 Upper: NA Lower: NA	Upper: 7.26 Lower: 7.20 Difference: 0.06	Median: 3.8 Upper: <10 Lower: <10	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	Purged 3.9 CVs, b/c DO was unstable, All SOPs met

AS 11/7/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45764

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			**FIELD MATRIX:**	WG	
TIME COLLECTED (HH:MM):			**MEDIA:**	UA	
PRS ID:			**SAMPLE TECH CODE:**	UA	
LOCATION ID:	R-28		**FIELD PREP:**	F	
LOCATION TYPE:	MON		**FIELD QC TYPE:**	REG	
PORT:	SINGLE COMPLETION		**SAMPLE USAGE:**	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-All Metals	1 LITER POLY	1	HNO3 ICE		
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

Not Collected

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45748

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			**FIELD MATRIX:**	WG	
TIME COLLECTED (HH:MM):			**MEDIA:**	UA	
PRS ID:			**SAMPLE TECH CODE:**	UA	
LOCATION ID:	R-28		**FIELD PREP:**	UF	
LOCATION TYPE:	MON		**FIELD QC TYPE:**	REG	
PORT:	SINGLE COMPLETION		**SAMPLE USAGE:**	INV	

11/8/13

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-H-3	250 ML AMBER GLASS	1	ICE		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45749

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/07/2013	**FIELD MATRIX:**	WG	OK
TIME COLLECTED (HH:MM):		1109	**MEDIA:**	UA	↓
PRS ID:		OK	**SAMPLE TECH CODE:**	UA	GSP
LOCATION ID:	R-42	↓	**FIELD PREP:**	UF	OK
LOCATION TYPE:	MON	↓	**FIELD QC TYPE:**	REG	↓
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 2	ICE	↓	↓
↓	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-H-3	250 ML AMBER GLASS	1	ICE	↓	↓
↓	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	↓	↓

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45749

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Sampled within 15' of running diesel generator.

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 7.12 mg/L Oxidation-Reduction Potential 185.6 mV pH 7.90 SU

Specific Conductance 494 uS/cm Temperature 19.79 deg C Turbidity 0.2 NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) David Fellenz (Signature)	**Date/Time** 11/7/13 1230	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time** 11/7/13 1230
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45765

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/~~09~~ 07 OF 11/7/13 /2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1109	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-42	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

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-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) David Fellenz (Signature)	11/7/13 1230	(Printed Name) M. Martin (Signature)	11/7/13 1230
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45734

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/07/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1109	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-42	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) David Fellenz (Signature)	Date/Time 11/7/13 1230	RECEIVED BY (Printed Name) (Signature)	Date/Time 11/7/13 1230
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

R-42

11/7/13

0700 M. Green conducts health and safety tailgate at TA-64
0740 D. Felleuz calibrates YSI #20 at TA-64, see calibration log book EP2011-0073 page 55 for details
1005 Crew (D. Felleuz, M. Green) plus M. Dale (NMED), S. Maze, S. Martinez, J. Romero on site
Weather: Sunny, 50's, calm
2 Minute Safety: Spills, trips, generator, sun
Objective: Purge and sample R-42 per applicable documents on page 3
1018 Connect to transducer (level troll)
1019 D. Ware, O. Marina on site
Note: This is a single screened Well with dedicated GSP
Note: The following data is from historicals and well completion data.
LSD = 6759.02' msl TV = 5836.30' msl
TD = 973.5' bgs DTW = 922.72' bgs
DP = (0.163 gal/ft) DTW = 150.4 gal WC = TD − DTW = 50.78'
1CV = (1.02 gal/ft) WC = 51.8 gal
3CV = 3(1CV) = 155.4 gal
Total to sample = 3CV + DP = 305.8 gal
Intial flow meter = 640608 gal; DP = 640758 gal; 3CV = 640913 gal
1027 ~~Pump~~ DF 11/7/13 Generator on
1028 Pump on
1028 Water to surface; Q = 7.05 gpm (using flow meter)
1049 DP clear (150 gal.); Begin logging parameters
1101 S. Martinez and J. Romero off site
Note: D. Ware and O. Marina were sampling through out the purge
1109 Begin sampling
1111 D. Ware, O. Marina off site
Note: M. Green preserves all samples; D. Felleuz QA's
1129 Pump off, sampling complete; Final flow meter = 641045 gal.
1134 M. Dale off site
1136 Generator off
1155 All remaining personnel off site
Summary: Crew successfully samples R-42
Note: See pages ~~85-86~~ 84-85 DF 11/7/13 of this log book for parameters, final TV, final parameters, waste info, compliance checklist
DF 11/7/13

84

R-42 Continued

11/7/13

1230 Relinquish samples to SMO c/o: M. Montoya
Event ID: 4455
Sample ID's: CAMO-14-45749, 45765, 45734

David Fellenz 11/7/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-42
Date: 11/7/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter	Drop Pipe: 150.4	150.5	155.5	3.0	Y N	NA
Manual	3 CVs: 155.4					

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1101	7.90	490	7.03	0.4	3 minute parameters due to quick purge.
1104	7.90	492	7.14	0.3	
1107	7.90	494	7.12	0.2	
Calculations:	Upper: 7.90	Median: 492	Upper: 7.14	Median: NA	
	Lower: 7.90	Upper: 507	Lower: 7.03	Upper: NA	
	Difference: 0	Lower: 477	Difference: 0.11	Lower: NA	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	NA

David Fellenz 11/7/13

11/7/13 R-42 Continued

David Fellenz 11/7/13

Groundwater Sampling Log

Project: IFY GMP MY2013	LSD: 6759.02 ft. msl	Well Diameter: 5 inches	Date: 11/7/13
Watershed: Mortandad	Water Level: 5836.30 ft. msl	Top of Screen: 5827.22 ft.msl	Notes: 3 min. parameters
Well: R-42	*TD: 973.5' bgs	Bottom of Screen: 5806.12 ft.msl	
Sampling Device: GSP	*DTW: 922.72' bgs	Water Column: 50.78 ft.	
Measuring Point: LSD	Drop Pipe: 150.4 gal.	1CV: 51.8 gal.	Packer Pressure
* Completion Depth: TD		3CV: 155.4 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: NA psi
DTW = (LSD - Water Level).. .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			Opening: NA psi
			After: NA psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1028	Pump on, water to surface								
1049	7.83	14.25	487	6.59	1.5	189.3	5830.85	7.05	green tint clear, odorless
1052	7.84	14.48	487	6.84	0.9	189.2	5830.85		
1055	7.84	16.19	482	6.75	0.9	189.1	5830.72		
1058	7.89	18.29	485	7.01	0.5	187.0	5830.65		
1101	7.90	19.20	490	7.03	0.4	186.0	5830.75		
1104	7.90	19.65	492	7.14	0.3	185.3	5830.61		
1107	7.90	19.79	494	7.12	0.2	185.6	5830.65		
1109	Begin sampling								
1129	Sampling complete, Pump off								

11/7/13 David Fellenz

WASTE

Contact: 1 gal.	Drum#: Field Trailer	Final Water Level: 5830.60' msl	11/7/13
Purge Water: 155.5 gal.	Drum#'s: TK-R42-1	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water: ~~306~~ ~~356~~ gal. → 437 gal.			

DF 11/7/13

David Fellenz 11/7/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45766

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/06/2013	FIELD MATRIX: WG		o/c
TIME COLLECTED (HH:MM):		1350	MEDIA: UA		↓
PRS ID:		o/c	SAMPLE TECH CODE: UA		GSP
LOCATION ID: R-44 S1		↓	FIELD PREP: F		o/c
LOCATION TYPE: MON		↓	FIELD QC TYPE: REG		↓
PORT: P1A		↓	SAMPLE USAGE: INV		↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	y	NA
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	y	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	y	↓

SAMPLE COMMENTS: generator Running 50' Away

LOCATION COMMENTS: None

FIELD PARAMETERS:

Dissolved Oxygen 6.20 mg/L Oxidation-Reduction Potential 117.4 mV pH 7.82 SU

Specific Conductance 135 uS/cm Temperature 18.84 deg C Turbidity 0.0 NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Maurice Stendo (Signature)	11/6/13 1510	(Printed Name) A. Martinez (Signature)	11/6/13 1510
RELINQUISHED BY	**Date/Time**	**RECEIVED BY**	**Date/Time**
(Printed Name) (Signature)		(Printed Name) (Signature)	

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45750

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/06/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1350	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-44 S1	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P1A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	y	↓
	WSP-8270C-SVOA	1 LITER AMBER GLASS	1 2	MG 11/6/13 ICE	y	
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	y	
	WSP-CN(T)	250 ML POLY	1	NAOH	y	
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE	y	
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	y	
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	y	
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	y	
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	y	↓

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45750

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	y	NA

SAMPLE COMMENTS: None

LOCATION COMMENTS: None

FIELD PARAMETERS:

Dissolved Oxygen N/A mg/L Oxidation-Reduction Potential N/A mV pH N/A SU

Specific Conductance N/A uS/cm Temperature N/A deg C Turbidity N/A NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Maurice Shendo (Signature)	11/6/13 1510	(Printed Name) M. Montoya (Signature)	11/6/13 1510
RELINQUISHED BY **(Printed Name)** **(Signature)**	**Date/Time**	**RECEIVED BY** **(Printed Name)** **(Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45735

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/06/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1350	MEDIA:	UA	↓
PRS ID:		o/c	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-44 S1	↓	FIELD PREP:	UF	o/c
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	P1A	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	MY HCL 11/6/13	y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	MY HCL 11/6/13	y	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	MY HCL 11/6/13	y	↓

SAMPLE COMMENTS: None

LOCATION COMMENTS: None

FIELD PARAMETERS:

Dissolved Oxygen N/A mg/L Oxidation-Reduction Potential N/A mV pH N/A SU

Specific Conductance N/A uS/cm Temperature N/A deg C Turbidity N/A NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Maurice Shendo (Signature)	11/6/13 1510	(Printed Name) M. Montoya (Signature)	11/6/13 1510
RELINQUISHED BY **(Printed Name)** **(Signature)**	**Date/Time**	**RECEIVED BY** **(Printed Name)** **(Signature)**	**Date/Time**

Report Date 11/04/2013

128

R-44 S1

11/06/2013

For morning preparations see page 125, this log Book

1230 crew: D. Fellenz & M. Shendo

weather: Sunny, low 50's.

safety: electrical & pressure safety systems

objective: Sample R-44 S1 per Buski documents (p.3 this log Book)

LSD: 6714.91' msl V = 5833.18' msl

TD: ~~1016.0 msl~~ 936.3 (TOP, 11/6/13) DTW = 880.73' logs = LSD − V

DP: DTW (.041 gal/ft) = 36.1

WC: TOP − DTW = 55.57

1cv = WC (1.02 gal/ft) = 56.68

3cv = 1cv (3) = 170.04

1247 pump on

1251 Q = 3.4 gpm

1258 DP clear (37.4)

1349 start Sampling (D. Fellenz)

1401 Pump off finish Sampling.

1411 D. Fellenz preserves samples. M. Shendo QC's

Summary: Sampling objective met/ NMED Sampled

For groundwater sampling log page 129

Compliance checklist page 130

1445 offsite

1505 at SMO Relinquishing Samples to M. Montoya 1510

~~15~~ Sample ID: Event ID 4455

Sample ID: CAMO-14-45766, 45750, 45735

11/6/13

R-44 S1 Continued

129

HS 11/6/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6714.91 ft. msl	Well Diameter: 5 inches	Date: 11/06/13
Watershed: Mortandad/Sandia	Water Level: 5833.18 ft. msl	Top of Screen: 5819.9 ft.	Notes:
Well: R-44 S1	*TD: TDP 936.3	Bottom of Screen: 905.0 ft.	
Sampling Device: GSP	*DTW: 880.73	Water Column: 55.57 ft.	
Measuring Point: LSD	Drop Pipe: 36.1 gal.	1CV: 56.68 gal.	Packer Pressure
* Completion Depth: TD		3CV: 170.04 gal.	Before: 243 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 440 psi
			Opening: 247 psi
DTW = (LSD - Water Level). Water Column = (TD - DTW). Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier) 3 CV = (1CV x 3)			After: _____ psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. MSL	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1247	Pump	on	water to						
1258	7.89	18.29	145	7.11	0.0	113.6	5832.87	3.4	water clear no odor
1308	7.78	18.30	140	6.33	0.3	115.2	5832.88	3.4	water clear no odor
1318	7.79	18.38	137	5.80	0.0	116.2	5832.88	"	"
1328	7.81	18.58	136	6.02	0.0	115.8	5832.87		"
1338	7.78	18.55	135	6.12	0.0	118.7	5832.89		"
1343	7.80	18.64	135	6.22	0.0	118.3	5832.89		"
1348	7.82	18.84	135	6.20	0.0	117.4	5832.89		"
1349	start Sampling								
1401	Pump off	finish Sampling							

WASTE			
Contact: 1/2 gal.	Drum#: 10171877	Final Water Level: 5832.89
Purge Water: 173.4 gal.	Drum#'s: municipal 300 gal Tank	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water: 251.6 gal.		

HS 11/6/13

130

R-44 S1 Continued

11/6/13

DF 11/5/13

SOP-20032 ~~Rev. 4~~ Rev. 3 Compliance Checklist

Well Name: R-44 S2

Date: 11/06/2013

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 36.1 3 CVs: 170.04	37.4	170.04	3	Y N	None

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1338	7.78	135	6.12	0.0	None
1343	7.80	135	6.22	0.0	
1348	7.82	135	6.20	0.0	
Calculations:	Upper: 7.82 Lower: 7.78 Difference: 0.04	Median: 135 Upper: 139 Lower: 131	Upper: 6.22 Lower: 6.12 Difference: 0.1	Median: N/A Upper: N/A Lower: N/A	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	None

11/6/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45767

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/06/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1207	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-44 S2	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P2A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	Y	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	Y	↓

SAMPLE COMMENTS: generator Running About 50' Away.

LOCATION COMMENTS: None

FIELD PARAMETERS:

Dissolved Oxygen 7.14 mg/L Oxidation-Reduction Potential 102.7 mV pH 7.90 SU

Specific Conductance 146 uS/cm Temperature 20.40 deg C Turbidity 0.25 NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) Maurice Sanchez (Signature)	Date/Time 11/6/13 1570	**RECEIVED BY** (Printed Name) (Signature)	Date/Time 11/6/13 1570
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	**RECEIVED BY** (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45751

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/06/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1207	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-44 S2	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P2A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	y	
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	y	
	WSP-8270C-SVOA	1 LITER AMBER GLASS	1 WS 2 ICE 11/13		y	
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	y	
	WSP-CN(T)	250 ML POLY	1	NAOH	y	
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE	y	
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	y	
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	y	
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	y	
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	y	

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45751

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: None

LOCATION COMMENTS: None

FIELD PARAMETERS:

Dissolved Oxygen N/A mg/L Oxidation-Reduction Potential N/A mV pH N/A SU

Specific Conductance N/A uS/cm Temperature N/A deg C Turbidity N/A NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Maurice Sanchez (Signature)	11/6/13 1510	(Printed Name) (Signature)	11/6/13 1516
RELINQUISHED BY **(Printed Name)** **(Signature)**	**Date/Time**	**RECEIVED BY** **(Printed Name)** **(Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45736

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/06/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1207	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-44 S2		↓	FIELD PREP:	UF	ok
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT: P2A		↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	1	HCL MS 11/6/13	y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	1	HCL MS 11/6/13	y	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	1	HCL MS 11/6/13	y	↓

SAMPLE COMMENTS: None

LOCATION COMMENTS: None

FIELD PARAMETERS:

Dissolved Oxygen N/A mg/L Oxidation-Reduction Potential N/A mV pH N/A SU

Specific Conductance N/A uS/cm Temperature N/A deg C Turbidity N/A NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) Maurice Shendo (Signature)	**Date/Time** 11/6/13 1510	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time** 11/6/13 1510
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

Report Date 11/04/2013

R-44 S2

11/06/2013
0700 Health & Safety tailgate Meeting at TA-64, M. green.
0735 calibrate YSI #20 at TA-64. D. Fellenz (EP-2011-0073 p. 55)
0945 on site
Weather: Sun, Breezy, Mid 40's to Low 50's.
Safety: electrical & pressure systems.
Crew: D. Fellenz & M. Shendo
objective: Sample R-44 S2 per Baski documents (page 3 on log book)
LSD: 6714.91 'msl TV = 5832.88 'msl
TD: 1016.0 bgs DTW = BOP = 941.1 ft bgs
DP = BOP (0.041 gal/ft) = 38.6 gal
WC = TD - BOP = 74.9'
1CV = WC (1.02 gal/ft) = 76.4 gal
3CV = 1CV (3) = 229.2 gal
1028 generator on, 50' away
1030 pump on water to Surface.
1034 Q = ~~3.19~~ 3.2 MS 11/06/13
1049 P. longmire & R. Gwanzoco NMED on site.
1055 NMED off site.
1054 Clear Drop Pipe
1206 Begin Sampling (D. Fellenz)
1217 Pump off Sampling complete
Summary = Sampling objective met / NMED samples
For ground water Sampling log page 126
Compliance checklist page 127
1219 D. Fellenz Preserves samples (M. Shendo QC's)
1445 off site
1510 Relinquished sample to SMO. M. Montoya
Sample ID: Event ID 4455
Sample ID: CAMO-14-45767, 45751, 45736

MS
11/6/13

126

R-44 S2 continued

MS 11/6/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6714.91 ft. msl	Well Diameter: 5 inches	Date: 11/06/2013
Watershed: Mortandad/Sandia	Water Level: 5832.88 ft. msl	Top of Screen: 5729 ft.	Notes:
Well: R-44 S2	*TD: 1016.0	Bottom of Screen: 5719.7 ft.	
Sampling Device: GSP	*DTW: BOP=941.1' bgs	Water Column: 74.9 ft.	
Measuring Point: LSD	Drop Pipe: 38.6 gal.	1CV: 76.4 gal.	Packer Pressure
* Completion Depth: TD		3CV: 229.2 gal.	Before: 243 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 440 psi
DTW = (LSD - Water Level). Water Column = (TD - DTW). Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier) ... 3 CV = (1CV x 3)			Opening: 247 psi
			After: 243 psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1030 Pump on water to Surface.									
1054 MS 11/6/13	~~14.12~~ 7.85	19.12	145	6.23	.88	52.6	5831.93	3.2	water clear No odor
1104	7.88	19.93	146	6.83	.44	75.2	5831.92		Turb Meter H'ACH #2
1114	7.90	20.28	146	7.12	1.31	85.2	5831.94		water clear No odor
1124	7.90	20.23	146	7.16	0.55	91.5	5831.92		water clear No odor
1134	7.88	20.02	145	7.00	0.42	96.5	5831.93		"
1144	7.88	20.00	145	6.93	0.33	99.1	5831.92		"
1154	7.88	19.17	145	7.04	0.31	102.0	5831.94		"
1159	7.88	20.32	144	7.06	0.20	102.5	5831.93		"
1204	7.90	20.40	146	7.14	0.25	102.7	5831.93		"
1207 MS 11/6/13 Began Sampling									
1217 Pump off Sampling complete									

WASTE

Contact: 1/2 gal.	Drum#: 10171876		Final Water Level: 5831.96
Purge Water: 307.2 gal.	Drum#'s: Municipal 550 gal Tank		*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water: ~~345.382.4~~ 383.0 gal.			

MS 11/6/13

MS 11/6/13

R-44 S2 Continued

MS 11/6/13

DF 11/5/13

SOP-20032 ~~Rev. 4~~ Rev. 3 Compliance Checklist

Well Name: R-44 S2

Date: 11/06/2013

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter	Drop Pipe: 38.6	39	229.2	3	Y N	None
Manual	3 CVs: 229.2					

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1154	7.88	145	7.04	0.31	None
1159	7.88	144	7.06	0.20	
1204	7.90	146	7.14	0.25	
Calculations:	Upper: 7.90	Median: 144	Upper: 7.14	Median: N/A	
	Lower: 7.88	Upper: 148	Lower: 7.04	Upper: N/A	
	Difference: 0.02	Lower: 140	Difference: 0.1	Lower: N/A	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	None

MS 11/6/13

MS 11/6/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45752

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/06/2013	FIELD MATRIX:	WG	gr
TIME COLLECTED (HH:MM):		1315	MEDIA:	UA	
PRS ID:		dh	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-45 S1		FIELD PREP:	UF	dh
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P1A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NP
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 2	ICE		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45752

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Sample collected within 50 ft of diesel generator

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 7.22 mg/L Oxidation-Reduction Potential 82.6 mV pH 7.95 SU

Specific Conductance 183 uS/cm Temperature 26.23 deg C Turbidity 0.8 NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Megan Green	11/6/13 1445		11/6/13 1445
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45768

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/06/2013	FIELD MATRIX:	WG	gr
TIME COLLECTED (HH:MM):		1315	MEDIA:	UA	d
PRS ID:		gr	SAMPLE TECH CODE:	UA	658
LOCATION ID:	R-45 S1		FIELD PREP:	F	gr
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P1A		SAMPLE USAGE:	INV	

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-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stockton

RELINQUISHED BY (Printed Name) Megan Green **(Signature)**	**Date/Time** 11/6/13 1445	**RECEIVED BY (Printed Name)** **(Signature)**	**Date/Time** 11/6/13 1445
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45737

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/06/2013	FIELD MATRIX:	WG	GW
TIME COLLECTED (HH:MM):		1315	MEDIA:	UA	
PRS ID:		OR	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-45 S1		FIELD PREP:	UF	OR
LOCATION TYPE:			FIELD QC TYPE:	FTB	
PORT:	P1A		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL OR 11/6/13	Y	NO
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stokes

RELINQUISHED BY (Printed Name) Maryann **(Signature)**	**Date/Time** 11/6/13 1445	**RECEIVED BY (Printed Name)** **(Signature)**	**Date/Time** 11/6/13 1445
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

80

11/6/13 R-45 S1

1210 Complete sampling R-45 screen 2, prepare to sample R-45 S1
See page 77 of this logbook for morning activities.
Objectives: Purge and sample R-45 S1 per SOPs and documents on page 3.
Note: YSI 30 used

1215 V = 5832.87' msl LSD = 6704.02' msl ID = Top 46 pcs
TOP = 921.31' bgs DTW = LSD - V = 871.15' msl
WC = DTW - TOP = 50.16'
DP = (0.041 gal/ft) DTW = 35.7 gal.
1CV = (1.020 gal/ft) WC = 51.2 gal
3CV = = 153.5 gal

1220 Open APV at 460 PSI
Note: See page 81 for the Groundwater Sampling Log and all purge details.

1224 Initial Q = 3.5 gpm. 5 gallons purged in 1 min 25 sec.
Note: Initial water level is lower than previous sampling event. This is expected due to ongoing pumping at Bearing R28.
Note: Parameters not logged until 1336
SOP requirements for sampling met, see SOP Completed Checklist (page 82). Begin Sampling

1330 Sampling Complete
A. Stocker presence, M. Green QA

Summary: R45 S1 successfully sampled.
1400 off site, drop generator off at MCOS-6
1445 pending VOA samples at SMO. Event ID: 4455
Sample IDs: CAMO-14-45752, -45768, -45737

my 11/6/13

81

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6704.02 ft. msl	Well Diameter: 5 inches	Date: 11/6/13
Watershed: Mortandad	Water Level: 5832.87 ft. msl	Top of Screen: 5824.0 ft. msl	Notes: None
Well: R-45i	*TD: TOP = 9261.31 bgs	Bottom of Screen: 5814.0 ft msl	
Sampling Device: Bohi GSP	*DTW: 871.15 mbgs	Water Column: 50.16 ft.	
Measuring Point: LSD	Drop Pipe: 35.7 gal.	1CV: 51.2 gal.	Packer Pressure
* Completion Depth: TOP		3CV: 153.5 gal.	Before: 233 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 460 psi
			Opening: 243 psi
DTW = (LSD - Water Level). Water Column = (TD - DTW). Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: 233 psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft.	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1221	Pump on, water to surface								
1231	8.21	19.45	171	6.68	0.0	109.3	5832.42	3.5	clear no odor
1241	7.89	19.84	184	6.39	0.2	64.4			
1251	7.93	20.08	183	7.09	0.0	82.0			
1301	7.95	20.11	183	7.17	0.0	82.0			
1306	7.95	20.21	183	7.21	0.0	81.6			
1311	7.95	20.13	183	7.22	0.0	82.6			
1315	Begin Sampling								
1330	Sampling complete, pump off								

MG 11/6/13

WAS

Contact:	1/2	Drum#: Municipal	Final Water Level: 5832.44
Purge Water:	159	Drum#'s: 1017180	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	2		

82

SOP-20032 Rev. 1 Compliance Checklist

Well Name: 11/6/13
Date: R-45 S1

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter Manual	Drop Pipe: 35.7 3 CVs: 153.5	36	154	3	Y N	None

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1301	7.95	183	7.17	0.0	None
1306	7.95	183	7.21	0.0	
1311	7.95	183	7.22	0.0	
Calculations:	Upper: NA Lower: Difference:	Median: NA Upper: Lower:	Upper: 7.22 Lower: 7.17 Difference: 0.05	Median: <10 Upper: NA Lower:	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	None

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45753

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/06/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1148	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GM
LOCATION ID:	R-45 S2	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P2A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE 11/6/13		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45753

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Samples collected within 50ft of diesel generator.

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 6.64 mg/L Oxidation-Reduction Potential 120.5 mV pH 8.15 SU

Specific Conductance 172 uS/cm Temperature 20.30 deg C Turbidity 0.0 NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Megan Green	11/6/13 1440	A. Martinez	11/6/13 1445
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45769

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/06/2013	FIELD MATRIX:	WG	GW
TIME COLLECTED (HH:MM):		1148	MEDIA:	UA	
PRS ID:		Op	SAMPLE TECH CODE:	UA	NA
LOCATION ID:	R-45 S2		FIELD PREP:	F	Op
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P2A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NP
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NP

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stokes

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Megan Gwen	11/6/13 1445	[illegible]	11/6/13 1445
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45738

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/06/2013	FIELD MATRIX:	WG	GR
TIME COLLECTED (HH:MM):		1148	MEDIA:	UA	
PRS ID:		GR	SAMPLE TECH CODE:	UA	NA
LOCATION ID:	R-45 S2		FIELD PREP:	UF	GR
LOCATION TYPE:			FIELD QC TYPE:	FTB	
PORT:	P2A		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~ 11/1/13	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	~~2~~ 1	HCL		

SAMPLE COMMENTS: N/A

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stetson

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Meagan	11/6/13 1445		11/6/13 1445
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

R-45 S2 11/6/13

0700 M. Green leads safety tailgate at TA-64
0800 M. Green calibrates meter #30 at TA64, see logbook.
0945 Crew onsite. A. Stocker, M. Green
Weather: 30's, sunny, slight breeze
Safety: Proximity to purging operations at R-28, pressure systems
objectives: Purge and sample R-45 S2 per SOP's and document in page 3 using dedicated bladder system, generator and nitrogen
1000 ~~Connect to local hall, no #60~~ Attempt to connect to screen 2 transducer with two different rugged readers and cables. Unable to connect. Able to connect to screen 1 so it is a screen 2 transducer problem. Contact STR. Permission given to proceed with sampling. Crew will monitor # in screen 1 to insure that correct APV is open
LSD = 6704.02' msl TD = 1016.0' bgs
DTW = bottom of packer = 926.0' bgs WC = DTW - TD = 90.0'
DP = (0.041 gal/ft) DTW = 38.0 gal
ICV = (1.020 gal/ft) WC = 91.8 gal
3CV = = 275.4 gal
1013 Open APV at 410 PSI
Note: see groundwater sampling log for purge and sampling details (page 78). Water level in screen 1 is not changing, screen 2 APV is open.
initial Q = 3.5 gpm 5 gallons purged in 1 min 25 sec
1148 SOP requirements for sampling met, see SOP compliance checklist (page 79). Begin sampling
Note: State onsite (P. Longmire and K. Granzow) onsite from 10:45 to 10:55 to drop off samples. Groundwater crew offers NMED split.
Summary: R-45 S2 successfully sampled. No water level data collected because transducer will not connect to rugged readers.
1210 Prepare to sample screen 1, see page 80.
1445 Relinquish samples at SMO. Event DD: 4455
Sample IDs: CAMO-14-45753, -45738, -45769

[illegible] 11/6/13

78

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6754.02 ft. msl	Well Diameter: 8 inches	Date: 11/6/13
Watershed: Mortandad	Water Level: NA ft. msl	Top of Screen: 5729.1 ft. msl	Notes: Transducer not working, no WL data
Well: R-45 SP	*TD: 1016.0' BGP	Bottom of Screen: 5709.1 ft. msl	
Sampling Device: Pump 65P	*DTW: BOP = 926.0' bgs	Water Column: 90 ft.	
Measuring Point: LSP	Drop Pipe: 38.0 gal.	1CV: 91.8 gal.	Packer Pressure
* Completion Depth: TD		3CV: 275.4 gal.	Before: 250 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 490 psi
			Opening: 240 psi
			After: 233 psi

DTW = (LSD - Water Level). Water Column = (TD - DTW). Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1021	Pump on, Water to surface								
1029	7.56	13.32	178	6.66	0.3	185.4	NA	3.5	Clear odorless
1044	7.99	18.58	170	6.42	0.1	137.9			
1054	8.14	20.14	171	6.61	0.0	131.2			
~~1104~~ 1114	8.14	20.26	172	6.63	0.0	127.4			
~~1129~~				mg 11/6/13					
1134	8.13	20.13	171	6.65	0.0	123.7			
1139	8.13	20.13	172	6.65	0.0	122.7			
1144	8.15	20.30	172	6.64	0.0	120.5			
1148	Begin Sampling								
1201	Sampling Complete, pump off								

mg 11/6/13

WASTE			
Contact:	10 gal.	Drum#: municipal	Final Water Level: NA
Purge Water:	270 gal.	Drum#'s: 10171879	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	320 gal.		

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-45 S2

Date: 11/6/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 38 3 CVs: 275.4	38	276	3	Y N	None

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1134	8.13	171	6.65	0.0	None
1139	8.13	172	6.65	0.0	
1144	8.15	172	6.64	0.0	
Calculations:	Upper: 8.15 Lower: 8.13 Difference: 0.02	Median: 172 Upper: 177 Lower: 167	Upper: 6.65 Lower: 6.64 Difference: 0.01	Median: <10 Upper: NA Lower: NA	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	None

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45739

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/12/2013	FIELD MATRIX: WG		OR
TIME COLLECTED (HH:MM):		1602	MEDIA: UA		↓
PRS ID:		OR	SAMPLE TECH CODE: UA		GSP
LOCATION ID: R-50 S1		↓	FIELD PREP: UF		OR
LOCATION TYPE:		↓	FIELD QC TYPE: FTB		↓
PORT: P1A		↓	SAMPLE USAGE: QC		↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Megan Green	11/12/13 1700	S. Sherwood	11/12/13 1700
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45754

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/12/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1602	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-50 S1		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P1A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	3	ICE		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45754

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Samples collected with 50 ft of diesel generator in wheels.

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 5.79 mg/L Oxidation-Reduction Potential 119.7 mV pH 7.98 SU

Specific Conductance 171 uS/cm Temperature 20.88 deg C Turbidity 0.43 NTU

COLLECTED BY (PRINT) A. Stacker

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Megan Green	11/12/13 1700	S. Sherwood	11/12/13 1700
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45770

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/12/2013	FIELD MATRIX:	WG	↓
TIME COLLECTED (HH:MM):		1602	MEDIA:	UA	↓
PRS ID:		↓	SAMPLE TECH CODE:	UA	6SP
LOCATION ID:	R-50 S1	↓	FIELD PREP:	F	↓
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P1A	↓	SAMPLE USAGE:	INV	↓

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+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L ~~Oxidation-Reduction Potential~~ _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C ~~Turbidity~~ _____ ~~NTUs~~

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Megan Gine	11/12/13 1700	S. Sherwood	11/12/13 1700
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

30

11/12/13 R-5051

1435 Prepare to sample R-5051. R-5052 sampled previously, see page 26 for details. Wind has increased

Crew: A. Stocker, M. Green

Objective: Purge and Sample R-5051 per directions on page 30 logbook, 6 SP Bank, system and generator.

1436 Connect to level troll, ∇ = 5834.32' msl

LSD = 6904.11' msl TD = TOP = 1118.1' bgs

DTW = LSD - ∇ = ~~864.79' bgs~~ 1069.79'

WC = DTW - TD = 48.31'

DP = (0.041 gal/ft) DTW = 43.9 gal

1CV = (1.020 gal/ft) WC = 49.3 gal

3CV = = 147.8 gal

1442 Open APV at 460 PSI

1443 Pump on, water to surface. See page 31 (Groundwater Sampling log) for all purge details

Note: A. Vigil and Z. Duran are on site and applying Screen 2 water.

1445 5 gallons purged in 1 min 57 sec. Q = 2.6 gpm

1455 A. Vigil + Z. Duran offsite

1532 M. Dale on site to collect NMED samples

1602 SOP requirements met, see SOP compliance checklist (page 32) Begin sampling. NMED Samples.

1615 A. Stocker preserves, M. Green QAs.

Summary: R-5051 successfully sampled. Extra volume purged to allow DO to stabilize.

1630 Offsite

1700 ~~1650~~ Relinquish samples at CMO. Event ID: 4455

Sample ID: CAMO-14-45754, 45770, -45771

MG 11/12/13

31

Groundwater Sampling Log

Project: IFWGMP MY2013	**LSD:** 6904.11 ft. msl	**Well Diameter:** 5 inches	**Date:** 11/12/13
Watershed: Mortandad	**Water Level:** 5834.32 ft. msl	**Top of Screen:** 5827.1 ft. msl	**Notes:** NA
Well: R-50S1	***TD:** 1118.1	**Bottom of Screen:** 5817.1 ft. msl	
Sampling Device: GSP Bailer	***DTW:** 1069.79	**Water Column:** 48.31 ft.	
Measuring Point: LSP	**Drop Pipe:** 43.9 gal.	**1CV:** 49.3 gal.	**Packer Pressure**
*** Completion Depth:** TOP		**3CV:** 147.8 gal.	**Before:** 230 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		**Actuation:** 460 psi
			Opening: 235 psi
			After: 220 psi

DTW = (LSD - Water Level).....**Water Column =** (TD - DTW).....**Drop Pipe =** (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1443	Pump on, water to surface								
1500	8.05	19.92	127	8.64	0.76*	117.9	5834.15	2.6	very effervescent
1510	7.41	20.19	169	5.46	0.52*	120.9	5830.13		less effervescent
1520	8.00	20.05	174	4.21	0.67*	121.5	5830.12		Slight effervescence
1530	8.04	20.25	171	4.75	0.63*	120.4	5830.11		
1540	8.00	21.05	171	5.25	0.45*	120.3	5830.11		
1545	8.00	20.91	170	5.40	0.39*	120.1	5830.11		
1550	8.00	20.86	170	5.69	0.43*	119.8	5830.10		
1555	7.99	20.82	170	5.74	0.39*	119.7	5830.10		
1557	300 gal purged, DO not stable								
1600	7.98	20.88	171	5.79	0.43*	119.7	5830.11		
1602	Begin sampling								
1612	Sampling complete, pump off								
							11/12/13		
* Turbidity meter with HACH meter									

	WASTE		**Final Water Level:** 5830.62
Contact:	12 gal.	**Drum#:** municipal	***Purge:** Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Purge	161 gal.	**Drum#'s:** 10171882	
of	Water: 220 gal.		

32

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-50S1

Date: 11/12/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter	Drop Pipe: 40.9	44	161	3.3	Y N	None
Manual	3 CVs: 147.8					

Parameters collected at proper intervals? (HH:MM)	pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,
	Stable for three consecutive readings?			
1550	8.00	170	5.69	0.43
1555	7.99	170	5.74	0.39
1600	7.98	170	5.79	0.43
Calculations:	Upper: 8.00	Median: 170	Upper: 5.79	Median: <10
	Lower: 7.98	Upper: 175	Lower: 5.69	Upper: NA
	Difference: 0.02	Lower: 165	Difference: 0.10	Lower:
Y N	Y N	Y N	Y N	Y N

Comments: After extra 0.3 CVs were purged further DO to stabilize

SOP Requirements Met?	Comments:
Y N	None

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45755

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/12/13	FIELD MATRIX: WG		OK
TIME COLLECTED (HH:MM):		1418	MEDIA: UA		↓
PRS ID:		OK	SAMPLE TECH CODE: UA		GSP
LOCATION ID: R-50 S2		↓	FIELD PREP: UF		OK
LOCATION TYPE: MON		↓	FIELD QC TYPE: REG		↓
PORT: P2A		↓	SAMPLE USAGE: INV		↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	↓	↓
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID:	4455	**EVENT NAME:**	Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD
SAMPLE ID:	CAMO-14-45755	**WORK ORDER:**	NA

SAMPLE COMMENTS: Samples collected within 50 ft of diesel generator

LOCATION COMMENTS: WHS

FIELD PARAMETERS:

Dissolved Oxygen 8.32 mg/L Oxidation-Reduction Potential 119.4 mV pH 8.02 SU

Specific Conductance 134 uS/cm Temperature 20.19 deg C Turbidity 0.35 NTU

COLLECTED BY (PRINT) A. Stocker, A. Vigil

RELINQUISHED BY (Printed Name) Magnogren (Signature)	**Date/Time** 11/12/13 1700	**RECEIVED BY** (Printed Name) S. Sherwood (Signature) Sheri Sherwood	**Date/Time** 11/12/13 1700
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45771

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/12/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1418	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	NA
LOCATION ID:	R-50 S2		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P2A	↓	SAMPLE USAGE:	INV	↓

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+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stocker, A. Vigil

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Megan Gran	11/12/13 1700	D. Sherwood	11/12/13 1700
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45898

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/12/2013	FIELD MATRIX:	WG	gr
TIME COLLECTED (HH:MM):		1418	MEDIA:	UA	
PRS ID:		cr	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-50 S2		FIELD PREP:	UF	cr
LOCATION TYPE:	MON		FIELD QC TYPE:	FTB	
PORT:	P2A		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~	Y	NA
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~		

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV ~~pH _____ SU~~

Specific Conductance _____ uS/cm Temperature _____ deg C ~~Turbidity _____ NTU~~

COLLECTED BY (PRINT) A. Stocker

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
M. Green	11/12/13 1700	S. Sherwood Sheri Sherwood	11/12/13 1700
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

26

11/12/13 R-50 S2

0700 M. Green leads safety tailgate at TA-64.

0742 M. Green Calibrates meter #40 at TA-64, see logbook.

0945 Crew onsite at R-50 S2: A. Stocker, M. Green

Weather: 40's, windy, cloudy

Safety: pressure systems, sun exposure

Objectives: purge and sample R-50 S2 per SOP on page 3 and work plan provided by GRL. Purge at a rate of ~1.5 gpm to prevent pump problems.

~~Connect to level troll with [illegible]~~

955 Attempt to connect to screen 2 level troll. Able to connect to screen 1 level troll so crew assumes problem is with transducer. Call STR for permission to sample. Crew will monitor water level in screen 1 to ensure correct APV is open. Initial msl is 5834.29 ms

LSD = 6904.11 msl TD = 1217.5 bgs

DTW = BOP = 1122.9 bgs WC = DTW - TD = 94.6'

DP = 10.041 gal/ft) DTW = 46.0 gal

ICV = 1.020 gal/ft) WC = 96.5 gal

3CV = = 289.5 gal

1027 Open APV with 400 PSI

1029 Pump on, see Groundwater Sampling log (page 28) for details on purge. Flow restricted initially, will adjust manual flow rate to dial in.

1030 Pump off, hose attachment broke while tightening to fix leak.

1032 pump on.

1036 initial flow <1 gpm, adjust flow

1040 5 gallons purged in 3 mins, 30 seconds Q = 1.5 gpm

1204 flow confirmed at 1.5 GV.

1416 A. Vigil and Z. Duran onsite

1418 Sampling requirements met, see SOP Compliance Checklist (page 29). Begin sampling, collect NMED sampling

Summary: R-50 S2 successfully sampled, Extra volume purged to allow DO to stabilize.

1430 A. Stocker preserves, M. Green QAS.

1435 Prepare to sample R-50 S1, see page 30.

27

R-50 S2 Continued

00 Samples relinquished at SMO: Event ID: 4455
Sample ID: CAMO-14-45818, -CAMO-144571, -45755

[illegible]
11/12/13

90

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6904.11 ft. msl	Well Diameter: 5 inches	Date: 11/21/13
Watershed: Mort	Water Level: NC ft. msl	Top of Screen: 5719.1 ft. msl	Notes: unable to connect to transducer
Well: R-50 S2	*TD: 1217.5 bgs	Bottom of Screen: 5698.5 ft. msl	
Sampling Device: 6 SR Bladder	*DTW: BOP = 1122.9' bgs	Water Column: 94.6 ft.	
Measuring Point: LSD	Drop Pipe: 46.0 gal.	1CV: 9.6.5 gal.	Packer Pressure
* Completion Depth: TD		3CV: 289.5 gal.	Before: 230 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 460 psi
			Opening: 225 psi
DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: 230 psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. NC	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1029	Pump on, water to surface, 10:30 pump off, see note								
1032	Pump on								
1102	7.53	14.89	131	7.93	2.43*	132.3	NC	1.5	effervescent reaction *HACH
1132	7.97	18.32	126	7.72	1.04*	113.5	NC		very abundant
1202	8.02	19.73	123	8.02	1.96*	115.2			
1232	8.09	19.88	128	7.90	3.39*	116.4			
1302	8.09	20.02	130	7.96	0.43*	117.9			
1332	8.03	20.15	130	8.06	0.48*	118.2			
1402	8.03	20.36	133	8.06	0.50*	118.4			
1407	8.03	20.38	132	8.36	0.48*	118.0			effervescence closer before
1412	8.02	20.43	133	8.40	1.49*	119.3			DO varying
1415	3 CVs purged, DO not stable								
1417	8.02	20.19	134	8.32	0.35*	119.4			
1418	Begin Sampling, collect NMED samples								
1426	Pump off, Sampling Complete								
* = turbidity collected with HACH meter									

WASTE

Contact:	112 gal.	Drum#: Municipal	Final Water Level: NC
Purge Water:	294 gal.	Drum#'s: 1017188 7	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	360 gal.		

SOP-20032 Rev. 1 Compliance Checklist

Well Name: E-5052

Date: 11/12/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 46.0 3 CVs: 289.5	46	~~287~~ 294	3.0	Y N	One extra parameter (4.5 gals) purged to allow DO to stabilize.

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1407	8.03	132	8.36	0.48	None
1412	8.02	133	8.40	1.49	
1417	8.02	134	8.32	0.35	
Calculations:	Upper: 8.03 Lower: 8.02 Difference: 0.01	Median: 133 Upper: 137 Lower: 129	Upper: 8.40 Lower: 8.32 Difference: 0.08	Median: <10 Upper: N/A Lower: ↓	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	An extra 4.5 gals were purged to allow DO to stabilize. Vigorous cleaning of the flow through cell was req'd because of observed effecting DO.

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45955

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		0900	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S1	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
TOP DEPTH:		↓	SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:		↓	EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-DRO	1 LITER AMBER GLASS	2	ICE	Y	NA

SAMPLE COMMENTS: Collect at ICV+DP

LOCATION COMMENTS: diesel generator 50' away downwind

FIELD PARAMETERS:

Dissolved Oxygen ~~5.56~~ 5.57 mg/L 11/15/13 Oxidation-Reduction Potential 20.7 mV pH 6.89 SU

Specific Conductance ~~146~~ 147 uS/cm 11/15/13 Temperature 18.64 deg C Turbidity 3.1 NTU

COLLECTED BY (PRINT) M. Stevdo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stokes	11/15/13 1505	K. Gucee	11/15/13 3:05
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45956

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		0957	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S1	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	↓
TOP DEPTH:			SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ALK	125 ML POLY	1	ICE	Y	NA
↓	WSP-EES6-TOC	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓

SAMPLE COMMENTS: Collect at 3CV

LOCATION COMMENTS:

FIELD PARAMETERS: JS 11/15/13 JS 11/15/13

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) M. Stenzo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stoker	11/15/13 1505	K. Green	11/15/13 3:05
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45966

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		0957	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S1		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ANIONS	125 ML POLY	1	ICE	Y	NA
	WSP-EES6-MET	125 ML POLY	1	HNO3 ICE		

SAMPLE COMMENTS: Collect at 3CV

LOCATION COMMENTS: diesel generator running 50' downward

FIELD PARAMETERS:

Dissolved Oxygen 4.95 mg/L Oxidation-Reduction Potential 73.5 mV pH 6.85 SU

Specific Conductance 147 uS/cm Temperature 19.75 deg C Turbidity 34.3 NTU

COLLECTED BY (PRINT) M. Steele

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
[illegible]	11/14/13 1505	K. Greene	11/15/13 3 105
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45957

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		1123	MEDIA:	UA	✓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSI
LOCATION ID:	R-61 S1	✓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	✓	FIELD QC TYPE:	REG	✓
TOP DEPTH:		✓	SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:		✓	EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ALK	125 ML POLY	1	ICE	Y	NA
✓	WSP-EES6-TOC	40 ML SEPTUM AMBER GLASS	2	ICE	Y	✓

SAMPLE COMMENTS: Collect at GCV

LOCATION COMMENTS:

FIELD PARAMETERS: 11/15/13

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stocker + M. Sandoval

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stocker	11/15/13 1505	K. Greene	11/15/13 3:05
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45967

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		1123	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S1		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ANIONS	125 ML POLY	1	ICE	Y	NA
	WSP-EES6-MET	125 ML POLY	1	HNO3 ICE		

SAMPLE COMMENTS: Collect at 6CV

LOCATION COMMENTS: diesel generator running 50' away

FIELD PARAMETERS:

Dissolved Oxygen 5.90 mg/L Oxidation-Reduction Potential 110.5 mV pH 6.84 SU

Specific Conductance 148 uS/cm Temperature 19.66 deg C Turbidity 1.4 NTU

COLLECTED BY (PRINT) M. Stenk

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stokes	11/15/13 1505	K. Green	11/15/13 3105
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45756

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1123	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S1	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P1A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
" NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8082-PCB	1 LITER AMBER GLASS	~~3~~ 2	ICE 11/14/2013 A.V.	↓	↓
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 2	ICE 11/14/2013 A.V.	↓	↓
↓	WSP-8290-D/F	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-8321A-NMED HEXP	1 LITER AMBER GLASS	~~3~~ 2	ICE 11/14/2013 A.V.	↓	↓
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-GrossA/B	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE	↓	↓

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45756

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	Y	NA
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: diesel generator running 50' away

FIELD PARAMETERS:

Dissolved Oxygen 5.90 mg/L Oxidation-Reduction Potential 110.5 mV pH 6.84 SU

Specific Conductance 148 uS/cm Temperature 19.66 deg C Turbidity 1.4 NTU

COLLECTED BY (PRINT) M. Steele + A. Vig.

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stoke	11/15/13 1505	K. Green	11/15/13 3:05
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45772

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1123	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S1	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P1A	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NM
↓	WSP-CR52/53	1 LITER POLY	1	ICE	↓	↓
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS:

AS 11/15/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Vigil + M. Steed

RELINQUISHED BY (Printed Name) (Signature) A. Vigil	**Date/Time** 11/15/13 1505	**RECEIVED BY (Printed Name) (Signature)** K. Gocke	**Date/Time** 11/15/13 3:05
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45726

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1123	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S1	↓	FIELD PREP:	UF	↓
LOCATION TYPE:		↓	FIELD QC TYPE:	FD	↓
PORT:	P1A	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8082-PCB	1 LITER AMBER GLASS	~~3~~ 1	ICE	↓	↓
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~2~~ 1	ICE		
	WSP-8290-D/F	1 LITER AMBER GLASS	2	ICE		
	WSP-8310-PAH	1 LITER AMBER GLASS	~~2~~ 1	ICE		
	WSP-8321A-NMED HEXP	1 LITER AMBER GLASS	~~2~~ 1	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	~~2~~ 1	ICE		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45726

WORK ORDER:

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	~~2~~ 1	ICE	Y	NA
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS: DS 11/15/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) M. Sterlo + A. Vigil

RELINQUISHED BY (Printed Name) (Signature) Andrew Stocker	**Date/Time** 11/15/13 1505	**RECEIVED BY (Printed Name) (Signature)** K. Greene	**Date/Time** 11/15/13 1505
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45729

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1123	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S1	↓	FIELD PREP:	F	ok
LOCATION TYPE:		↓	FIELD QC TYPE:	FD	↓
PORT:	P1A	↓	SAMPLE USAGE:	QC	↓

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-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS: SS 11/15/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Vigil + M. Steele

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrea Stocker	11/15/13 1505	K. Green	11/15/13 3:05
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45723

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1123	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-61 S1		FIELD PREP:	UF	ok
LOCATION TYPE:			FIELD QC TYPE:	FB	
PORT:	P1A		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8082-PCB	1 LITER AMBER GLASS	~~3~~ 1	ICE		
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 1	ICE		
	WSP-8290-D/F	1 LITER AMBER GLASS	~~2~~ 1	ICE		
	WSP-8310-PAH	1 LITER AMBER GLASS	~~2~~ 1	ICE		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	~~2~~ 1	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	~~2~~ 1	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45723

WORK ORDER:

SAMPLE COMMENTS:

LOCATION COMMENTS:

AS 11/15/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stoke

RELINQUISHED BY (Printed Name) (Signature) A. Stoke	**Date/Time** 11/13/13 1505	**RECEIVED BY (Printed Name) (Signature)** K. Greene	**Date/Time** 11/15/13 3:05
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45740

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1123	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	DC
LOCATION ID: R-61 S1			FIELD PREP:	UF	ok
LOCATION TYPE:			FIELD QC TYPE:	FTB	
PORT: P1A			SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MS	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~ NONE	Y	MS
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~ NONE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~ NONE		

SAMPLE COMMENTS:

AS 11/15/13

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) AVISI

RELINQUISHED BY (Printed Name) (Signature) Andrew Stoke	**Date/Time** 11/15/13 1505	**RECEIVED BY (Printed Name) (Signature)** K. Greene	**Date/Time** 11/15/13 3:05
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45958

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	W	gw
TIME COLLECTED (HH:MM):		1249	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S1	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	↓
TOP DEPTH:			SAMPLE USAGE:	SCR	TESS
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ALK	125 ML POLY	1	ICE	Y	NA
↓	WSP-EES6-TOC	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓

SAMPLE COMMENTS: Collect at 9CV

LOCATION COMMENTS:

FIELD PARAMETERS: AS 11/15/13

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ µS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) J. Stalker + A. Vigil

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stalker	11/15/13 1505	K. Green	11/15/13 3:05
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45968

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		1249	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S1	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
TOP DEPTH:		↓	SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:		↓	EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ANIONS	125 ML POLY	1	ICE	Y	NA
↓	WSP-EES6-MET	125 ML POLY	1	HNO3 ICE	↓	↓

SAMPLE COMMENTS: Collect at QCV

LOCATION COMMENTS: diesel generator running 50' away

FIELD PARAMETERS:

Dissolved Oxygen 5.60 mg/L Oxidation-Reduction Potential 127.8 mV pH 6.86 SU

Specific Conductance 147 uS/cm Temperature 19.86 deg C Turbidity 2.1 NTU

COLLECTED BY (PRINT) A. Vigil + N. Stenke

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stocker	11/15/13 1505	K. Green	11/15/13 3105
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45959

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		1415	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-61 S1		↓	FIELD PREP:	UF	ok
LOCATION TYPE: MON		↓	FIELD QC TYPE:	REG	↓
TOP DEPTH:		↓	SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:		↓	EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ALK	125 ML POLY	1	ICE	Y	NA
↓	WSP-EES6-TOC	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓

SAMPLE COMMENTS: Collect at 12CV

LOCATION COMMENTS: diesel generator running 50' away

FIELD PARAMETERS:

Dissolved Oxygen 5.61 mg/L Oxidation-Reduction Potential 105.4 mV pH 6.80 SU

Specific Conductance 148 uS/cm Temperature 19.67 deg C Turbidity 1.9 NTU

COLLECTED BY (PRINT) M. Stevens

RELINQUISHED BY (Printed Name) Aubrey Stocker (Signature)	Date/Time 11/15/13 1505	RECEIVED BY (Printed Name) K. Green (Signature)	Date/Time 11/15/13 3:05
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45969

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/15/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		1415	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S1		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ANIONS	125 ML POLY	1	ICE	Y	NA
	WSP-EES6-MET	125 ML POLY	1	HNO3 ICE	Y	

SAMPLE COMMENTS: Collect at 12CV

LOCATION COMMENTS: diesel generator running 50' away

FIELD PARAMETERS:

Dissolved Oxygen 5.61 mg/L Oxidation-Reduction Potential 165.4 mV pH 6.80 SU

Specific Conductance 148 uS/cm Temperature 19.67 deg C Turbidity 1.9 NTU

COLLECTED BY (PRINT) M. Steele

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrea Stoka	11/15/13 1505	K. Greene	11/15/13 3105
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/05/2013

11/15/13 R-61 S1

0700 H&S daily gate performed by A. Stacker @ TA-64, Note: YSI #10 calibrated 11/14/13 1415

~~0738~~

0738 crew onsite:
crew: A. Stacker, M. Steele, A. Vigil
weather, 40s, -50s, possible precipitation later
2-min safety: weather, pinch points
Objectives: purge + sample R-61 S1 per SOPs, referenced documents, and Work Plan using on basis: GSP
Workplan: Time series sampling @ 1CV + DP, 3CV, 6CV, 9CV, + 12CVs and Interim Plan Sampling @ 6CVs regardless of stability

0748 connected to field well pressure transducer
TD: 5836.50' msl LSD: 6940.12' msl TD = Top of packer: 1162.3' bgs
DTW: 1103.62' bgs WC: 58.68'

11:50 DP 11/15/13

DP	= (0.041 gal/ft + DTW)	= 45.3 gal
1CV	= (1.020 gal/ft + WC)	= 59.9 gal
3CV	=	= 179.6 gal
5"SD 6CV	=	= 359.1 gal
9CV	=	= 538.7 gal
12CV	=	= 718.3 gal

0800 open SPV @ 360psi
0804 pump on, water to surface
0809 manual rate = 2.1 gpm
0831 DP cleared, begin logging parameters on Groundwater Sampling Log, see SOP Compliance Checklist for stability
0900 H. Boukhalfa + D. Weir onsite, 1CV + DP samples taken for DRO
0903 H. Boukhalfa + D. Weir offsite with DP clear samples; ~~090~~ 11/15/13
0957 3CV sample taken
1001 sampling complete
1050 G. Helland onsite
1055 G. Helland offsite
1123 6CVs purged, sample time series, interim plan samples regardless of stability, and samples for H. Boukhalfa
1201 6CV sampling complete
1299 9CVs sampling for time series samples, also samples for H. Boukhalfa
1351 T. McFarland onsite
1415 Begin sampling 12CVs ~~sampling~~ 11/15/13, H. Boukhalfa + D. Weir onsite
1419 Sampling complete, pump off

98

11/15/13 R-61 S1

1422 D. Weir + H. Boukhalfa offsite

Objectives complete to purge + sample R-61 S1

1445 Crew offsite

1505 submit samples to SMO: Event ID: 4464 + 4455;

Sample ID #: CAMO-145955, -45966, -45956, -45967, -45957, -45968, -45958, -45959, -45969, -45756, -45740, -45723, -45726, -45726, -45772, -45729

JS 11/15/13

JP 11/15/13

99

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6940.12 ft. msl	Well Diameter: 5 inches	Date: 11/15/13	
Watershed: Mortandad	Water Level: 11/15/13 5833.59 ft. msl	Top of Screw: 3815.12 ft msl	Notes: pg. 1 of 2	
Well: R-61 S1	*TD: 1162.3' bgs	Bottom of Screw: 5809.12 ft msl		
Sampling Device: bailer GSP	*DTW: 1103.62' bgs	Water Column: 58.68 ft.		
Measuring Point: LSD	Drop Pipe: 45.3 gal.	1CV: 59.9 gal.	Packer Pressure	
* Completion Depth: 1251.6' bgs		3CV: 179.6 gal.	Before: 200 psi	
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 360 psi	
			Opening: 205 psi	
			After: ____ psi	

DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0804	Pump on, water to surface								
0831	6.58	15.82	160	0.37	4.2	-2.6	5833.11	2.1	clear, slight organic odor, effervescent
0846	6.85	17.06	150	5.04	3.3	-14.2	5833.04	2.1	clear slight organic odor, effervescent
0901	6.88	18.64	147	5.27	3.6	20.7	5832.99	2.1	Organic in odor sample
0916	6.89	18.93	146	5.56	3.1	35.7	5833.01	2.1	clear, slight organic odor, effervescent
0931	6.89	19.33	149	4.90	2.7	50.9	5832.99	2.1	
0946	6.87	19.26	148	5.23	2.8	65.5	5833.01	2.1	
0957 ~~1001~~	3CV sample taken for time series								
1001	6.85	19.74	147	4.95	34.3	73.5	5833.00	2.1	
1016	6.86	19.55	149	5.88	~~824~~ 1.4 11/15/13	82.5	5833.01	2.1	
1031	6.88	19.77	149	5.82	1.4	88.3	5833.02	2.1	
1046	6.85	19.62	148	6.05	1.3	97.0	5833.01	2.1	
1101	6.84	19.68	148	5.88	1.4	103.0	5833.03	2.1	
JP 11/15/13 ~~1106~~	6.84	19.69	148	5.39	1.4	106.6	5833.03	2.1	
1116	6.84	19.70	148	5.61	1.4	108.6	5833.02	2.1	
1121	6.84	19.66	148	5.90	1.4	110.5	5833.05	2.1	

WASTE			
Contact:	1.5 gal.	Drum#: Municipal	Final Water Level: 5833.16' msl
Purge Water:	360 (6cvs) gal.	Drum#'s: 10171902	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	775 gal.		

JP 11/15/13

100

AS 11/15/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: ft. msl	Well Diameter: inches	Date: 11/15/13
Watershed: Mortandad	Water Level: ft. msl	Top of Screen: ft.	Notes:
Well: R-61S1	*TD:	Bottom of Screen: ft.	PS 2 of 2
Sampling Device: GSP	*DTW: AS 11/15/13	Water Column: ft.	
Measuring Point: LSD	Drop Pipe: gal.	1CV: gal.	Packer Pressure
* Completion Depth: 1251.66 gs		3CV: gal.	Before: psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: AS 11/15/13 psi
			Opening: psi
DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. WS	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1123	6 CVs sample taken for time series, interim plan, Begin sampling								
AS 11/15/13 1146	6.82	20.28	149	5.82	1.6	116.8	5833.06	AS 11/15/13 2.1	clear, organic odor, effervescent
1201	6.86	20.01	148	5.43	1.1	116.7	5833.06	2.1	
1201	6 CV sampling complete								
AS 11/15/13 1216	6.84	19.76	147	6.56	0.8	124.2	5833.11	2.1	
1231	6.83	19.85	147	6.06	1.2	127.8	5833.09	2.1	
1246	6.86	19.86	147	5.60	1.0	129.8	5833.09	2.1	
1249	9 CV time series sampled, also for H. Boukhalfa								
1301	6.84	19.77	147	5.60	0.9	134.3	5833.12	2.1	
1316	6.83	19.93	146	5.86	0.8	138.1	5833.14	2.1	
1331	6.82	19.24	146	6.05	1.2	141.6	5833.12	2.1	
1346	6.79	19.57	149	5.49	1.5	134.0	5833.12	2.1	
1401	6.80	19.66	149	5.56	1.7	118.1	5833.13	2.1	
1406	6.80	19.70	148	5.61	1.0	111.4	5833.13	2.1	
1411	6.80	19.67	148	5.61	1.9	105.4	5833.15	2.1	✓
1415	12 CVs purged, sample time series + sample for H. Boukhalfa								
1419 Purgoff, sampling complete									

WASTE			Final Water Level: NA
Contact:	gal.	Drum#:	
Purge Water:	gal.	Drum#'s: AS 11/15/13	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	gal.		

AS 11/15/13

AJ 11/15/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-61 S1

Date: 11/15/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 45.3 3 CVs: 179.6	46	360	6	Y N	Accordy to workplan

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1111	6.84	148	5.39	1.4	DO not stable @ 6 CVs
1116	6.84	148	5.61	1.4	
1121	6.84	148	5.90	1.4	
Calculations:	Upper: NA Lower: NA Difference: 0	Median: 148 Upper: NA Lower: NA	Upper: 5.90 Lower: 5.39 Difference: 0.41	Median: 1.4 Upper: <10 Lower: <10	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	6 CVs purged + sampled regardless of stability and accordy to SOPs + referenced documents

AJ 11/15/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45960

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		0842	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-61 S2			FIELD PREP:	UF	ok
LOCATION TYPE: MON			FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	SCR	TEST AS 11/14/13
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-DRO	1 LITER AMBER GLASS	2	ICE	Y	NA

SAMPLE COMMENTS: Collect at ICV + DP

LOCATION COMMENTS: diesel generator 40' away

FIELD PARAMETERS:

Dissolved Oxygen 0.29 mg/L Oxidation-Reduction Potential -80.5 mV pH 6.50 SU

Specific Conductance 202 uS/cm Temperature 17.82 deg C Turbidity 3.0 NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
D. Fellenz	11/14/13 1700	Sherwood Sheri Sherwood	11/14/13 1700
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45961

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		1006	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	BSP
LOCATION ID: R-61 S2		↓	FIELD PREP:	UF	ok
LOCATION TYPE: MON		↓	FIELD QC TYPE:	REG	↓
TOP DEPTH:		↓	SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:		↓	EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ALK	125 ML POLY	1	ICE	Y	NA
↓	WSP-EES6-TOC	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓

SAMPLE COMMENTS: Collect at 3CV

LOCATION COMMENTS: diesel generator running 50' away

FIELD PARAMETERS:

Dissolved Oxygen 1.06 mg/L Oxidation-Reduction Potential -40.2 mV pH 6.49 SU

Specific Conductance 201 uS/cm Temperature 18.74 deg C Turbidity 1.6 NTU

COLLECTED BY (PRINT) M. Shields + D. Fellenz

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Andrew Stocker (Signature) [signature]	11/14/13 1700	(Printed Name) D. Sherwood (Signature) [signature]	11/14/13 1700
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-i4-45971

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		1006	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S2	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
TOP DEPTH:		↓	SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:		↓	EXCAVATED:		YES / (NO) / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ANIONS	125 ML POLY	1	ICE	Y	NA
↓	WSP-EES6-MET	125 ML POLY	1	HNO3 ICE	↓	↓

SAMPLE COMMENTS: Collect at 3CV

LOCATION COMMENTS:

FIELD PARAMETERS: AS 11/14/13

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrea Stoker	11/14/13 1700	S Sherwood	11/14/13 1700
		Sherri Sherwood	
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45962

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		11/14/13 ~~1201~~ 1211	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S2		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:			EXCAVATED:		YES / (NO) / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ALK	125 ML POLY	1	ICE	Y	NA
	WSP-EES6-TOC	40 ML SEPTUM AMBER GLASS	2	ICE	Y	

SAMPLE COMMENTS: Collect at GCV

LOCATION COMMENTS: diesel generator running 50' away

FIELD PARAMETERS:

Dissolved Oxygen 1.82 mg/L Oxidation-Reduction Potential -20.4 mV pH 6.57 SU

Specific Conductance 183 uS/cm Temperature 19.95 deg C Turbidity 1.0 NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature) Andrew Stoh	Date/Time 11/14/13 1700	RECEIVED BY (Printed Name) (Signature) D. Sherwood	Date/Time 11/14/13 1700
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45972

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		1211	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S2		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	ok
TOP DEPTH:			SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ANIONS	125 ML POLY	1	ICE	Y	NA
	WSP-EES6-MET	125 ML POLY	1	HNO3 ICE		

SAMPLE COMMENTS: Collect at GCV

LOCATION COMMENTS: NA

FIELD PARAMETERS: AS 11/14/13

Dissolved Oxygen _____ mg/l Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ µS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Stroke

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
A. Stroke	11/14/13 1700	S. Sherwood	11/14/13 1700
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45757

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	**FIELD MATRIX:**	WG	ok
TIME COLLECTED (HH:MM):		1211	**MEDIA:**	UA	
PRS ID:		ok	**SAMPLE TECH CODE:**	UA	GSP
LOCATION ID:	R-61 S2		**FIELD PREP:**	UF	ok
LOCATION TYPE:	MON		**FIELD QC TYPE:**	REG	
PORT:	P2A		**SAMPLE USAGE:**	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	MA
	WSP-8082-PCB	1 LITER AMBER GLASS	~~3~~ 2	ICE AS 11/15/13		
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 2	ICE AS 11/15/13		
	WSP-8290-D/F	1 LITER AMBER GLASS	2	ICE		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-8321A-NMED HEXP	1 LITER AMBER GLASS	~~3~~ 2	ICE AS 11/15/13		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45757

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	Y	NA
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: diesel generator running 50' away

FIELD PARAMETERS:

Dissolved Oxygen 1.82 mg/L Oxidation-Reduction Potential -20.4 mV pH 6.57 SU

Specific Conductance 183 uS/cm Temperature 19.95 deg C Turbidity 1.0 NTU

COLLECTED BY (PRINT) M. Stenko + D. Fellenz

RELINQUISHED BY (Printed Name) (Signature) Andrew Stokes	**Date/Time** 11/14/13 1700	**RECEIVED BY (Printed Name) (Signature)** Sherwood Sherwood	**Date/Time** 11/19/13 1700
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45773

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):		1211	MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S2		FIELD PREP:	F	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P2A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
ND	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	ND
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS: 11/14/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	**Date/Time** 11/14/13 1700	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time** 11/14/13 1700
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45742

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1211	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	QC
LOCATION ID:	R-61 S2		FIELD PREP:	UF	ok
LOCATION TYPE:			FIELD QC TYPE:	FTB	
PORT:	P2A		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	1	~~2~~ HCL 3 11/13/13	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	1	~~2~~ HCL		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	1	~~2~~ HCL		

SAMPLE COMMENTS:

LOCATION COMMENTS: As 11/14/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stirling	11/14/13 1700	B. Sherwood	11/14/13 1700
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45963

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		1416	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSC
LOCATION ID:	R-61 S2	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ALK	125 ML POLY	1	ICE	Y	NA
↓	WSP-EES6-TOC	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓

SAMPLE COMMENTS: Collect at 9CV

LOCATION COMMENTS: diesel generator 50' away

FIELD PARAMETERS:

Dissolved Oxygen 2.41 mg/L Oxidation-Reduction Potential -6.8 mV pH 6.62 SU

Specific Conductance 165 uS/cm Temperature 20.35 deg C Turbidity 1.0 NTU

COLLECTED BY (PRINT) D. Fellenz, M. Stenslo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Starker	11/14/13 1700	D. Sherwood	11/14/13 1700
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45973

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		1416	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S2		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	↓
TOP DEPTH:			SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:		↓	EXCAVATED:		YES / (NO) / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ANIONS	125 ML POLY	1	ICE	Y	NA
↓	WSP-EES6-MET	125 ML POLY	1	HNO3 ICE	↓	↓

SAMPLE COMMENTS: Collect at QCV

LOCATION COMMENTS:

FIELD PARAMETERS: As 11/14/13

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) P. Fellenz

RELINQUISHED BY (Printed Name) (Signature) Andrew Stokes	**Date/Time** 11/14/16 1700	**RECEIVED BY (Printed Name) (Signature)** Sherwood	**Date/Time** 11/14/13 1700
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45964

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	FIELD MATRIX:	W	df
TIME COLLECTED (HH:MM):		1621	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-61 S2		↓	FIELD PREP:	UF	ok
LOCATION TYPE: MON		↓	FIELD QC TYPE:	REG	↓
TOP DEPTH:		↓	SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:		↓	EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MS	WSP-EES6-ALK	125 ML POLY	1	ICE	Y	MS
↓	WSP-EES6-TOC	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓

SAMPLE COMMENTS: Collect at 12CV

LOCATION COMMENTS: diesel generator running 50' away

FIELD PARAMETERS:

Dissolved Oxygen 2.67 mg/L Oxidation-Reduction Potential 11.1 mV pH 6.67 SU

Specific Conductance 152 uS/cm Temperature 19.93 deg C Turbidity 2.9 NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
D. Fellenz	11/14/13 1700	Sherwood	11/14/13 1700
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4464

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 R-61 time series sampling

SAMPLE ID: CAMO-14-45974

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):		1621	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-61 S2	↓	FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	↓
TOP DEPTH:			SAMPLE USAGE:	SCR	TEST
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES6-ANIONS	125 ML POLY	1	ICE	Y	NA
↓	WSP-EES6-MET	125 ML POLY	1	HNO3 ICE	Y	↓

SAMPLE COMMENTS: Collect at 1200

LOCATION COMMENTS:

FIELD PARAMETERS: 10/14/13

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Amberg Stoh	11/14/13 1700	S Sherwood	11/14/13 1700
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/05/2013

11/14/13 R-61 S2

0630 H+S daily gate @ TA-64 for M. Green, note: 451 # 40
calibrated by M. Shendo, 11/13/13 1550

0700 crew onsite
crew: A. Stacker, M. Shendo, D. Fellenz
weather: 40s-50s, foggy
2 min-safety: pressure systems, electrical
Objective: purge + sample R-61 S2 per SOPs and
referenced documents on pg. 3 using a basis: GSP
use Work Plan for well, sample @ 1CV + DP, 3CVs, 6CVs, 9CVs
+ 12CVs and, interim plan samples sampled @ 6CVs regardless
of stability

0717 connect to level troll pressure transducer
TOC: 5836.35 msl LSD: 6940.12' msl TD: 1251.6' gs
DTW = Bottom of Packer = 1167.0' gs WC = 84.6'

1" ID	IDP = (0.041 gal/ft × DTW)	= 47.9 gal
5" ID	1CV = (1.020 gal/ft × WC)	= 86.3 gal
	3CV =	= 258.9 gal
	6CV =	= 517.8 gal
	9CV =	= 776.7 gal
	12CV =	= 1035.6 gal

0723 APV opened @ 360 psi
0737 Pump on
0738 water to surface
0743 manual rate: 2.08 gpm
0801 DP closed, begin logging parameters on Groundwater Sampling Log,
see SOP Compliance Checklist for stability
0842 1CV + DP sample taken for DRO
0945 H. Boukhalfa on site, at 1006 3CVs sampled
1100 H. Boukhalfa offsite
1205 L. Miller onsite to drop off cooler
1206 L. Miller offsite
1211 6CVs sampled for time series + interim plan samples
1229 sampling complete for 6CVs
1416 9CVs sample for time series begins
1417 sampling complete, including sample for H. Boukhalfa
AS 11/14/13

96

11/14/13 R-61 S2

1554 L. Miller + D. Weir onsite

~~1625 L. Miller + D. Weir offsite~~ DS 11/14/13

1621 1200s purged + sampled

1625 Sampling complete, pump off, L. Miller + D. Weir offsite
Objectives Complete, to purge + sample R-61 S2 per SOPs, referenced Permits + Work Plan

1645 on site

1700 submit samples to SMO = Event ID: 4464+4455 Sample ID:
CAMO-14-45973, -45963, -45974, -45964, -45757, -45773,
-45742, -45962, -45972, -45960, -45961, -45971

Note: see pg. 102-6 for paperwork

DS 11/14/13

102

AS 11/15/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6940.12 ft. msl	Well Diameter: 5 inches	Date: 11/14/13
Watershed: Mortandad	Water Level: 5836.35 ft. msl	Top of Screen: 5519.72 ft msl	Notes:
Well: R-61S2	*TD: 1251.6695	Bottom of Screen: 5499.12 ft msl	pg. 1 of 3
Sampling Device: Grundfos	*DTW: = 6.1 (bottom of screen) = 1167.84	Water Column: 84.6 ft.	
Measuring Point: LSD	Drop Pipe: 47.9 gal.	1CV: 86.3 gal.	Packer Pressure
* Completion Depth: TD		3CV: 258.9 gal.	Before: 200 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 360 psi
			Opening: 205 psi
			After: 200 psi

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0737	Pump on 0738 Water to surface								
0801	6.48	14.29	155	2.67	6.6	-77.4	5833.82	2.08	clear, smells strong organic odor
0821	6.46	16.29	221	0.16	3.9	-99.1	5833.82	2.08	clear, effervescent, organic odor
0841	6.50	17.82	202	0.29	3.0	-60.5	5833.82	2.08	
0842	1CV + DP sample taken for DRO								
0901	6.49	17.88	206	0.43	2.3	-55.1	5833.82	2.08	
0921	6.50	18.27	202	0.67	1.9	-51.0	5833.83	2.08	
0941	6.50	18.39	196	0.89	1.6	-45.9	5833.85	2.08	
1001	6.49	18.74	201	1.06	1.6	-40.2	5833.84	2.08	
1006	3CV time series sampled								
1021	6.52	18.92	197	1.28	1.4	-35.6	5833.83	2.08	
1041	6.53	18.92	191	1.43	1.3	-33.4	5833.84	2.08	
1101	6.54	19.58	192	1.39	1.5	-30.2	5833.84	2.08	
1121	6.56	19.59	188	1.79	1.0	-28.5	5833.86	2.08	
1141	6.57	19.55	184	1.89	0.9	-24.5	5833.86	2.08	
1201	6.58	19.65	180	2.03	0.9	-20.5	5833.88	2.08	

WASTE

Contact:	1 gal.	Drum#:	Municipal
Purge Water:	518 gal.	Drum#'s:	10171885
Total Waste Water:	1090 gal.		

Final Water Level: 5833.99 msl

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)

AS 11/15/13

DS 11/15/13 103

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: ft. msl	Well Diameter: inches	Date: 11/14/13
Watershed: Mortandad	Water Level: ft. msl	Top of Screen: ft.	Notes: pg. 2 of 3
Well: R-61 S2	*TD:	Bottom of Screen: ft.	
Sampling Device:	*DTW:	Water Column: ft.	
Measuring Point: DS 11/14/13	Drop Pipe: DS 11/14/13 gal.	1CV: gal.	Packer Pressure
* Completion Depth:		3CV: gal.	Before: psi
			Actuation: DS psi
			Opening: 11/14/13 psi
			After: psi

[* ft. BTOC / BTIC / BGS / MSL] Note height of TOC/TIC on MP for Alluvials

DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME (MST) / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1206	6.58	19.74	180	2.02	0.9	-19.9	5833.90	2.08	clear, effervescent organic odor
1211	6.57	19.95	183	1.82	DS 11/14/13 1.0	-20.4	5833.90	2.08	
1211	6 CVs DS 11/14/13	purged, begin sampling time series + inferior plume samples							
1221	6.59	20.24	179	1.88	0.9	-19.7	5833.92	2.08	
1241	6.60	20.40	178	2.03	1.0	-18.7	5833.91	2.08	
1301	6.60	~~20.40~~ 20.60 DS 11/14/13	174	2.17	1.0	-15.6	5833.92	2.08	
1321	6.61	20.48	172	2.22	1.0	-14.4	5833.92	2.08	
1341	6.61	20.44	169	2.29	1.0	-9.4	5833.94	2.08	
1401	6.62	20.35	165	2.41	1.0	-6.8	5833.94	2.08	
1416	9CV sample taken								
1417	sampling complete								
1421	6.63	20.43	163	2.34	2.9	-6.0	5833.95	2.08	
1441	6.64	20.04	162	2.38	3.1	-3.8	5833.96	2.08	
1501	6.64	20.03	161	2.44	3.3	-1.5	5833.94	2.08	
1521	6.65	19.89	158	2.54	1.9	2.1	5833.96	2.08	
1541	6.66	19.94	156	2.53	2.0	5.3	5833.97	2.08	

Final Water Level: NA

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)

WASTE

Contact:	gal.	Drum#:	
Purge Water: 518	gal.	Drum#'s DS 11/14/13	
Total Waste Water:	gal.		

DS 11/15/13

104

JS 11/15/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: ft. msl	Well Diameter: inches	Date: 11/14/13
Watershed: Mortandad	Water Level: ft. msl	Top of Screen: ft.	Notes: pg. 3 of 3
Well: R-61S2	*TD:	Bottom of Screen: ft.	
Sampling Device: BSP	*DTW: JS 11/14/13	Water Column: ft.	
Measuring Point: LSP	Drop Pipe: gal.	1CV: gal.	Packer Pressure
* Completion Depth: TD		3CV: gal.	Before: psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: JS 11/14/13 psi
DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: psi
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: psi

TIME (MST) / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. MP	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1601	6.66	19.73	153	2.64	2.1	9.8	5833.97	2.08	clear, effervescent organic odor
1621	6.67	19.93	152	2.67	2.9	11.1	5833.97	2.08	↓
1621	Begin sampling 12 CVs								
1625	Sampling Complete including samples for H. Bowlkhalfa, pupoff								

JS 11/14/13

WASTE				Final Water Level:
Contact:	gal.	Drum#:		
Purge Water:	gal.	Drum#'s: JS 11/14/13		*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	gal.			

JS 11/15/13

JS 11/15/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-6152
Date: 11/14/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 47.9 3 CVs: 258.9	48	518	6	(Y) N	per work plan 6CV interim sample

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1201	6.58	180	2.03	0.9	All but DO stable but sampled @6CVs regardless of stability per work plan
1206	6.58	180	2.02	0.9	
1211	6.57	183	1.82	1.0	
Calculations:	Upper: 6.58 Lower: 6.57 Difference: 0.01	Median: 180 Upper: 185.4 Lower: 174.6	Upper: 2.03 Lower: 1.82 Difference: 0.21	Median: <10 Upper: <10 Lower: <10	
(Y) N	(Y) N	(Y) N	~~(Y)~~ (N)	(Y) N	

JS 11/14/13

SOP Requirements Met?	Comments:
(Y) N	All SOPs met, work plan followed

JS 11/15/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45758

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/12/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1315	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-62	↓	FIELD PREP:	UF	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8082-PCB	1 LITER AMBER GLASS	~~3~~ 2	ICE DF 11/12/13	↓	↓
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 2	ICE DF 11/12/13	↓	↓
↓	WSP-8290-D/F	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-8321A-NMED HEXP	1 LITER AMBER GLASS	~~3~~ 2	ICE DF 11/12/13	↓	↓
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-GrossA/B	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE	↓	↓

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45758

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	Y	NA
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:
Sampled within 50' of running diesel generator.

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen 5.38 mg/L Oxidation-Reduction Potential 79.7 mV pH 8.50 SU
Specific Conductance 193 uS/cm Temperature 19.03 deg C Turbidity 1.07 NTU

COLLECTED BY (PRINT) T. Naibert

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
David Fellenz	11/12/13 1520	S. Sherwood	11/12/13 1520
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45774

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/12/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1315	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-62	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

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-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) T. Naibert

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) David Felleuz (Signature)	11/12/13 1520	(Printed Name) S. Sherwood (Signature) Sheri Sherwood	11/12/13 1520
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45724

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/12/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1315	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-62	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FD	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8082-PCB	1 LITER AMBER GLASS	~~3~~ 1	ICE DF 11/12/13	↓	↓
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 1	ICE DF 11/12/13	↓	↓
↓	WSP-8290-D/F	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-8310-PAH	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13	↓	↓
↓	WSP-8321A-NMED HEXP	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13	↓	↓
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-GrossA/B	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13	↓	↓

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45724

WORK ORDER:

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13	Y	NA
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Sampled within 50' of running diesel generator.

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) David Fellenz (Signature)	11/12/13 1520	(Printed Name) S. Sherwood (Signature) Sheri Sherwood	11/12/13 1520
RELINQUISHED BY **(Printed Name)** **(Signature)**	**Date/Time**	**RECEIVED BY** **(Printed Name)** **(Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45727

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/12/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1315	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-62	↓	FIELD PREP:	F	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FD	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

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-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) David Fellenz (Signature)	Date/Time 11/12/13 1520	RECEIVED BY (Printed Name) S. Sherwood (Signature) Sheri Sherwood	Date/Time 11/12/13 1520
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45741

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/12/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1315	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-62	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	~~2~~ 1	HCL DF 11/12/13	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	~~2~~ 1	HCL DF 11/12/13	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	~~2~~ 1	HCL DF 11/12/13	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
David Fellenz	11/12/13 1520	S. Sherwood Sheri Sherwood	11/12/13 1520
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

.atory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

.: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

LE ID: CAMO-14-45721

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
TE COLLECTED (MM/DD/YYYY):		11/12/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1315	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-62	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FB	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8082-PCB	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13	↓	↓
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13	↓	↓
↓	WSP-8290-D/F	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-8310-PAH	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13	↓	↓
↓	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13	↓	↓
↓	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	↓	↓

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455 **EVENT NAME:** Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45721 **WORK ORDER:**

SAMPLE COMMENTS: Sampled within 50' of running diesel generator.

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) T. Naibert

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
David Fellenz (Signature)	11/12/13 1520	S Sherwood (Signature)	11/12/13 1520
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45720

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/12/2013	**FIELD MATRIX:**	WG	OK
TIME COLLECTED (HH:MM):		0930	**MEDIA:**	UA	↓
PRS ID:		OK	**SAMPLE TECH CODE:**	UA	DC
LOCATION ID:	R-62	↓	**FIELD PREP:**	UF	OK
LOCATION TYPE:		↓	**FIELD QC TYPE:**	PEB	↓
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8082-PCB	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13	↓	↓
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13		
	WSP-8290-D/F	1 LITER AMBER GLASS	2	ICE		
	WSP-8310-PAH	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13		
	WSP-8321A-NMED HEXP	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13		
	WSP-All Metals	1 LITER POLY	1	HNO3 ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4455

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45720

WORK ORDER:

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-GrossA/B	1 LITER POLY	1	HNO3	Y	NA
	WSP-H-3	250 ML AMBER GLASS	1	ICE		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	~~2~~ 1	ICE DF 11/12/13		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) T. MAIBERT

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) David Fellenz (Signature)	11/12/13 1520	(Printed Name) S. Sherwood (Signature) Sheri Sherwood	11/12/13 1520
RELINQUISHED BY **(Printed Name)** **(Signature)**	**Date/Time**	**RECEIVED BY** **(Printed Name)** **(Signature)**	**Date/Time**

Report Date 11/04/2013

R-62

11/12/13

0700 M. Green conducts health and safety tailgate at TA-64
0735 T. Naibert ~~preserves~~ DF 11/12/13 calibrates YSI #10 at TA-64, see log book EP2011-0072 page 60 for details
0930 Crew (D. Fellenz, T. Naibert) collect PEB at M. Rearick Geochem laboratory; T. Naibert preserves all samples, D. Fellenz QA's
1010 PEB stored at TA-64 cooler, Temp 6°C
1035 Crew on site at R-62
Weather: Sunny, 50's, light breeze
2 Minute Safety: Electrical systems, trips, bears, splashes
Objective: Purge and sample R-62 per applicable documents on p. 3
1044 Connect to transducer (level troll)
Note: This is a single completion well with a dedicated GSP pump
Note: The following data is from historicals
LSD = 6984.93' msl ∇ = 5838.90' msl
TD = 1189.7' bgs DTW = LSD − ∇ = 1146.03' bgs
DP = (0.041 gal/ft) DTW = 46.9 gal WC = TD − DTW = 43.67
1 CV = (1.02 gal/ft) WC = 44.5 gal
3 CV = 3 (1 CV) = 133.5 gal; Total to sample = 3CV + DP = 180.4 gal
Note: Per Sampling work plan for Mortandad/Sandia Q1 MY2014 RO, flow rate will be restricted to limit drawdown
1100 Generator on
1102 Pump on
1102 Water to surface; Q = 1.65 gpm (32 gal purged)
1121 Q = 1.31 gpm, reduced to limit drawdown
1133 DP clear (47.5 gal); Begin logging parameters (File: R-62)
1310 NMED (M. Dale, P. Longmire) on site
1315 Begin sampling
1341 Sampling complete, pump off; Generator off
1343 NMED off site
Note: T. Naibert preserves all samples; D. Fellenz QA's
Note: Hach #5 was used to record turbidity during purge
1450 Crew off site
1505 Crew removes sample (PEB) from TA-64 cooler (Temp 5°C)
Summary: Crew successfully samples R-62 (Objective met!)
Note: See pages 90-91 of this log book for parameters, final ∇, final parameters, waste info, compliance checklist
DF 11/12/13

DF 11/12/13

90

R-62 Continued

11/12/13
1520 Relinquish samples to SMO c/o: S. Sherwood
Event ID: 4455
Sample ID's: CAMO-14-45758, 45774, 45724, 45727, 45741, 45721, 45720

David Fellenz 11/12/13

11/12/13

David Fellenz

DF 11/5/13
SOP-20032 ~~Rev. 4~~ Compliance Checklist
Rev. 3

Well Name: R-62
Date: 11/12/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 216.9 3 CVs: 133.5	47.5	133.5	3.0	(Y) N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity (<10 NTU) or ± 10%,	Comments:
1303	8.51	189	5.29	0.0	NA
1308	8.50	193	5.30	0.9	
1313	8.50	193	5.38	1.07	
Calculations:	Upper: 8.51 Lower: 8.50 Difference: 0.01	Median: 193 Upper: 199 Lower: 187	Upper: 5.38 Lower: 5.29 Difference: 0.09	Median: NA Upper: NA Lower: NA	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	NA

David Fellenz 11/12/13

11/12/13

R-62 Continued

91

David Fellenz 11/12/13

Groundwater Sampling Log

Project: IFC/GMP MY2013	LSD: 6984.93 ft. msl	Well Diameter: 5 inches	Date: 11/12/13
Watershed: Mortandad	Water Level: 5838.90 ft. msl	Top of Screen: 5826.53 ft msl	Notes:
Well: R-62	*TD: 1189.7' bgs	Bottom of Screen: 5805.83 ft msl	NA
Sampling Device: GSP	*DTW: 1146.03' bgs	Water Column: 43.67 ft.	
Measuring Point: LSD	Drop Pipe: 46.9 gal.	1CV: 44.5 gal.	Packer Pressure
* Completion Depth: TD		3CV: 133.5 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: NA psi
DTW = (LSD - Water Level). Water Column = (TD - DTW). Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: NA psi
1CV = (Water Column x Well Diameter Multiplier) . 3 CV = (1CV x 3)			After: NA psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1102	Pump on, water to surface								
1133	7.75	12.75	191	4.50	0.5	143.9	5831.14	1.31	effervescent, clear, odorless
1143	7.73	13.33	187	2.40	11.3	122.0	5831.03		
1153	8.80	13.98	167	2.19	1.9	71.3	5830.99		
1203	8.78	14.91	174	3.32	1.5	77.9	5830.96		
1213	8.74	16.23	185	4.21	2.52	77.1	5830.92		
1223	8.68	17.93	188	4.67	1.57	77.0	5830.90		
1233	8.63	18.25	189	4.81	1.35	77.1	5830.87		75.5 gal. purged
1243	8.59	18.54	189	4.98	1.13	77.8	5830.83		effervescent, clear, odorless
1253	8.55	18.86	189	5.33	0.97	79.5	5830.82		
1303	8.51	18.86	189	5.29	0.0	80.3	5830.76		
1308	8.50	18.90	193	5.30	0.9	79.8	5830.75		
1313	8.50	19.03	193	5.38	1.07	79.7	5830.74		
1315	Begin sampling								133.5 gal purged
1341	Sampling complete, pump off								
DF	11/12/13								

11/12/13

WASTE

Contact: 1/2 gal.	Drum#: Municipal	Final Water Level: 5828.66' msl	
Purge Water: 133.5 gal.	Drum#'s: 10171898	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water: 200 gal.			

David 11/12/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45710

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/19/13 11/19/13 2013	FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):		1233	MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	RSP
LOCATION ID:	SCI-1		FIELD PREP:	UF	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MS	WSP-CN(T)	250 ML POLY	1	NAOH	Y	MS
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-H-3	250 ML AMBER GLASS	1	ICE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

AS 11/19/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) M. Stendo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stch	11/19/13 1505		11/19/13 1505
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45718

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/19/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1233	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	RSP
LOCATION ID:	SCI-1		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

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-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

NA

LOCATION COMMENTS:

NA

FIELD PARAMETERS:

Dissolved Oxygen 11.57 mg/L Oxidation-Reduction Potential 99.4 mV pH 7.24 SU

Specific Conductance 705 uS/cm Temperature 10.81 deg C Turbidity 1.6 NTU

COLLECTED BY (PRINT) M. Stevens

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 11/19/13 1505	RECEIVED BY (Printed Name) (Signature)	Date/Time 11/19/13 1505
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

11/19/13 SCI-1 AS 11/19/13

0700 H-S daily gate performed by ~~AS~~ M. Green @ TA-64

0730 YSI #10 calibrated by M. Stenlo @ TA 64

1015 crew onsite

crew: A. Stricker + M. Stenlo

weather: 40s-50s, clear

2 min safety: Pressure systems

Objectives: purge + sample SCI-1 per SOPs and referenced documents on pg. 3 using a Bennett Pump (RSP) + nitrogen

1023 connect to level troll, read are transducer

TI: 6370.10 msl LSD: 6738.27' msl TD: 378.5' bgs

DTW: 368.17 bgs WC: 10.33'

3/8" SD: DP: (0.006 gal/ft x DTW) = 2.2 gal

1/4" SD: ICV = (0.653 gal/ft x WC) = 6.7 gal

TCV: = 20.2 gal

1046 pump on @ ~~180 psi~~ 105 psi, regulator wont go any higher

1056 Pump off, regulator not functioning, bleeds off nitrogen and wont go above 105 psi, which pumps too slow around five minutes for one gallon. Will bring back regulator to G. Hellard for adjustment will get other regulator @ TA64

1110 crew offsite

1135 crew onsite with new regulator

1143 pump on @ 70 psi, water to surface

1147 DP cleared, begin logging parameters on Groundwater Sampling Log note: water level on screen

1208 DO is really high (up to 12.50 mg/L), bubbles in water from pump

1210 3 CVs purged, DO not stable, keep purging

1233 6 CVs purged, Begin sampling, DO still not stable

1247 Sampling Complete, pump off, 2200 psi used

sampling preceded by M. Stenlo, Objectives Complete to purge + sample SCI-1

1320 crew offsite, note: SOP compliance checklist on pg. 53 of M13 CASA

1505 submit samples to SMO: Event ID: 4457; Sample ID: CSMQ-14-45710, -45718

AS 11/19/13

50

AS 11/19/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6738.77 ft. msl	Well Diameter: 4 inches	Date: 11/19/13
Watershed: Sandia	Water Level: 6370.10 ft. msl	Top of Screen: 6379.87 ft. msl	Notes: pg 1 of 2
Well: SCI-1	*TD: 378.5' bgs	Bottom of Screen: 6359.87 ft. msl	
Sampling Device: RSP	*DTW: 368.17' bgs	Water Column: 10.33 ft.	
Measuring Point: LSD	Drop Pipe: 2.2 gal.	1CV: 6.7 gal.	Packer Pressure
* Completion Depth: TD		3CV: 20.2 gal.	Before: ____ psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: AS psi
			Opening: 11/19/13 psi
			After: ____ psi

DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1046	Pump on @ ~~120~~ psi. AS 11/19/13 105 psi because regulator wont go higher								
1051	7.66	9.77	718	10.13	7.5	53.4	6368.80		clear, odorless
1056	Pump off, regulator not functioning cant pump fast enough								
1143	Pump on @ 120 psi. purge to surface								
1147	7.06	9.92	699	9.04	7.5	64.5	6367.15	0.88	clear, odorless
1150	7.08	9.98	700	9.00	8.0	68.5	6365.55	0.88	
1153	6.96	10.27	713	8.84	8.2	72.3	6365.93	0.88	
1156	6.84	10.23	718	8.78	5.2	76.0	6365.94	0.88	
1159	6.84	10.21	714	11.52	4.2	71.3	6365.94	0.88	
1202	6.91	10.18	709	12.50	6.0	82.1	6365.94	0.88	
1205	7.04	10.12	704	11.82	7.8	83.5	6365.99	0.88	
1208	7.09	10.15	701	10.90	5.2	85.0	6365.99	0.88	~~3CVs~~ AS 11/19/13
1211	7.05	10.20	705	11.21	3.6	87.7	6365.98	0.88	3CVs purged, Dorwick
1214	7.16	10.26	703	10.75	2.4	89.7	6365.99	0.88	clear, odorless
1217	7.19	10.50	705	10.68	2.3	92.0	6365.99	0.88	
1220	7.20	10.55	705	10.53	2.0	93.6	6365.99	0.88	

WASTE

Contact:	1/2 gal.	Drum#:	Municipal	Final Water Level: 6365.99' msl
Purge Water:	40.5 gal.	Drum#'s:	10171889	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	50.5 gal.			

AS 11/19/13

51

JS 11/19/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: ft. msl	Well Diameter: inches	Date: 11/19/13
Watershed: Sandia	Water Level: ft. msl	Top of Screen: ft.	Notes: pg. 2 of 2
Well: SCI-1	*TD:	Bottom of Screen: ft.	
Sampling Device: RSP	*DTW: JS 11/19/13	Water Column: ft.	
Measuring Point: LSD	Drop Pipe: gal.	1CV: gal.	Packer Pressure
* Completion Depth: TD		3CV: gal.	Before: ___ psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: NA psi
			Opening: 11/19/13 psi
			After: ___ psi

DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST/ DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. NA	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1223	7.20	10.63	705	10.89	2.1	95.5	6365.99	0.88	clear, colorless
1226	7.21	10.71	704	11.22	1.7	97.5	6365.99	0.88	
1229	7.23	10.78	704	11.26	1.5	98.3	6365.99	0.88	
1232	7.24	10.81	705	11.57	1.6	99.4	6365.99	0.88	
1233	6CVs purged, begin sampling, only DO not stable								
1247	Sampling complete, pump off								

JS 11/19/13

WASTE

Contact:	gal.	Drum#:	Final Water Level: NA
Purge Water:	gal.	Drum #'s: JS 11/19/13	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	gal.		

JS 11/19/13

AS 11/18/13 53

SOP-20032 Rev. 1 Compliance Checklist

Well Name: SCI-1

Date: 11/19/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 2.2 3 CVs: 20.2	2.2	40.5	6	(Y) N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1226	7.21	704	11.22	1.7	DO not stable after 6 CVs, based all around, flows 8.69 mg/L last sampling event
1229	7.23	704	11.26	1.5	
1232	7.24	705	11.57	1.6	
Calculations:	Upper: 7.24 Lower: 7.21 Difference: 0.03	Median: 704 Upper: 725 Lower: 683	Upper: 11.57 Lower: 11.22 Difference: 0.35	Median: NA Upper: <10 Lower: <10	
(Y) N	(Y) N	(Y) N	Y (N)	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOPs met, sampled @ 6 CVs

AS 11/19/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45719

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	SCI-2		FIELD PREP:	F	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-All Metals	1 LITER POLY	1	HNO3 ICE		
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45711

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			**FIELD MATRIX:**	WG	
TIME COLLECTED (HH:MM):			**MEDIA:**	UA	
PRS ID:			**SAMPLE TECH CODE:**	UA	
LOCATION ID:	SCI-2		**FIELD PREP:**	UF	
LOCATION TYPE:	MON		**FIELD QC TYPE:**	REG	
PORT:	SINGLE COMPLETION		**SAMPLE USAGE:**	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	3	ICE		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-H-3	250 ML AMBER GLASS	1	ICE		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45711

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

Not collected
CPL
11/13/13

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45697

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			**FIELD MATRIX:**	WG	
TIME COLLECTED (HH:MM):			**MEDIA:**	UA	
PRS ID:			**SAMPLE TECH CODE:**	UA	
LOCATION ID:	SCI-2		**FIELD PREP:**	UF	
LOCATION TYPE:			**FIELD QC TYPE:**	FTB	
PORT:	SINGLE COMPLETION		**SAMPLE USAGE:**	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45704

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/05/2013	**FIELD MATRIX:**	WG	ok
TIME COLLECTED (HH:MM):		1235	**MEDIA:**	UA	↓
PRS ID:		ok	**SAMPLE TECH CODE:**	UA	GSP
LOCATION ID:	R-11	↓	**FIELD PREP:**	UF	ok
LOCATION TYPE:	MON	↓	**FIELD QC TYPE:**	REG	↓
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CN(T)	250 ML POLY	1	NAOH	Y	NA
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:
NA

LOCATION COMMENTS: 40' from diesel generator and Truck Route road

FIELD PARAMETERS:

Dissolved Oxygen 7.10 mg/L Oxidation-Reduction Potential 174.4 mV pH 8.22 SU

Specific Conductance 238 uS/cm Temperature 20.86 deg C Turbidity 0.6 NTU

COLLECTED BY (PRINT) M. Stende

RELINQUISHED BY (Printed Name) (Signature) Andrew Stocker	**Date/Time** 11/5/13 1415	**RECEIVED BY (Printed Name) (Signature)** D. Sherwood	**Date/Time** 11/5/13 1415
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45712

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/05/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1235	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-11		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

LOCATION COMMENTS: 40' from diesel generator and ~~Pajar~~ AS 11/5/13 Track Route road

FIELD PARAMETERS:

Dissolved Oxygen 7.10 mg/L Oxidation-Reduction Potential 174.4 mV pH 8.22 SU

Specific Conductance 238 uS/cm Temperature 20.86 deg C Turbidity 0.6 NTU

COLLECTED BY (PRINT) M. Stenclo

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Andrew Stacker	11/5/13 1415	(Printed Name) D. Sherwood	11/5/13 1415
(Signature)		(Signature)	
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

74

11/5/13 R-11

0700 MST H+S tailgate performed by M. Green @ TA-64
0715 kick off for Mort/Sandia MY2014 Q1
0830 YSI # 20 calibrated by A. Stocker @ TA-64
1050 crew onsite @ R-11 after waiting for S. Maze to leave R-43 up the road
dig out dirt + debris from around well, pad and bollards
1115 Begin setting up to sample, R. Brownstein onsite for H+S
crew: A. Stocker, M. Stenlo
weather: overcast, 40s possible precipitation
2 min safety: careful on uneven surface
Objective: purge + sample R-11 per SOP and reference documents on PS 3 using a GSP
connect to level troll pressure transducer
1121 ↓: 5834.38 msl LSD: 6673.72 msl TD: 901.7 bgs
DTW: 839.34 bgs WC: 62.36'

1" SD DP: (0.041 gal/ft × DTW)	= 34.4 gal
4.5" SD ICV: (0.826 gal/ft × WC)	= 51.5 gal
3 CV:	= 154.5 gal

1141 Pump on, water to surface
1145 Manual rate = 2.88 gpm
1153 DP cleared, begin logging parameters on Groundwater Sampling log see SOP Compliance Checklist for stability
1200 P. Longmire onsite
1235 Parameters stable, 3 CVs purged, sampling begins
1246 Pump off, sampling complete
1250 P. Longmire offsite, objectives complete, samples preserved by M. Stenlo, A. Stocker QA
1300 R. Brownstein offsite
1315 crew offsite
1415 submit samples to SMO: Event ID: 4457; Sample ID: CASA-13-45712, -45704

AS 11/5/13

AS 11/5/13

75

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6673.72 ft. msl	Well Diameter: 4.5 inches	Date: 11/5/13
Watershed: Sandia	Water Level: 5834.38 ft. msl	Top of Screw: 5818.72 ft. msl	Notes:
Well: R-11	*TD: 901.7' bgs	Bottom of Screw: 5795.82 ft msl	NONE
Sampling Device: GSP	*DTW: 839.34' bgs	Water Column: 62.36 ft.	
Measuring Point: GSD	Drop Pipe: 34.4 gal.	1CV: 51.5 gal.	Packer Pressure
* Completion Depth: TD		3CV: 154.5 gal.	Before: ____ psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: AS psi
			Opening: 11/5/13 psi
DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			After: ____ psi
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1141	Pump on, water to surface								
1153	7.97	15.68	235	6.06	0.4	186.7	5834.25	2.88	clear, odorless
1158	8.01	17.27	232	6.95	1.2	180.9	5834.27		
1203	8.08	17.63	229	7.55	0.7	178.9	5834.27		
1208	8.16	19.03	229	7.34	0.5	176.7	5834.27		
AS 11/5/13 1212	8.22	19.89	229	7.35	0.5	175.7	5834.27	2.88	clear, odorless
1218	8.25	20.35	236	7.02	0.4	174.7	5834.27		
1223	8.25	20.36	237	7.15	0.4	174.6	5834.28		
1228	8.24	20.43	237	7.13	0.4	174.6	5834.28		
1233	8.22	20.86	238	7.10	0.6	174.4	5834.28		
1235	Begin sampling parameters stable, 3CVs purged								
1246	Pump off, sampling complete								
				AS 11/5/13					

WASTE

Contact:	12 gal.	Drum#:	Municipal	Final Water Level: 5834.28' msl
Purge Water:	155 gal.	Drum#'s:	10171873	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	190 gal.			

AS 11/5/13

76

AS 11/5/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-11

Date: 11/5/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 34.4 3 CVs: 154.5	34.5	155	3	(Y) N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1223	8.25	237	7.15	0.4	NONE
1228	8.24	237	7.13	0.4	
1233	8.22	238	7.10	0.6	
Calculations:	Upper: 8.25 Lower: 8.22 Difference: 0.03	Median: 237 Upper: 244 Lower: 230	Upper: 7.15 Lower: 7.10 Difference: 0.05	Median: <10 Upper: <10 Lower: <10	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOPs met

AS 11/5/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45705

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/13/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1351	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-35a		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	MA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~2~~ 2	ICE 11/13/13		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45705

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: diesel generator running 40' away + 60' from road

FIELD PARAMETERS:

Dissolved Oxygen 4.99 mg/L Oxidation-Reduction Potential 131.1 mV pH 8.06 SU

Specific Conductance 243 uS/cm Temperature 24.18 deg C Turbidity 1.4 NTU

COLLECTED BY (PRINT) M. Stenko

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stoker	11/13/13 1435	J. Martin	11/13/13 1435
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45713

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/13/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1351	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-35a		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MS	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	MS
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS: AS

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) M. Stenko

RELINQUISHED BY (Printed Name) (Signature) Andrew Stocker	**Date/Time** 11/13/13 1435	**RECEIVED BY (Printed Name) (Signature)** M. Montoya	**Date/Time** 11/13/13 1435
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45698

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/13/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1351	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	PC
LOCATION ID:	R-35a		FIELD PREP:	UF	ok
LOCATION TYPE:			FIELD QC TYPE:	FTB	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	1 2	HCL AS 11/13/13	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	1 2	HCL		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	1 2	HCL		

SAMPLE COMMENTS:

LOCATION COMMENTS: AS 11/13/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) M. Stenzo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stokes	11/13/13 1435	M. Martinez	11/13/13 1435
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

92

11/13/13 R-35A

0700 H+S tailgate performed by M. Green @ TA-64
0740 YSI #40 calibrated by M. Shendo @ TA-64
0950 crew onsite @ R-35A
crew: A. Stocker, M. Shendo
weather: 40s-50s clear
Zero-safety: unobstructed well pad, drops
Objectives: Purge + sample R-35A per SOPs and referenced documents on pg. 3 using a BSP
1000 connect to level troll pressure transducer
TD: 5827.69' bgs ; SD: 6623.06' bgs ; TD: 1086.2' bgs
DTW: 795.37' bgs WC: 290.9' bgs

1" SD DP = (0.041 gal/ft × DTW) = 32.6 gal
4.5" SD 1CV = (~~1.020~~ 0.826 gal/ft × WC) = 240.3 gal
3CV = = 720.9 gal

1030 Pump on
1031 Water to surface
1034 Manual rate: 3.8 gpm
1040 DP cleared, begin logging parameters on Groundwater Sampling Log, see SOP Compliance checklist for stability
1351 3CVs purged, parameters stable, Begin Sampling
1355 M. Dale onsite
1402 Pump off, sampling complete, M. Dale offsite, Objectives Complete
samples received by M. Shendo, A. Stocker QA
1420 crew offsite
1435 submit samples to SMO: Event ID: 4457; Sample ID: CASA-14-45705, -45713, -45698

AS 11/13/13

93

AS 11/13/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6623.06 ft. msl	Well Diameter: 4.5 inches	Date: 11/13/13
Watershed: Sandia	Water Level: 5827.69 ft. msl	Top of Screen: 5609.76 ft msl	Notes:
Well: R-35A	*TD: 1086.26 bgs	Bottom of Screen: 5560.86 ft msl	NONE
Sampling Device: GSP	*DTW: 795.37 bgs	Water Column: 290.9 ft.	
Measuring Point: LSD	Drop Pipe: 32.6 gal.	1CV: 290.3 gal.	Packer Pressure
* Completion Depth: TD		3CV: 870.9 gal.	Before: ____ psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: AS psi
			Opening: 11/13/13 psi
DTW = (LSD - Water Level).....Water Column = (TD - DTW).....Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: ____ psi

TIME (MST / DST)	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1030	Pump on								
1031	Water to surface								
1040	7.80	16.38	234	4.29	8.0	163.7	5819.84	3.8	clear/odorless
1110	8.09	23.24	242	4.98	5.5	153.6	5819.95	3.8	
1140	8.08	23.55	242	4.98	7.3	148.7	5820.08	3.8	
AS 11/13/13 1210	8.08	23.97	242	4.96	7.0	142.4	5820.11	3.8	
1240	8.07	24.09	242	4.98	3.4	139.1	5820.13	3.8	
AS 11/13/13 1310	8.07	24.06	242	4.96	2.3	135.5	5820.13	3.8	
1325	8.06	24.14	242	4.98	2.4	134.0	5820.16	3.8	
1335	8.06	24.13	242	5.09	1.6	133.0	5820.23	3.8	
1340	8.06	24.13	242	4.98	1.7	132.3	5820.23	3.8	
1345	8.06	24.16	242	5.00	1.7	131.8	5820.23	3.8	
1350	8.06	24.18	243	4.99	1.4	131.1	5820.23	3.8	
1351	Begin sampling, 3CVs purged, parameters stable								
1402	Pump off, sampling complete								
				AS 11/13/13					

WASTE

Contact:	1/2 gal.	Drum#:	Municipal
Purge Water:	722 gal.	Drum#'s:	10171891
Total Waste Water:	794 gal.		

Final Water Level: 5820.28 msl

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)

AS 11/13/13

94

AS 11/13/13

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-35A

Date: 11/13/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter Manual	Drop Pipe: 32.6 3 CVs: 720.9	33	722	3	Y N	NONE

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1340	8.06	242	4.98	1.7	NONE
1345	8.06	242	5.00	1.7	
1350	8.06	243	4.99	1.4	
Calculations:	Upper: NA Lower: NA Difference: 0	Median: 242 Upper: NA Lower: NA	Upper: 5.00 Lower: Difference:	Median: 1.7 Upper: <10 ~~NA~~ AS 11/13/13 Lower: <10	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	SOPs met

AS 11/13/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45706

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/13/2013	**FIELD MATRIX:**	WG	OK
TIME COLLECTED (HH:MM):		1138	**MEDIA:**	UA	↓
PRS ID:		OK	**SAMPLE TECH CODE:**	UA	GSP
LOCATION ID:	R-35b	↓	**FIELD PREP:**	UF	OK
LOCATION TYPE:	MON	↓	**FIELD QC TYPE:**	REG	↓
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	~~HCL~~ HCl	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	~~HCL~~ HCl	↓	↓
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 2	ICE	↓	↓
↓	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	~~HCL~~ HCl	↓	↓
↓	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	↓	↓
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45706

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Sampled within 50' of 2 running diesel generators

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 6.06 mg/L Oxidation-Reduction Potential 76.3 mV pH 7.48 SU

Specific Conductance 171 uS/cm Temperature 20.79 deg C Turbidity 0.6 NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
David Fellows	11/13/13 1500		11/13/13 1500
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45699

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/13/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1138	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-35b	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
David Felleuz	11/13/13 1500	M. Martin	11/13/13 1500
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45714

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/13/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1138	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-35b	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) David Felleuz (Signature)	Date/Time 11/13/13 1500	RECEIVED BY (Printed Name) M. Montoya (Signature)	Date/Time 11/13/13 1500
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

R-35b

11/13/13

0700 M. Green conducts tailgate, health and safety, at TA-64
0830 D. Fellenz calibrates YSI # 10 at TA-64, see calibration log book EP2011-0072 page 60 for details
1000 Crew (D. Fellenz, M. Green) on site at R-35b
2 Minute Safety: Electrical systems, trips, overgrown well pad, splashes
Weather: 50's, Sunny, calm
Objective: Purge and sample R-35b per applicable documents on page 3
1010 Connect to transducer (level troll)
Note: This is a single completion well with a dedicated GSP pump
Note: The following data is from historicals and well completion diagram
LSD = 6625.21' msl IV = 5834.14' msl
TD = 872.2' bgs DTW = LSD - IV = 791.07' bgs
DP = (0.041 gal/ft) DTW = 32.4 gal WC = TD - DTW = 81.13'
1CV = (0.826 gal/ft) WC = 67.0 gal
3CV = 3(1CV) = 201 gal; Total to sample = 3CV + DP = 233.4 gal
1022 Generator on
1023 Pump on
1024 Water to surface; Q = 3.23 gpm
1035 DP clear (35.5 gal), begin logging parameters (File: R-35b)
1124 M. Dale (NMED) on site at R-35b
1138 Begin sampling
1145 M. Dale off site
1151 Sampling complete, pump off; Generator off
Note: M. Green preserves all samples; D. Fellenz QA's
Summary: Crew successfully samples R-35b
Note: See pages 34-35 of this log book for parameters, final IV, final parameters, waste info, compliance checklist
1210 Disconnect from transducer
1235 Crew off site
1500 Relinquish samples to SMO c/o: M. Montoya
Event ID: 4457
Sample ID's: CASA-14-45706, 45714, 45699

David Fellenz 11/13/13

34
11/13/13

R-35b Continued

11/13/13

David Fellows 11/13/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6625.21 ft. msl	Well Diameter: 4.5 inches		Date: 11/13/13
Watershed: Sandia	Water Level: 5834.14 ft. msl	Top of Screen: 5799.81 ft msl		Notes: NA
Well: R-35b	*TD: 872.2' bgs	Bottom of Screen: 5776.71 ft msl		
Sampling Device: GSP	*DTW: 791.07' bgs	Water Column: 81.13 ft.		
Measuring Point: LSD	Drop Pipe: 32.4 gal.	1CV: 67.0 gal.		Packer Pressure
* Completion Depth: TD		3CV: 201.0 gal.		Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials			Actuation: NA psi
DTW = (LSD - Water Level). Water Column = (TD - DTW). Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)				Opening: NA psi
1CV = (Water Column x Well Diameter Multiplier) . 3 CV = (1CV x 3)				After: NA psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1023	Pump on; 1024 water to surface								
1035	7.10	16.70	170	7.66	14.0	162.4	5833.34	3.23	clear, odorless
1045	7.92	19.99	169	6.89	0.4	128.1	5833.39		
1055	7.98	20.35	169	6.96	0.4	107.7	5833.41		
1105	7.96	20.52	170	6.53	0.9	92.1	5833.42		
1115	7.69	20.67	171	6.26	1.4	89.0	5833.44		129gal. purged
1125	7.54	20.96	171	6.06	0.8	83.1	5833.44		clear, odorless
1130	7.49	20.86	171	6.03	0.8	79.9	5833.45		
1135	7.48	20.79	171	6.06	0.6	76.3	5833.46		203gal. purged
1138	Begin sampling								
1151	Sampling complete, pump off								

David Fellows 11/13/13

WASTE			
Contact: 1/2 gal.	Drum#: Municipal		Final Water Level: 5833.57' msl
Purge Water: 203 gal.	Drum#'s: 10171892		*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water: 250 gal.		1550	

David Fellows 11/13/13

11/13/13

R-35 b Continued

35

David Fellenz 11/13/13

DF 11/5/13

SOP-20032 ~~Rev. 4~~ Compliance Checklist
Rev. 3

Well Name: R-35b
Date: 11/13/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 32.4 3 CVs: 201	35.5	203.	3.0	(Y) N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity (<10 NTU) or ± 10%,	Comments:
1125	7.54	171	6.06	0.8	NA
1130	7.49	171	6.03	0.8	
1135	7.48	171	6.06	0.6	
Calculations:	Upper: 7.54 Lower: 7.48 Difference: 0.06	Median: 171 Upper: 176 Lower: 166	Upper: 6.06 Lower: 6.03 Difference: 0.03	Median: NA Upper: NA Lower: NA	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	NA

11/13/13

David Fellenz 11/13/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45707

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/13/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1356	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-36	↓	FIELD PREP:	UF	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 2	ICE	↓	↓
↓	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	↓	↓
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457 **EVENT NAME:** Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45707 **WORK ORDER:** NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Sampled within 50' of running diesel generator.

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 5.81 mg/L Oxidation-Reduction Potential 78.6 mV pH 7.17 SU

Specific Conductance 193 uS/cm Temperature 19.96 deg C Turbidity 1.0 NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) David Fellenz (Signature)	**Date/Time** 11/13/13 1500	**RECEIVED BY** (Printed Name) M. Martin (Signature)	**Date/Time** 11/13/13 1500
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45715

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/13/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1356	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-36	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
David Fellenz	11/13/13 1500	M. Martin	11/13/13 1500
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45700

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/13/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1356	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	DC
LOCATION ID:	R-36	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Green

RELINQUISHED BY (Printed Name) David Fellenz (Signature)	Date/Time 11/13/13 1500	RECEIVED BY (Printed Name) M. Martyn (Signature)	Date/Time 11/13/13 1500
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

36

R-36

11/13/13

0700 M. Green conducts health and safety tailgate at TA-64
0830 D. Fellenz calibrates YSI #10 at TA-64, see log book EP2011-0072 page 60 for details
1245 Crew (D. Fellenz, M. Green) on site at R-36
Weather: Sunny, 50's, light breeze
2 Minute Safety: Electrical system, trips, splashes
Objective: Purge and sample R-36 per applicable documents on p.3
1255 Connect to transducer
Note: This is a single completion well with a dedicated GSP pump
Note: The following data is from historicals and well completion info
LSD = 6591.37' msl IV = 5838.33' msl
TD = 803.7' bgs DTW = LSD - IV = 753.04' bgs
DP = (0.041 gal/ft) DTW = 30.9 gal WC = TD - DTW = 50.66'
1CV = (0.826 gal/ft) WC = 41.8 gal
3CV = 3(1CV) = 125.4 gal; Total to sample = 3CV + DP = 156.3 gal
1307 Generator on
1309 Pump on
1309 Water to surface; Q = 3.41 gpm
1319 DP clear (34 gal.), begin logging parameters (File: R-36)
1355 M. Dale (NMED) on site
1356 Begin sampling
1405 M. Dale off site
1407 Sampling complete, pump off; Generator off
Note: M. Green preserves all samples; D. Fellenz QA's
Summary: Crew successfully samples R-36
Note: See pages 37-38 of this log book for parameters, final IV, final parameters, waste info, compliance checklist
1420 Disconnect from transducer
1445 Crew off site
1500 Relinquish samples to SMO c/o: M. Montoya
Event ID: 4457
Sample ID's: CASA-14-45707, 45715, 45700

David Fellenz 11/13/13

11/13/13

David Fellenz

R-36 Continued

37

11/13/13

Groundwater Sampling Log

Project: PWCMP MY2013	LSD: 6591.37 ft. msl	Well Diameter: 4.5 inches	Date: 11/13/13
Watershed: Sandia	Water Level: 5838.33 ft. msl	Top of Screen: 5824.47 ft. msl	Notes:
Well: R-36	*TD: 803.7' bgs	Bottom of Screen: 5801.41 ft. msl	NA
Sampling Device: GSP	*DTW: 753.04' bgs	Water Column: 50.66 ft.	
Measuring Point: LSD	Drop Pipe: 30.9 gal.	1CV: 41.8 gal.	Packer Pressure
* Completion Depth: TD		3CV: 125.4 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: NA psi
			Opening: NA psi
DTW = (LSD - Water Level). Water Column = (TD - DTW). Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier). 3 CV = (1CV x 3)			After: NA psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1309	Pump on, water to surface								
1319	7.15	16.97	192	4.08	2.6	127.2	5837.98	3.41	clear, odorless
1324	7.87	18.92	192	6.26	1.0	110.8	5838.02		
1329	8.00	19.69	193	6.68	2.4	105.4	5838.04		
1334	7.52	19.98	194	6.22	1.9	106.3	5838.05		
1339	7.32	20.16	193	5.92	1.4	98.4	5838.05		
1344	7.22	20.36	193	5.83	0.9	91.2	5838.06		
1349	7.20	20.31	194	5.83	1.0	83.4	5838.06		
1354	7.17	19.96	193	5.81	1.0	78.6	5838.05		
1356	Begin sampling								126 gal. purged
1407	Sampling complete, pump off								

11/13/13

David Fellenz

WASTE

Contact: 1/2 gal.	Drum#: Municipal	Final Water Level: 5838.08 msl	
Purge Water: 126 gal.	Drum#'s: 10171896 305	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)	
Total Waste Water: 170 gal.			

11/13/13

David Fellenz

38
11/13/13

R-36 Continued

David Fellenz 11/13/13

DF 11/5/13
SOP-20032 ~~Rev. 4~~ Compliance Checklist
Rev. 3

Well Name: R-36
Date: 11/13/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 30.9 3 CVs: 125.4	34	126	3.0	(Y) N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity (<10 NTU or ~~± 10%~~)	Comments:
1344	7.22	193	5.83	0.9	NA
1349	7.20	194	5.83	1.0	
1354	7.17	193	5.81	1.0	
Calculations:	Upper: 7.22 Lower: 7.17 Difference: 0.05	Median: 193 Upper: 199 Lower: 187	Upper: 5.83 Lower: 5.81 Difference: 0.02	Median: NA Upper: NA Lower: NA	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	NA

David Fellenz 11/13/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45708

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/19/2013	FIELD MATRIX:	WG	QR
TIME COLLECTED (HH:MM):		1306	MEDIA:	UA	
PRS ID:		dr	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-43 S1		FIELD PREP:	UF	OR
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P1A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 2	ICE		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45708

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Samples collected within 50 ft of diesel generator

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 6.96 mg/L Oxidation-Reduction Potential 113.5 mV pH 8.25 SU

Specific Conductance 164 uS/cm Temperature 20.01 deg C Turbidity 0.2 NTU

COLLECTED BY (PRINT) D. Fellers

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Megan Green	11/14/13 1600	S. Sherwood	11/19/13 1606
		Teri Sherwood	
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45716

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/19/2013	FIELD MATRIX:	WG	↓
TIME COLLECTED (HH:MM):		1306	MEDIA:	UA	↓
PRS ID:		↓	SAMPLE TECH CODE:	UA	6SP
LOCATION ID:	R-43 S1	↓	FIELD PREP:	F	↓
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	P1A	↓	SAMPLE USAGE:	INV	↓

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-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) P. Fellenz

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Megan Green (Signature)	11/19/13 1600	(Printed Name) S. Sherwood (Signature) Sheri Sherwood	11/19/13 1600
RELINQUISHED BY **(Printed Name)** **(Signature)**	**Date/Time**	**RECEIVED BY** **(Printed Name)** **(Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45701

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/19/2013	FIELD MATRIX: WG		OK
TIME COLLECTED (HH:MM):		1306	MEDIA: UA		↓
PRS ID:		OK	SAMPLE TECH CODE: UA		1306
LOCATION ID: R-43 S1		↓	FIELD PREP: UF		OK
LOCATION TYPE:		↓	FIELD QC TYPE: FTB		↓
PORT: P1A		↓	SAMPLE USAGE: QC		↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Megan Green (Signature)	11/19/13 1600	(Printed Name) S Sherwood (Signature) Sheri Sherwood	11/19/13 1600
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

R-43 S1 11/19/12

0700 0700 M. Green leads safety tailgate at TA-64
0755 D. Fellenz calibrates meter at TA-64 see logbook
900 Crew onsite at R-43 S1: D. Fellenz, M. Green
Weather: 50's, sunny
Safety: SCI-2 operations, road access
Objectives: Purge and sample R-43 S1 per SOPs on page 3. This is a dual screen Basalt.
Connect to level troll, V = 5836.29' msl
LSD = 6732.65' msl TD = TOP = 960.7' bgs
DTW = LSD - V = 896.09' WC = TD - DTW = 64.34'
~~DP + CV = (1.02 gal/ft) WC =~~
DP = (0.041 gal/ft) DTW = 36.7 gal
CV = (1.02 gal/ft) WC = 65.6 gal
3CV = = 196.8 gal
936 Open APV, unable to detect movement on pressure gauge though ~~APV~~ nitrogen tank is at 560 PSI. Crew will attempt to turn on well to see if APV is open.
951 Pump on
Note: Short generator had a very hard time starting, though it functioned fine at TA-64.
952 Water to surface, see groundwater sampling log (page 132) for purge details.
955 Initial Q = 1.2 gpm. 4 gallons purged in 3 mins 20 sec
1300 M. Dale onsite to collect NMED split; + P. Longmire
1306 SOP requirements met for sampling, see SOP compliance checklist (page 133). Begin sampling, NMED samples.
1315 ~~Stave maze~~ Water wagon onsite with water wagon for SCI-2 sampling.
1322 Sampling complete, pump off, NMED offsite
Note: Water wagon crew onsite waiting for stave maze, crew does not allow access across well pad until stave maze arrives
1345 D. Fellenz preserves. M. Green QAs. Begin preparing to sample R-43 S2.
Summary: R-43 S1 successfully sampled.
1600 Samples relinquished to SMO. EventID: 4457. Sample IDs: CASA-14-45716, -45708, -45701
[illegible] 11/19/12

132

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6732.65 ft. msl	Well Diameter: 5 inches	Date: 11/12/13
Watershed: Sandia	Water Level: 5836.29 ft. msl	Top of Screen: 5828.8 ft msl	Notes:
Well: R-43S1	*TD: 960.7' bgs	Bottom of Screen: 5808.1 ft msl	
Sampling Device: GSP	*DTW: 896.09'	Water Column: 64.34 ft.	
Measuring Point: LSD	Drop Pipe: 26.7 gal.	1CV: 65.6 gal.	Packer Pressure
* Completion Depth: TD		3CV: 196.8 gal.	Before: 145 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: ~60 psi
DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: NA psi
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: 145 psi

TIME MST DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
951	Pump on, 952, water to surface								
1022	8.27	18.78	187	2.30	0.3	136.0	5835.20	1.2	clear, colorless
1052	8.22	18.14	178	6.60	0.2	120.9	5835.23		
1122	8.27	19.38	181	6.91	0.1	119.2	5835.53		
1152	8.27	19.60	182	6.94	0.2	117.6	5835.58		
1222	8.26	19.67	183	6.98	0.1	115.8	5835.28		
1252	8.25	19.95	184	6.99	0.2	114.1	5835.29		
1257	8.25	19.96	184	6.97	0.2	113.8	5835.38		
1302	8.25	20.01	184	6.96	0.2	113.5	5835.30		
1306	Begin Sampling								
1322	Sampling Complete, pump off								

mj 11/12/13

WASTE

Contact:	1/2 gal.	Drum#: municipal	Final Water Level: 5835.38' msl
Purge Water:	197 gal.	Drum#'s: 10171888	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	300 ~~270~~ gal.		

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-43S1

Date: 11/19/12

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter	Drop Pipe: 36.7	37	197	3	Y N	None
Manual	3 CVs: 196.8					

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1252	8.25	184	6.99	0.2	None
1257	8.25	184	6.97	0.2	
1302	8.25	184	6.96	0.2	
Calculations:	Upper: 8.25	Median: NA	Upper: 6.97	Median: <10	
	Lower: 8.25	Upper: NA	Lower: 6.96	Upper: NA	
	Difference: NA	Lower: NA	Difference: 0.03	Lower: NA	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	None

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45709

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/19/2013	FIELD MATRIX:	WG	gr
TIME COLLECTED (HH:MM):		1503	MEDIA:	UA	
PRS ID:		dr	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-43 S2		FIELD PREP:	UF	dr
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P2A		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 2	ICE		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457 **EVENT NAME:** Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45709 **WORK ORDER:** NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS: Samples collected within 50 ft of disch Generator

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 3.08 mg/L Oxidation-Reduction Potential 162.8 mV pH 8.71 SU

Specific Conductance 197 uS/cm Temperature 19.72 deg C Turbidity 0.2 NTU

COLLECTED BY (PRINT) P. Fellen

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Meagan [illegible]	11/19/13 1600	S. Sherwood Sheri Sherwood	11/19/13 1600
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45717

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/19/2013	FIELD MATRIX:	WG	GR
TIME COLLECTED (HH:MM):		1503	MEDIA:	UA	
PRS ID:		GR	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-43 S2		FIELD PREP:	F	GR
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	P2A		SAMPLE USAGE:	INV	

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-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Mayo [illegible]	11/19/13 1600	S. Sherwood	11/19/13 1600
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4457

EVENT NAME: Mortandad/Sandia (Chromium Investigation) MY2014 Q1 Watershed Sampling_SANDIA

SAMPLE ID: CASA-14-45702

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/19/2013	FIELD MATRIX:	WG	GR
TIME COLLECTED (HH:MM):		1503	MEDIA:	UA	↓
PRS ID:		GR	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-43 S2	↓	FIELD PREP:	UF	GR
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	P2A	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~	↓	↓
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~		

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L ~~Oxidation-Reduction Potential~~ _____ mV pH _____ ~~SU~~

Specific Conductance _____ uS/cm Temperature _____ deg C ~~Turbidity~~ _____ ~~NTU~~

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Meyrnegue	11/19/13 1600	S. Sherwood	11/19/13 1600
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

134
11/19/13 R-43 S 2

1320 Sampling of R-43 S2 complete, begin preparing to sample R-43 S1. See page 131 for morning details
Crew: D. Fellenz, M. Green
objectives: Purge and sample R-43 S2 per SOPs on page 3. This is a dedicated dual screen GSP with Baski system.

1330 Connect to level troll, TOC = 2835.38' msl
LSD = 6732.65' msl, TD = 990.4' bgs
DTW = BOP = 965.4' msl, WC = TD - DTW = 25.0'
DP = (0.041 gal/ft) DTW = 39.6 gal
1CV = (1.020 gal/ft) WC = 25.5 gal
3CV = = 76.5 gal

1333 Open APV at 500 PSI. needle on pressure gauge does not move.

1334 Pump on, water to surface.

Note: 4 MSS personnel on site waiting for Steve Maze to coordinate delivery of tube trailer and water wagon at SCI-2.

1340 Initial Q = 1.3 gpm. 4 gallons purged in 3 min 13 sec

1357 S. Maze onsite. Note: See page 135 for Groundwater Sampling log.

Note: Both screen 1 & Screen 2 drop pipes purged into S1 container because it is the most contaminated.

1405 Steve Maze covers power cord of generator so heavy equipment can access SCI2. Crew will move hose so it is not damaged. Tube trailer misses cord covers and runs over power cord for short generator.

1500 All bros offsite, S. Maze remains onsite (offsite 1526)

1503 SOP requirements met for sampling, see SOP compliance checklist (page 136). Begin sampling

1518 Sampling complete, pump off. M. Pall on site to pick up his sample, offsite

1520 D. Fellenz preserves M. Green QA

Summary: R-43 S2 successfully sampled. Heavy equipment onsite at SCI-2 throughout purge and sampling.

1600 Relinquish samples at SMO. Event ID: 4457. Sample IDs: CASA-14-45712, -45717, -45709

[illegible]

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6732.65 ft. msl	Well Diameter: 5 inches	Date: 11/12/13
Watershed: Sandia	Water Level: 2835.38 ft. msl	Top of Screen: 3763.6 ft. msl	Notes: NA
Well: R-43 S2	*TD: 990.4' bgs	Bottom of Screen: 5753.6 ft. msl	
Sampling Device: GSP	*DTW: 965.4'	Water Column: 25.0 ft.	
Measuring Point: LSD	Drop Pipe: 39.6 gal.	1CV: 25.5 gal.	Packer Pressure
* Completion Depth: TD		3CV: 76.5 gal.	Before: 195 psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: 500 psi
			Opening: NA psi
			After: psi

DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1334	Pump on, Water to surface								
1404	8.22	19.36	185	7.05	0.4	110.9	5834.44	1.3	clear no odor
1414	8.97	19.74	188	2.21	0.2	99.7	5834.46		
1424	8.97	19.68	189	1.98	0.2	101.6	5834.42		
1434	8.86	19.85	194	2.62	0.2	103.0	5834.43		
1444	8.77	19.60	198	3.01	0.2	103.0	5834.41		
1449	8.74	19.68	197	3.08	0.2	103.0	5834.44		
1454	8.73	19.69	197	3.07	0.2	102.8	5834.45		
1459	8.71	19.72	197	3.08	0.2	102.8	5834.40		
1503	3CVs purged, begin sampling								
1516	Sampling complete, pump off								

11/12/13

WASTE				
Contact:	1/2 gal.	Drum#: municipal		Final Water Level: 5834.54 msl
Purge Water:	77 gal.	Drum#'s: 10171893		*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Other Waste Water:	90 gal.			

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-42S2

Date: 11/19/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 39.6 3 CVs: 76.5	40	77	3	(Y) N	None

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1449	8.74	197	3.08	0.2	None
1454	8.73	197	3.07	0.2	
1459	8.71	197	3.08	0.2	
Calculations:	Upper: 8.74 Lower: 8.71 Difference: 0.03	Median: NA Upper: Lower:	Upper: 3.08 Lower: 3.07 Difference: 0.01	Median: <10 Upper: NA Lower:	
(Y) N	(Y) N	(Y) N	(Y) N	Y N	

SOP Requirements Met?	Comments:
(Y) N	None

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45689

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/05/2013	**FIELD MATRIX:**	WG	ok
TIME COLLECTED (HH:MM):		1133	**MEDIA:**	UA	↓
PRS ID:		ok	**SAMPLE TECH CODE:**	UA	6SP
LOCATION ID:	R-14 S1		**FIELD PREP:**	UF	ok
LOCATION TYPE:	MON		**FIELD QC TYPE:**	REG	
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	No
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	3	ICE		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45689

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-H-3	1 LITER POLY	1	NONE	Y	NA
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Collected within 50 ft. of diesel generator

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 5.64 mg/L Oxidation-Reduction Potential 87.9 mV pH 8.25 SU

Specific Conductance 130 uS/cm Temperature 22.43 deg C Turbidity 0.3 NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Megan Green	11/5/13 1:00		11/5/13 1:00
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45693

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/05/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1133	MEDIA:	UA	✓
PRS ID:		ok	SAMPLE TECH CODE:	UA	688
LOCATION ID:	R-14 S1	✓	FIELD PREP:	F	ok
LOCATION TYPE:	MON	✓	FIELD QC TYPE:	REG	✓
PORT:	SINGLE COMPLETION	✓	SAMPLE USAGE:	INV	✓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	✓	NA
✓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	✓	✓

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Morgan Olcen	11/5/13 1:00	M. Martinez	11/5/13 1:00
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45686

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/05/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1133	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	68P
LOCATION ID:	R-14 S1	↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL 1 DF 11/5/13	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL 1 DF 11/5/13	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL 1 DF 11/5/13		

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) Megan Green **(Signature)**	**Date/Time** 11/5/13 1:00	**RECEIVED BY (Printed Name)** M. Martz **(Signature)**	**Date/Time** 11/5/13 1:00
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

122

11/5/13 R-14

0730 M. Green leads safety tailgate at TA-64 Mortandad and Sandia watershed PPE off mating
M. Green calibrates meter #30 at TA-64, see logbook.
1030 Crew onsite at R-14, ~~SO~~ M/SAP M. Green, D. Fellenz
Weather: 40s, overcast
Safety: Slow restart after furlough, pay extra attention
Objectives: purge and sample R-14 per SOPs on page 3 of logbook. Dedicated GSP and generator
1055 Connect to level troll with rugged reader #2. ∇ 5877.85' msl
LSD: 7062.08' msl TD: 1244.7' bgs
DTW = LSD − ∇ = 1184.23' bgs WC = TD − DTW = 60.47'
~~Vol~~ DP = (0.048 gal/ft) DTW = 48.6 gal
1CV = (0.826 gal/ft) WC = 49.9 gal
3CV = = 149.8 gal
1105 Pump on, see groundwater sampling log (page 123) for details on purge.
1107 initial Q = 7.1 gpm. 5 gallons purged in 42 ~~minutes~~ seconds
~~Note~~ Note: 3CVs will be 21 minutes at this rate, parameters will be collected in 5 minute intervals.
1133 Sampling requirements met, see page 124 for SOP compliance checklist.
D. Fellenz preserves, M. Green QAs.
Summary: R-14 successfully sampled.
1215 off site
1300 Relinquish samples at SMO. Event ID: 4459
Sample IDs: CAMO-14-45684, -45693, -45686

MG

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 7062.08 ft. msl	Well Diameter: 4.5 inches	Date: 11/5/13
Watershed: Mortandad	Water Level: 5877.85 ft. msl	Top of Screen: 5861.48 ft. msl	Notes: NA
Well: R-14	*TD: 1244.7' bgs	Bottom of Screen: 5828.88 ft. msl	
Sampling Device: bsp	*DTW: 1184.23' bgs	Water Column: 60.47 ft.	
Measuring Point: LSP	Drop Pipe: 48.6 gal.	1CV: 49.9 gal.	Packer Pressure
* Completion Depth: TD		3CV: 149.8 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: psi
			Opening: psi
			After: psi

DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1105	pump on	Water to surface							
1112	7.36	14.94	129	4.55	~~1.0~~ 0.4	131.9	5870.60	7.1	clear no odor
1117	7.79	17.59	129	5.17	1.1	112.0	5870.59	↓	↓
1122	8.10	20.79	129	5.68	0.6	98.7	5870.60	↓	↓
1127	8.20	22.04	129	5.69	0.4	94.6	5870.60	↓	↓
1132	8.25	22.43	130	5.64	0.3	87.9	5870.61	↓	↓
1133	Begin Sampling								
1143	Sampling Complete, pump off								

11/15/13

WASTE

Contact:	12 gal.	Drum#: municipal	
Purge Water:	150 gal.	Drum#'s: 10171898	
Total Waste Water:	800 gal.		

Final Water Level: 5870.62' msl

*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)

124

SOP-20032 ~~Rev. 1~~ Rev 2 Compliance Checklist

Well Name: R-14

Date: 11/5/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 48.6 3 CVs: ~~149~~ 149.8	44	150	3	Y N	None

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1122	8.10	129	5.68	6.6	None
1127	8.20	129	5.69	0.4	
1132	8.25	130	5.64	0.3	
Calculations:	Upper: 8.25 Lower: 8.10 Difference: 0.15	Median: 129 Upper: 133 Lower: 125	Upper: 5.69 Lower: 5.64 Difference: 0.05	Median: <10 Upper: NA Lower: NA	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	None

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45691

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/18/2013	**FIELD MATRIX:**	WG	ok
TIME COLLECTED (HH:MM):		1128	**MEDIA:**	UA	
PRS ID:		ok	**SAMPLE TECH CODE:**	UA	GSP
LOCATION ID:	R-46		**FIELD PREP:**	UF	
LOCATION TYPE:	MON		**FIELD QC TYPE:**	REG	
PORT:	SINGLE COMPLETION		**SAMPLE USAGE:**	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~1~~ 2	NIS ICE 11/18/13		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45691

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-H-3	1 LITER POLY	1	NONE	Y	NA
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

NA

LOCATION COMMENTS: diesel generator running 40' away

FIELD PARAMETERS:

Dissolved Oxygen 6.50 mg/L Oxidation-Reduction Potential 90.4 mV pH 8.02 SU

Specific Conductance 122 uS/cm Temperature 20.34 deg C Turbidity 0.0 NTU

COLLECTED BY (PRINT) M. Stenlo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Andrew Stokes	11/18/13 1435	S. Sherwood	11/18/13 1435
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45695

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/18/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1128	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-46		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS: AS 11/18/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) M Green

RELINQUISHED BY (Printed Name) (Signature) Andrew Stokes	**Date/Time** 11/18/13 1435	**RECEIVED BY (Printed Name) (Signature)** S. Norwood	**Date/Time** 11/18/13 1435
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45687

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/18/2013	**FIELD MATRIX:**	WG	ok
TIME COLLECTED (HH:MM):		1128	**MEDIA:**	UA	↓
PRS ID:		ok	**SAMPLE TECH CODE:**	UA	DC
LOCATION ID:	R-46	↓	**FIELD PREP:**	UF	ok
LOCATION TYPE:		↓	**FIELD QC TYPE:**	FTB	↓
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	3	HCL 11/18/13	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	3	HCL 11/18/13	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	3	HCL 11/18/13	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS: 11/18/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg-C Turbidity _____ NTU

COLLECTED BY (PRINT) M. Steele

RELINQUISHED BY (Printed Name) (Signature)	**Date/Time** 11/18/13 1435	**RECEIVED BY (Printed Name) (Signature)** S. Sherwood	**Date/Time** 11/18/13 1435
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

11/18/13 R-46

0700 H&S tailgate performed by M. Green @ TA-64

0753 YSI #40 calibrated by A. Stocker @ TA-64

1025 crew onsite

crew: A. Stocker, M. Green, M. Shendo

weather: 30s, clear

2-min-safety: careful on gravel pad, trips

Objectives: Purge + sample R-46 per SOPs and referenced documents on pg. 3 using a GSP

1030 connect to level troll pressure transducer w/ Rugged Reader

↓: 5882.92' msl, LSD: 7213.33' msl TD: 1382.2' bgs

DTW: ~~1379.84' bgs~~ 1330.41' bgs WC = 51.79'

1150 DP = (0.041 gal/ft + DTW) = 54.6 gal

1150 ICV = (1.020 gal/ft + WC) = 52.8 gal

3CV = = 158.5 gal

1042 pump on, water to surface

1045 manual rate: 4.69 gpm

1054 DP cleared, begin logging parameters on Groundwater Sampling Log, see SOP Compliance Checklist for stability

1128 3CVs purged, parameters stable, Begin sampling

1138 sampling complete, pump off, Objectives met to purge + sample R-46

1200 crew offsite

1435 submit samples to SMO: Event ID: 4459; Sample ID: CAMD-14-45695, -45691, -45687

JS 11/18/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 7213.33 ft. msl	Well Diameter: 5 inches	Date: 11/18/13
Watershed: Mortandad	Water Level: 13* 5882.92 ft. msl	Top of Screen: 5573.33 ft. msl	Notes:
Well: R-46	*TD: 1382.26 bgs	Bottom of Screen: 5852.63 ft. msl	NONE
Sampling Device: GSP	*DTW: 1330.41 bgs	Water Column: 51.79 ft.	
Measuring Point: LSP	Drop Pipe: 54.6 gal.	1CV: 52.8 gal.	Packer Pressure
* Completion Depth: TD		3CV: 158.5 gal.	Before: ____ psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: ____ psi
			Opening: 11/18/13 psi
DTW = (LSD - Water Level) .Water Column = (TD - DTW) .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier) .... 3 CV = (1CV x 3)			After: ____ psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1042	Pump on water to surface								
1054	7.25	15.13	121	3.64	3.7	121.8	5881.44	4.69	clear, odorless
1059	7.35	16.85	121	5.23	1.2	104.0	5881.53	4.69	
1104	7.79	18.47	120	5.97	0.4	91.1	5881.58	4.69	
1109	7.98	19.65	121	6.26	0.1	88.3	5881.59	4.69	
1114	8.02	20.15	122	6.43	0.0	89.3	5881.59	4.69	
1119	8.04	20.21	122	6.46	0.0	89.6	5881.60	4.69	
1124	8.02	20.34	122	6.50	0.0	90.4	5881.59	4.69	
1128	3CVs purged, parameters stable, Begin sampling								
1138	Sampling complete, pump off								

JG 11/18/13

WASTE				
Contact:	4 gal.	Drum#:	Municipal	Final Water Level 5881.59 bgs
Purge Water:	160 gal.	Drum#'s:	10171890	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	230 gal.			

45

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-46

Date: 11/18/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 54.6 3 CVs: 158.5	56	160	3	(Y) N	NONE

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1114	8.02	122	6.43	0.0	Stable
1119	8.04	122	6.46	0.0	
1124	8.02	122	6.50	0.0	
Calculations:	Upper: 8.04 Lower: 8.02 Difference: 0.02	Median: 122 Upper: NA Lower: NA	Upper: 6.50 Lower: 6.43 Difference: 0.07	Median: 0.0 Upper: <10 Lower: <10	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	All SOP's met

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45692

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	**FIELD MATRIX:**	WG	QR
TIME COLLECTED (HH:MM):		~~11:12~~ 11:14	**MEDIA:**	UA	↓
PRS ID:		QR	**SAMPLE TECH CODE:**	UA	GSP
LOCATION ID:	R-60	↓	**FIELD PREP:**	UF	QR
LOCATION TYPE:	MON	↓	**FIELD QC TYPE:**	REG	↓
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NP
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~3~~ 2	ICE 11/14/2013 A.V.	↓	↓
↓	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-GrossA/B	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	↓	↓

Analyses continued on next page

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45692

WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-H-3	1 LITER POLY	1	NONE	Y	NA
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Samples collected within 50 ft of diesel generator

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 5.55 mg/L Oxidation-Reduction Potential 21.9 mV pH 8.24 SU

Specific Conductance 126 uS/cm Temperature 23.64 deg C Turbidity 1.18 NTU

COLLECTED BY (PRINT) A. Vigil, M. Green

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Maya Green	11/14/13 1230	Martyn	11/14/13 1230
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45696

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	FIELD MATRIX:	WG	QR
TIME COLLECTED (HH:MM):		~~1112~~ 1114	MEDIA:	UA	Q
PRS ID:		QR	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-60		FIELD PREP:	F	QR
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Vigil

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
M. Gyrem	11/14/13 1230	M. Martinez	11/14/13 1230
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45975

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1012	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GJP
LOCATION ID:	R-60	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-DRO	1 LITER AMBER GLASS	2	ICE	Y	NA

SAMPLE COMMENTS: Collect at 1 CV + DP

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen 5.62 mg/L Oxidation-Reduction Potential 50.5 mV pH 8.20 SU

Specific Conductance 126 uS/cm Temperature 19.73 deg C Turbidity 1.81 NTU

COLLECTED BY (PRINT) A. Vigil

RELINQUISHED BY (Printed Name) Megan Green (Signature)	Date/Time 11/14/13 1230	**RECEIVED BY** (Printed Name) A. Montoya (Signature)	Date/Time 11/14/13 1230
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	**RECEIVED BY** (Printed Name) (Signature)	Date/Time

Report Date 11/05/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45688

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/14/2013	**FIELD MATRIX:**	WG	gr
TIME COLLECTED (HH:MM):		~~1212~~ 1114	**MEDIA:**	UA	↓
PRS ID:		ch	**SAMPLE TECH CODE:**	UA	GSP
LOCATION ID:	R-60	↓	**FIELD PREP:**	UF	gr
LOCATION TYPE:		↓	**FIELD QC TYPE:**	FTB	↓
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL A.V 11/14/2013	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL A.V 11/14/2013	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL A.V. 11/14/2013	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) A. Vigil

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Meyergram	11/14/13 1230	M. Martin	11/14/13 1230
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

R-60 11/14/13

0830 M.Green ~~calibrated~~ then leads safety tailgate at TA 64.
0855 M.Green calibrates meter ~~#10~~ 10 at TA-64, see logbook
0840 Crew onsite at R-60. Note: Another truck and heavy equipment are parked onsite. Do not appear to be doing work at well site but crew will monitor activity.
Crew: M.Green A.Vigil
Weather: 40's, sunny with scattered clouds
objectives: purge and sample R-60 using dedicated GSP and generator. Follow SOPs on page 3 and work plan which mandates additional sampling at ICV + DP. Typically, flow is restricted to ~1.9 gpm to prevent drawdown into screen.
850 TOC = 5907.29' msl, connect to level troll
LSP = 7228.17' msl TD = 1360.9' bgs
DTW = TOC - LSP = 1320.88' bgs WC = DTW - TD = 40.02'
DP = (0.041 gal/ft) DTW = 54.2 gal
ICV = (1.020 gal/ft) WC = 40.8 gal
3C = = 122.5 gal
855: Heavy equipment & truck offsite
858 Pump on, water to surface. See groundwater sampling log (page) for purge details.
901 Restrict flow, Initial Q = 3.4 gpm. 2 gallons purged in 35 sec.
902 Restrict more. Q = 0.6 gpm. 1 gallons purged in 1 min, 40 sec
905 Q = 1.3 gpm. 2 gallons purged in 1 min 28 sec. Crew will keep rate here and monitor WL. Q will be adjusted as necessary.
955 Manual Hach meter turbidity will be used for remainder of purge, unable to sufficiently clear effervescence from flow through cell for accurate reading
1012 Collect ICV + DP samples.
~~1112~~ 1114 SOP requirements met for sampling. See page for SOP compliance check 1.A. Begin sampling
1134 Sampling complete, pump off
1140 A. Vigil presents M. Green QAs
Summary: Objectives complete. R-60 sampled. Purge rate of 1.3 prevented drawdown into screen. Additional samples collected at ICV + DP.

40

11/14/13 R-60 Continued

1200 offsite

1220 Relinquish samples at SMO, Event ID: 4459

Sample IDs: CAMMO-14-45975, -45892, -45696, -45688

11/14/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 7228.17 ft. msl	Well Diameter: 8 inches	Date: 11/14/13
Watershed: mortandad	Water Level: ft. msl	Top of Screen: 5895.0 ft msl	Notes: NA
Well: R-60	*TD: 1360.9 bgs	Bottom of Screen: 5874.1 ft msl	
Sampling Device: GSP	*DTW: 1320.88 bgs	Water Column: 40.02 ft.	
Measuring Point: LSD	Drop Pipe: 54.2 gal.	1CV: 40.8 gal.	Packer Pressure
* Completion Depth: TD		3CV: 122.5 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: ✓ psi
			Opening: ✓ psi
DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: psi

TIME MST DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft.	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
858	Pump on, Water to surface, adjust flow rate								
940	7.34	16.86	126	4.10	5.4	114.7	5900.48	1.3	very turbid, clay
955	8.08	18.12	128	5.06	3.99*	53.4	5900.10		
1010	8.20	19.73	126	5.62	1.81*	50.5	5899.92		
1012	Begin Sampling 1CV Samples Sampling Complete								
1025	8.26	22.10	128	5.67	1.97*	38.1	5899.83		
1040	8.27	22.92	127	5.58	1.59*	30.7	5899.76		
1055	8.25	23.37	125	5.66	2.55*	18.7	5899.75		
1100	8.24	23.56	126	5.50	1.34*	12.2	5899.74		
1105	8.25	23.62	125	5.66	1.02*	15.1	5899.74		
1110	8.24	23.64	126	5.55	1.18*	21.9	5899.72		
1114	Begin Sampling								
1134	Sampling Complete, pump off								
							11/14/13		
* Turbidity collected using HACH meter due to effervescence									

WASTE

Contact:	1/2 gal.	Drum#: municipal	Final Water Level: 5898.32' msl
Purge Water:	123 gal.	Drum#'s: 10171901 (305)	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	200 gal.		

42

SOP-20032 Rev. 1 Compliance Checklist

Well Name: R-60

Date: 11/14/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 54.2 3 CVs: 122.5	55	123	3	(Y) N	None

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1100	8.24	128	5.50	1.34	None
1105	8.25	125	5.66	1.02	
1110	8.24	126	5.55	1.18	
Calculations:	Upper: 8.25 Lower: 8.24 Difference: 0.01	Median: 125 Upper: 129 Lower: 124	Upper: 5.66 Lower: 5.50 Difference: 0.16	Median: <10 Upper: NA Lower: ↓	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	None

11/14/13

11/14/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45690

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		12/19/~~23~~ 2013 DJF 12/19/13	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1121	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-34	↓	FIELD PREP:	UF	OK
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CN(T)	250 ML POLY	1	NAOH	Y	NA
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: Sampled within 50' of running diesel generator Q = 2-97 gpm

FIELD PARAMETERS:

Dissolved Oxygen 6.82 mg/L Oxidation-Reduction Potential -8.3 mV pH 8.27 SU

Specific Conductance 152 uS/cm Temperature 17.77 deg C Turbidity 1.7 NTU

COLLECTED BY (PRINT) J. Maze

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
David Fellenz	12/19/13 1205	K. Greene	12/19/13 12:05

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4459

EVENT NAME: Mortandad/Sandia (MDA C and GS Monitoring) MY2014 Q1 Watershed Sampling_MORTANDAD

SAMPLE ID: CAMO-14-45694

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		12/19/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1121	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	NA
LOCATION ID:	R-34	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA mV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Shendo

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) David Fellenz (Signature)	12/19/13 1205	(Printed Name) K. Green (Signature)	12/19/13 12:05
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

38

R-34

12/19/13

0700 A. Stocker conducts health and safety tailgate at TA-64
0724 J. Maze calibrates YSI #10 at TA-64, see calibration log book EP2011-0072 page63 for details
0910 Crew (D. Fellenz, M. Shendo, J. Maze) on site at R-34 plus A. King (escort)
Weather: Sunny, 40's, light breeze
2 Minute Safety: Electrical system, splashes, trips
Objective: Purge and sample R-34 per applicable documents on p.3
0918 Connect to transducer (level troll) with Rugged Reader #4
Note: This is a single completion well with a dedicated GSP pump
Note The following data is from well completion diagrams and historicals
LSD = 6629.99' msl $\bar{V}$ = 5831.70' msl
TD = 920.7' bgs DTW = LSD − $\bar{V}$ = 798.29
DP = (0.041 gal/ft) DTW = 32.7 gal WC = TD − DTW = 122.41'
1CV = (0.826 gal/ft) WC = 101.1 gal
3CV = 3(1CV) = 303.3 gal; Total to sample = 3CV + DP = 336.0 gal
0918 Generator on
0926 Pump on
0927 Water to surface; Q = 2.97 gpm (manual using carboy)
0938 DP clear (32.7 gal), begin logging parameters (File: R-34)
1121 Begin sampling
1124 Sampling complete, pump off; Generator off
Note: M. Shendo preserves all samples; J. Maze QA's
1128 Disconnect from transducer
Note: See pages 39-40 of this log book for parameters, final $\bar{V}$, final parameters, waste info, compliance checklist
Summary: Crew successfully samples R-34 (Objective met!)
1150 All personnel off site
1205 Relinquish samples to SMO c/o K. Greene
Event ID: 4459
Sample ID's: CAMO-14-45690, 45694

David Fellenz 12/19/13

12/19/13

David Fellenz

R-34 continued

39

12/19/13

David Fellenz 12/19/13

Groundwater Sampling Log

Project: IFW/GMP MY2013	LSD: 6629.99 ft. msl	Well Diameter: 4.5 inches	Date: 12/19/13
Watershed: Mortandad	Water Level: 5831.70 ft. msl	Top of Screen: 5746.28 ft. msl	Notes: NA
Well: R-34	*TD: 920.71' bgs	Bottom of Screen: 5723.28 ft. msl	
Sampling Device: GSP	*DTW: 798.29' bgs	Water Column: 122.41 ft.	
Measuring Point: LSD	Drop Pipe: 32.7 gal.	1CV: 101.1 gal.	Packer Pressure
* Completion Depth: TD		3CV: 303.3 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: NA psi
DTW = (LSD - Water Level). Water Column = (TD - DTW). Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: NA psi
1CV = (Water Column x Well Diameter Multiplier) . 3 CV = (1CV x 3)			After: NA psi

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. msl	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
0926	Pump on; 0927 Water to surface								
0938	7.87	12.49	153	6.73	1.2	-23.5	5828.68	2.97	clear, no odor effervescent
0953	7.77	14.83	153	5.53	4.6	-15.0	5828.61		
1008	8.06	16.73	153	5.30	7.9	-21.9	5828.55		
1023	8.20	16.75	152	6.55	6.1	-14.4	5828.51		
1038	8.24	17.53	152	6.49	4.4	-10.8	5828.55		178 gal. purged
1053	8.26	17.58	152	6.61	2.7	-9.9	5828.52		odorless, clear effervescent
1108	8.27	17.78	151	6.67	1.9	-9.4	5828.53		
1113	8.27	17.77	151	6.67	1.8	-9.0	5828.53		
1118	8.27	17.77	152	6.82	1.7	-8.3	5828.51		
1121	Begin Sampling								
1124	Sampling complete, pump off								

David Fellenz 12/19/13

WASTE

Contact: 1/2 gal.	Drum#: Municipal		Final Water Level: 5828.61' msl
Purge Water: 305.5 gal.	Drum#'s: 10171949		*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water: 340 gal.		550 gal	

David Fellenz 12/19/13

on p.3
4
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6.0gal
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40
12/19/13

R-34 continued

David Fellenz 12/19/13

DF 11/5/13
SOP-20032 ~~Rev. 4~~ Compliance Checklist
Rev. 3

Well Name: R-34
Date: 12/19/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: 32.7 3 CVs: 303.3	32.7	305.5	3.0	Y N	NA

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1108	8.27	151	6.67	1.9	NA
1113	8.27	151	6.67	1.8	
1118	8.27	152	6.82	1.7	
Calculations:	Upper: 8.27 Lower: 8.27 Difference: 0.00	Median: 151 Upper: 156 Lower: 146	Upper: 6.82 Lower: 6.67 Difference: 0.15	Median: NA Upper: NA Lower: NA	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	NA

David Fellenz 12/19/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4460

EVENT NAME: Mortandad/Sandia MY2014 Q1 Watershed Sampling_Discharge Permit Sampling

SAMPLE ID: CAMO-14-45675

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	CDBO-6		FIELD PREP:	F	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	NV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	Tal Metals	1 LITER POLY	1	HNO3 ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-Molybdenum	500 ML POLY	1	HNO3 ICE		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID:	4460	**EVENT NAME:**	Mortandad/Sandia MY2014 Q1 Watershed Sampling_Discharge Permit Sampling
SAMPLE ID:	CAMO-14-45670	**WORK ORDER:**	NA

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

Not enough DRY

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4460

EVENT NAME: Mortandad/Sandia MY2014 Q1 Watershed Sampling_Discharge Permit Sampling

SAMPLE ID: CAMO-14-45670

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	CDBO-6		FIELD PREP:	UF	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	Anions-W	125 ML POLY	1	ICE		
	GrossA	1 LITER POLY	1	HNO3 ICE		
	MSGP-Hg	1 LITER POLY	1	HNO3		
	NH3+NO2NO3+TKN	250 ML AMBER GLASS	1	H2SO4		
	Ra226+228	1 GAL POLY	1	HNO3		
	TDS	250 ML POLY	1	ICE		
	WSP-8082-PCB	1 LITER AMBER GLASS	3	ICE		
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	3	ICE		
	WSP-CL04	250 ML POLY	1	ICE		

Analyses continued on next page

NOT Performed 11/20/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4460

EVENT NAME: Mortandad/Sandia MY2014 Q1 Watershed Sampling_Discharge Permit Sampling

SAMPLE ID: CAMO-14-45669

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	CDBO-6		FIELD PREP:	UF	
LOCATION TYPE:			FIELD QC TYPE:	FTB	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Not Sample Dry Only

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4460

EVENT NAME: Mortandad/Sandia MY2014 Q1 Watershed Sampling_Discharge Permit Sampling

SAMPLE ID: CAMO-14-45900

WORK ORDER:

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-Fluoride	125 ML POLY	1	ICE		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4460

EVENT NAME: Mortandad/Sandia MY2014 Q1 Watershed Sampling_Discharge Permit Sampling

SAMPLE ID: CAMO-14-45900

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	CDBO-6		FIELD PREP:	UF	
LOCATION TYPE:	MON		FIELD QC TYPE:	FD	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	Anions-W	125 ML POLY	1	ICE		
	GrossA	1 LITER POLY	1	HNO3 ICE		
	MSGP-Hg	1 LITER POLY	1	HNO3		
	NH3+NO2NO3+TKN	250 ML AMBER GLASS	1	H2SO4		
	Ra226+228	1 GAL POLY	1	HNO3		
	TDS	250 ML POLY	1	ICE		
	WSP-8082-PCB	1 LITER AMBER GLASS	3	ICE		
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	3	ICE		
	WSP-CL04	250 ML POLY	1	ICE		

Analyses continued on next page

Not Sampled DRY

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4460

EVENT NAME: Mortandad/Sandia MY2014 Q1 Watershed Sampling_Discharge Permit Sampling

SAMPLE ID: CAMO-14-45899

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	CDBO-6		FIELD PREP:	F	
LOCATION TYPE:	MON		FIELD QC TYPE:	FD	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	Tal Metals	1 LITER POLY	1	HNO3 ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-Molybdenum	500 ML POLY	1	HNO3 ICE		

Not Sampled DRY

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4460

EVENT NAME: Mortandad/Sandia MY2014 Q1 Watershed Sampling_Discharge Permit Sampling

SAMPLE ID: CAMO-14-45676

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):			FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):			MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID:	MCO-3		FIELD PREP:	F	
LOCATION TYPE:	OBS		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	NH3+NO2NO3+TKN	250 ML AMBER GLASS	1	H2SO4		
	TDS	250 ML POLY	1	ICE		
	WSP-CL04	250 ML POLY	1	ICE		
	WSP-Fluoride	125 ML POLY	1	ICE		

SP 10/20/13

Not Sampled

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ mV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 11/04/2013

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4460

EVENT NAME: Mortandad/Sandia MY2014 Q1 Watershed Sampling_Discharge Permit Sampling

SAMPLE ID: CAMO-14-45677

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/20/2013	FIELD MATRIX:	WG	GW
TIME COLLECTED (HH:MM):		1123	MEDIA:	UA	↓
PRS ID:		JR	SAMPLE TECH CODE:	UA	BP
LOCATION ID:	MCO-4B	↓	FIELD PREP:	F	JR
LOCATION TYPE:	OBS	↓	FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	NH3+NO2NO3+TKN	250 ML AMBER GLASS	1	H2SO4	Y	NA
↓	TDS	250 ML POLY	1	ICE	↓	↓
↓	WSP-CL04	250 ML POLY	1	ICE	↓	↓
↓	WSP-Fluoride	125 ML POLY	1	ICE	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 7.62 mg/L Oxidation-Reduction Potential 123.6 mV pH 6.49 SU

Specific Conductance 1208 uS/cm Temperature 11.54 deg C Turbidity 0.9 NTU

COLLECTED BY (PRINT) M. Sherado

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Megan Gee	11/20/13 1315	K. Gurley	11/20/13 1:15
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

52

11/19/13 MCO-4B

1342 crew onsite @ MCO-4B, see pg. 49 for morning activities at SCI-1
crew: J. Stokes M. Clendo
weather: 40s-50s, clear
2-man-safety: pressure systems, uneven surfaces
Objectives: Purge + sample MCO-4B per SOPs and referenced documents on pg. 3 using a dedicated bladder pump + QED MP-15 backpack controller + CO_2

1347 DTW: 20.35' TOC

1350 DTW = 20.35' TOC, depth to top of pump = 26.50' TOC, TD = 35.47' TOC
WC = 15.12'

2"SO ICV = (0.163 gal/ft × WC) = 2.5 gal
3CV = = 7.45 gal

~~pump on @ 20psi~~ AS 11/19/13

1400 Backpack controller out of batteries (charge), try batteries from other two dedicated

1420 cant get backpack controller QED MP-15 to work, will have to return with another controller or new batteries another day

1440 Objectives not complete, crew offsite

JS 11/19/13

MCO-4B 11/20/13

0700 M. Green leads safety tailgate at TA-64
0730 M. Green calibrates meter #40 at TA-64, see logbook.
1020 Crew onsite at MCO-4B: M. Shendo, M. Green, A. Vigil
weather: 40's, cloudy
safety: tripping hazards, flood debris around well pad.
objectives: second attempt to sample MCO-4B. Backpack Control was not working on 11/19/13. New batteries and backpack seems to be working. Crew will use dedicated bladder pump and backpack controller with CO_2.
1037 Manual DTW = 20.46' bTOC
1040 manual DTW = 20.46' bTOC, manual depth top of pump = 26.68' bTOC
TD = 35.47' bTOC, Top of screen = 10.47' bTOC, Bottom of screen = 30.47' bTOC
1 CV = (0.163 gal/ft WC) = 2.44 gal
WC = DTW - TD = 15.01
3 CV = = 7.34 gal
1100 Pump on see Groundwater Sampling log (page 138) for purge details, 30 PSI
1123 Begin Sampling, see SOP Compliance checklist (page 139).
1127 Sampling complete, pump off
1130 A. Vigil preserves, M. Shendo QAS
Summary: MCO-4B successfully sampled.
1145 offsite
1315 Relinquish samples at SMO. Ent ID: 4460. Sample ID: CAMO-14-45677

MG 11/20/13

138

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6886.75 ft. msl	Well Diameter: 2 inches	Date: 11/20/13
Watershed: Mortandad	Water Level: NA ft. msl	Top of Screen: 10.47 ft btoc	Notes: NA
Well: MLO-4B	*TD: 35.47' btoc	Bottom of Screen: 30.47 ft btoc	
Sampling Device: Bladder	*DTW: 20.46	Water Column: 15.01 ft.	
Measuring Point: +1.57	Drop Pipe: NA gal.	1CV: 2.44 gal.	Packer Pressure
* Completion Depth: TD		3CV: 7.34 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: ____ psi
DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)			Opening: ____ psi
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: ____ psi

TIME (MST) / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water ft. btoc	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1100	Pump on, 1101 water to surface								
1103	6.55	11.45	871	6.27	8.2	130.1	20.60	0.13	some flakes in water
1105	6.43	11.53	1057	7.00	4.3	127.1	20.60		
1108	6.43	11.55	1150	7.48	2.3	125.4	20.60		
1111	6.46	11.54	1199	7.53	1.8	124.3	20.56		
1114	6.48	11.51	1206	7.58	1.1	123.7	20.56		
1117	6.48	11.52	1207	7.62	1.0	123.6	20.58	0.13	
1120	6.49	11.54	1208	7.62	0.9	123.6	20.61		
1121	Pump paused to prepare to sample								
1123	Begin Sampling								
1127	Sampling Complete, pump off								

MJ 11/20/13

WASTE

Decontact:	3 gal.	Drum#:	10171907	Final Water Level: 20.57' btoc
Purge Water:	2.5 gal.	Drum#'s:	10171904	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	3 gal.			

SOP-20032 Rev. ~~1~~ 3 Compliance Checklist

Well Name: MC04B

Date: 11/20/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: NA 3 CVs: 7.34	NA	2.44	1	(Y) N	Volume calculated by filling gallon size waste containers

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1114	6.48	1206	7.58	1.1	None
1117	6.48	1207	7.62	1.0	
1120	6.49	1208	7.62	0.9	
Calculations:	Upper: 6.49 Lower: 6.48 Difference: 0.01	Median: 1207 Upper: 1243 Lower: 1171	Upper: 7.62 Lower: 7.58 Difference: 0.04	Median: <10 Upper: NA Lower: ↓	
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N	

SOP Requirements Met?	Comments:
(Y) N	None

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4460

EVENT NAME: Mortandad/Sandia MY2014 Q1 Watershed Sampling_Discharge Permit Sampling

SAMPLE ID: CAMO-14-45678

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/20/2013	FIELD MATRIX:	WG	CK
TIME COLLECTED (HH:MM):		1240	MEDIA:	UA	↓
PRS ID:		8R	SAMPLE TECH CODE:	UA	6SP
LOCATION ID:	MCO-6		FIELD PREP:	F	dr
LOCATION TYPE:	OBS		FIELD QC TYPE:	REG	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	NH3+NO2NO3+TKN	250 ML AMBER GLASS	1	H2SO4	Y	NA
↓	TDS	250 ML POLY	1	ICE	↓	↓
↓	WSP-CL04	250 ML POLY	1	ICE	↓	↓
↓	WSP-Fluoride	125 ML POLY	1	ICE	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 8.32 mg/L Oxidation-Reduction Potential 121.5 mV pH 6.71 SU

Specific Conductance 605 uS/cm Temperature 9.92 deg C Turbidity 1.2 NTU

COLLECTED BY (PRINT) M. Shendo

RELINQUISHED BY (Printed Name) (Signature) Megan Green	**Date/Time** 11/20/13 1315	**RECEIVED BY (Printed Name) (Signature)** K. Green	**Date/Time** 11/20/13 1:15
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

140

11/20/13 MCO-6

1140 Onsite at MCO-6. Crew sampled MCO-4B this morning see page 137 for morning activities. YSI #40 is used
Crew: M. Shendo, A. Vigil, M. Green
Objectives: Purge and sample MCO-6 per SOPs on page 3. Use dedicated bladder pump and CO_2 with backpack controller.

1138 Manual DTW = 39.26' bTOC
manual pTW = 39.26' bTOC, Manual TD = 45.26' bTOC
LSD = 6849.48' msl MP = 2.66' above LSD
TD = 47.19' bTOC
WC = TD - DTW = 7.93'
ICV = (0.65 gal/ft) WC = 5.18 gal
3CV = = 15.5 gal

1159 Pump on at 30 PSI, see ~~logbook for~~ groundwater sampling log (page 141) for purge details.
Initial Q = 0.17 L/min = 0.05 gpm

1206 Increase pressure to 40 PSI, Q = 0.5 L/min = 0.13 gpm

1240 Begin sampling. See page 142 for SOP compliance checklist

1243 Sampling complete, pump off

1245 A. Vigil presents, M. Shendo QAs

Summary: MCO-6 successfully sampled.

1255 Off site

1315 Relinquish sample at SMO. Field ID: 4460. Sample ID: CAMO-14-45678.

11/20/13

141

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6849.48 ft. msl	Well Diameter: 4 inches	Date: 11/20/13
Watershed: Mortandad	Water Level: NA ft. msl	Top of Screen: 29.66 ft.	Notes: NA
Well: MCO-6	*TD: 47.19 ft TOC	Bottom of Screen: 47.66 ft.	
Sampling Device: BP	*DTW: 43.17 ft TOC	Water Column: 7.93 ft.	
Measuring Point: +2.46	Drop Pipe: NA gal.	1CV: 5.18 gal.	Packer Pressure
* Completion Depth: TD		3CV: 15.5 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: psi
			Opening: psi
			After: psi

DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier)
1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)

TIME MST / DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. ft TOC	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1159	Pump on, water to surface								
1203	6.95	10.47	520	8.50	7.8	125.1	39.30	0.05	Clear odorless
1208	6.81	10.06	571	8.52	3.7	123.8	39.35	0.13	
1218	6.71	9.89	605	8.46	1.1	122.6	39.38		
1228	6.71	9.92	605	8.36	1.1	121.9	39.38		
1233	6.71	9.92	605	8.35	1.2	121.6	39.39		
1238	6.71	9.92	605	8.32	1.2	121.5	39.40		
1240	Begin sampling								
1243	Sampling Complete, pump off								

WASTE

Contact:	6 gal.	Drum#: 10171907	Final Water Level: 39.37 ft TOC
Purge Water:	5.2 gal.	Drum#'s: 10171904	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	5.5 gal.		

142

SOP-20032 Rev. ~~1~~ 3 Compliance Checklist

Well Name: 11/20/13

Date: MCW-6

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter (Manual)	Drop Pipe: NA 3 CVs: 15.5	NA	5.18	1	Y N	Volume Calculated by filling gallon sized cont.

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,	Comments:
1228	6.71	605	8.36	1.1	NA
1233	6.71	605	8.35	1.2	
1238	6.71	605	8.32	1.2	
Calculations:	Upper: NA Lower: Difference:	Median: NA Upper: Lower:	Upper: 8.36 Lower: 8.32 Difference: 0.04	Median: <10 NTU Upper: NA Lower:	
Y N	Y N	Y N	Y N	Y N	

SOP Requirements Met?	Comments:
Y N	None

11/20/13

Los Alamos National Laboratory

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4460

EVENT NAME: Mortandad/Sandia MY2014 Q1 Watershed Sampling_Discharge Permit Sampling

SAMPLE ID: CAMO-14-45679

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		11/21/2013	FIELD MATRIX:	WG	SO
TIME COLLECTED (HH:MM):		1408	MEDIA:	UA	
PRS ID:		SR	SAMPLE TECH CODE:	UA	BP
LOCATION ID:	MCO-7		FIELD PREP:	F	SO
LOCATION TYPE:	OBS		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	NH3+NO2NO3+TKN	250 ML AMBER GLASS	1	H2SO4	Y	NA
	TDS	250 ML POLY	1	ICE		
	WSP-CL04	250 ML POLY	1	ICE		
	WSP-Fluoride	125 ML POLY	1	ICE		

SAMPLE COMMENTS: None

LOCATION COMMENTS: None

FIELD PARAMETERS:

Dissolved Oxygen 7.72 mg/L Oxidation-Reduction Potential 151.0 mV pH 6.83 SU

Specific Conductance 472 uS/cm Temperature 10.29 deg C Turbidity 15.3 NTU

COLLECTED BY (PRINT) M. Shendo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Megan Green	11/21/13 2:58	S. Sherwood Sheri Sherwood	11/21/13 2:58
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 11/04/2013

MCO-7 11/21/13

700 M. Green leads safety tailgate at TA-64
730 M. Shendo calibrates meter HQ at TA-64, see logbook.
1005 Crew on site at MCO-7. M. Shendo, M. Green
Weather: 40s, cloudy
Safety: Mortandad Road safety, weather
Objectives: purge and sample MCO-7 per SOP on page 3 using dedicated bladder pump, CO_2 and back pack controller.
LSD = 6827.31' msl TD = 71.18' bTOC
Top of Screen: 41.18' bTOC Bottom of Screen = 71.18' bTOC
1030 A. Stocker + A. Vigil on site
1032 MDTW = 43.92' bTOC
1035 MDTW = 43.92' bTOC Total Depth = 55.02' bTOC
WC = TD - MDTW = 27.26 ft
1CV = (0.367 gal/ft) WC = 10.0 gal
3 CV = = 30.0 gal
1052 Pump on at 40 PSI, see groundwater sampling log (page 145-146) for purge details, water to surface 1054. First water to surface brown, murky, cloudy.
1059 Q = .55 L/min = 0.15 gpm
1118 Q = 0.45 L/min = 0.12 gpm
Note: Total purge volume will be calculated by filling ziplock and gallon containers with waste water. Flow rate is expected to slow throughout purge.
1131 Q = 0.10 L/min = 0.03. Increase PSI to 45. 5 gallons purged
1140 Vigil departs to get early-up. Light rain is starting
1142 Q = 0.03 gpm. Time to purge 5 more gallons is 166 min.
1147 Q = 0.18 L/min = 0.05 gpm
1157 Q = 0.16 L/min = 0.04 gpm. 100 mins remain at this rate
1230 CO_2 runs out, change to nitrogen system because no spare CO_2 on site. 7.5 gallons purged
1307 Pump on with nitrogen system at 50 PSI
1305 A. Vigil on site
1310 Q = 0.6 L/min = 0.16 gpm
1321 3 CVs purged. Turbidity not stable
1351 Flow through cell cleaned of sediment
1403 A. Vigil, A. Stocker off site

Page E-245 of 273

144

MCO-7 Continued 11/21/13

1408 SOP requirements for sampling met, see SOP compliance checklist (page 147)
1408 Begin Sampling.
1415 Sampling Complete, pump off
1417 M. Shade preserves, M. Green QAS
1430 off site
1500 Relinquish Samples at SMO. Event ID. 4460.
Sample IDs: CAMO-1445677.
Summary: MCO-7 Successfully Sampled. Purge rate very slow, pump probably needs replacing.

11/21/13

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: 6827.31 ft. msl	Well Diameter: 3 inches	Date: 11/21/13
Watershed: Mortandad	Water Level: ft. msl	Top of Screen: 41-18 ft. BTOC	Notes:
Well: MCO-7	*TD: 71.18' BTOC	Bottom of Screen: 71.18 ft. BTOC	page 1 of 2
Sampling Device: BP	*DTW: 43.92' BTOC	Water Column: 27.26 ft.	
Measuring Point: +2.18'	Drop Pipe: NA gal.	1CV: 10.0 gal.	Packer Pressure
* Completion Depth: TD		3CV: 30.0 gal.	Before: NA psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: psi
			Opening: psi
DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: psi

TIME MST/DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. BTOC	Discharge Rate (GPM)	NOTES
Stability	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1052	Pump on		1054 Water to surface						
1057	7.27	10.44	456	8.15	91.1	-40.7	45.03	0.15	very silty, brown
1107	6.84	10.24	427	8.13	76.6	162.2	46.27	↓	↓
1117	6.78	10.23	448	8.15	189.3	162.7	47.45	0.12	more turbid, brown
1127	6.75	10.22	459	7.96	409.3	162.5	47.77	↓	dark cloudy
1137	6.74	10.24	460	7.92	399.6	161.9	47.73	0.03	cloudy, milky, silty
1147	6.75	10.30	462	7.83	296.5	106.7	47.61	0.05	↓
1157	6.76	10.34	465	6.76	159.7	159.7	47.55	↓	↓
1207	6.78	10.44	469	7.59	36.7	156.8	47.57	↓	less cloudy
~~1257~~ 1307	6.81	10.28	470	7.67	29.0	153.7	46.71	0.16	slightly cloudy
1312	6.80	10.36	471	7.62	32.7	153.8	47.41	0.11	↓
1317	6.80	10.35	472	7.64	65.9	153.4	47.62	0.07	cloudy
1321	~~3 hrs~~	1CV	purged, turbidity not stable					↓	↓
1322	6.81	10.36	473	7.64	84.1	153.1	47.61	↓	↓
1327	6.81	10.35	472	7.66	103.5	152.9	47.56	↓	↓
1332	6.81	10.34	471	7.65	96.9	152.6	47.58	↓	↓

WASTE

Contact:	gal.	Drum#:	Final Water Level:
Purge Water:	gal.	Drum#'s: see page 2	*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	gal.		

146

Groundwater Sampling Log

Project: IFWGMP MY2013	LSD: ft. msl	Well Diameter: inches	Date:
Watershed:	Water Level: ft. msl	Top of Screen: ft.	Notes: Page 2 of 2
Well:	*TD:	Bottom of Screen: ft.	
Sampling Device:	*DTW:	Water Column: ft.	
Measuring Point:	Drop Pipe: gal.	1CV: gal.	Packer Pressure
* Completion Depth:		3CV: gal.	Before: psi
[* ft. BTOC / BTIC / BGS / MSL]	Note height of TOC/TIC on MP for Alluvials		Actuation: psi
			Opening: psi
DTW = (LSD - Water Level). .Water Column = (TD - DTW). .Drop Pipe = (DTW x Drop Pipe Diameter Multiplier) 1CV = (Water Column x Well Diameter Multiplier)..... 3 CV = (1CV x 3)			After: psi

TIME MST/ DST	pH SU	TEMP °C	SPEC COND µs/cm	DO mg/l	Turb NTU	ORP mV	Water Level* ft. FBTOC	Discharge Rate (GPM)	NOTES
Stability:	≤ 0.2 STU variance		± 3% (>100) ± 5% (≤100)	≤ 0.2 mg/l variance	<10 or ± 10%				
1337	6.81	10.31	471	7.67	81.7	152.4	47.51	0.05	cloudy
1342	6.81	10.32	470	7.67	56.5	152.2	47.53	↓	↓
1347	6.82	10.30	470	7.66	40.3	152.1	47.50	↓	↓
1349	Pump pause to clean sediment out of flowthrough cell								
1351	Pump on								
~~1357~~	~~7.6~~	~~Turb~~							
1357	6.85	10.30	471	7.72	17.3	151.4	47.61	0.04	Cloudy
1402	6.83	10.28	471	7.69	16.7	151.2	47.54	↓	↓
1407	6.83	10.29	472	7.68	15.3	151.0	47.54	↓	↓
1408	Begin Sampling								
1415	Sampling Complete, pump off								

11/21/13

WASTE				
Contact:	1/2 gal.	Drum#: 10171907		Final Water Level: 47.55 BTOC
Purge Water:	12.5 gal.	Drum#'s: 10171904		*Purge: Formation water purged prior to sampling (excluding drop pipe water and sampling water)
Total Waste Water:	13.0 gal.			

147

SOP-20032 Rev. 1 Compliance Checklist

Well Name: MC07

Date: 11/20/13

Discharge calculation method	Calculated volumes (gal):	Drop pipe volume purged (gal)	Purge water volume purged (gal)	CV's Purged before sampling	Minimum Purge Met?	Comments:
Flow Meter	Drop Pipe: NA	NA	12.5	1.25	(Y) N	None
Manual	3 CVs: 10					

Parameters collected at proper intervals? (HH:MM)	Stable for three consecutive readings? pH ≤ 0.2 STU variance	Specific Conduct. ± 3% (>100) ± 5% (≤100)	Dissolved Oxygen ≤ 0.2 mg/l variance	Turbidity <10 NTU or ± 10%,
1357	6.85	471	7.72	17.3
1402	6.83	471	7.69	16.7
1407	6.83	472	7.68	15.3
Calculations:	Upper: 6.85	Median: 471	Upper: 7.72	Median: 16.7
	Lower: 6.83	Upper: 485	Lower: 7.68	Upper: 18.4
	Difference: 0.02	Lower: 457	Difference: 0.04	Lower: 15.0
(Y) N	(Y) N	(Y) N	(Y) N	(Y) N

Comments: Extra volume purged to allow turbidity to stabilize. Sediment settled on bottom of flow through cell and had to be cleaned in order to get accurate turb. reading

SOP Requirements Met?	Comments:
(Y) N	See above

Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☒ Waste Management (WM)

DATE/TIME: 11/27/2013 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew A. Vigil, M. Shendo
	11/27/2013 A.V.		
sites	sites	sites	sites Mode for watershed Pajarito

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
PPE
Stay warm

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☐ WM ☐ WL ☐ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☒ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
11/27/2013 A.V.

☒ Emergency Communications/Access Control
☒ Point-of-Contact Roy B
☒ Fire Danger Status Low
☒ Weather 40° cold
☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Mechanical/Winches/Tools
☒ Biological/Environmental Hazards

☒ Vehicle Safety Inspection
☒ 360° Walk Around
☒ Vehicle Operations
☒ Distracted Driving
No cell phone or 2-way radio use while driving
☒ Towing
☒ Spotter
☐ Generators, Electrical N/A

☐ Pressure Systems/Nitrogen Tank Transport N/A
☐ Sample Collection N/A
☒ Personal Protective Equipment (PPE)
☒ TA-64, TA-59
☒ Fire Extinguishers
☒ First Aid Kit & Blood Borne Pathogen Kit
☒ Unplanned or Abnormal Events
☒ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: Andrew Vigil	[signature]	096532
Maurice Shendo	[signature]	169197

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 11/26/13

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew A. Vigil, M. Sisneros
sites	sites 11/26/13	sites	sites Land Apps mode for pajarito

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
• icy walkways + roads

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☐ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☑ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☑ Emergency Communications/Access Control
☑ Point-of-Contact R. Bohn
☑ Fire Danger Status Moderate
☑ Weather 20s - 30s + clear
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☑ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☑ Towing
☑ Spotter
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☑ TA-64, TA-59
☑ Fire Extinguishers
☑ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☑ Additional Safety Topics Cancer

Name (*print*)	Signature	Z Number
Meeting Conducted By: Andrew Stocker	[signature]	238905
Andrew Vigil	[signature]	096552
Maurice Sisneros	[signature]	169197
David Fellenz	[signature]	272463

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 11/25/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew A. Stacke, A. Vigil, D. Fellenz, M. Shendo
sites	sites 11/25/13	sites	sites land app waste consolidation

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- icy roads
- slips, trips, falls
- Delce to be Nice

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☐ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☑ Emergency Communications/Access Control
☑ Point-of-Contact T. McFarland
☑ Fire Danger Status Moderate
☑ Weather 20s-30s, overcast
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☑ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☑ Towing
☑ Spotter
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☑ TA-64, TA-59
☑ Fire Extinguishers
☑ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☑ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: Andrew Stacke		238905
David Fellenz		272463
Tracy McFarland		113022
ANDREW VIGIL		096552
Maurice Shendo		169197

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Watershed/ Monitoring Group/or Dates Included: Production Wells

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☐ Waste Management (WM)

DATE/TIME: 11/21/13 0600

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew M. Green, A. Vigil	crew
		M. Shendo	
sites MS 11/21/13	sites MS 11/21/13	sites MCO-7	sites

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Pete Padilla
- warm clothes

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☐ WM ☐ WL ☒ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
- LA County wells
D. Fellenz, A. Stocker

☑ Emergency Communications/Access Control
☑ Point-of-Contact T. McFarland
☑ Fire Danger Status Moderate
☑ Weather 40's, Wind, Possible Rain/Snow
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☑ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☑ Towing
☑ Spotter
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☑ TA-64, TA-59
☑ Fire Extinguishers
☑ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☑ Additional Safety Topics Darkness

Name (*print*)	Signature	Z Number
Meeting Conducted By: David Fellenz		272463
Andrew Stocker		238905
Megan Green		74423
Maurice Shendo		169197
ANDREW VIGIL		096552

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Watershed/ Monitoring Group/or Dates Included: Production Wells

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☐ Waste Management (WM)

DATE/TIME: 11/20/13 0500

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew M. Gruen, A. Vigil,	crew
		M. Shanto	
sites	sites	sites MCO-4B, MCO-6	sites

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Darkness
- Slipry / Icy

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☐ WM ☐ WL ☒ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
LA County Wells
↳ D. Fellenz, A. Stocker

☑ Emergency Communications/Access Control
☑ Point-of-Contact T. McFarland
☑ Fire Danger Status Moderate
☑ Weather 40's, calm
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☑ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☑ Towing
☑ Spotter
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☑ TA-64, TA-59
☑ Fire Extinguishers
☑ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☑ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: David Fellenz	[signature]	272463
Andrew Stocker	[signature]	238905
Megan Gruen	[signature]	240423
Maurice Stevens	[signature]	169197
Andrew Vigil	[signature]	096552

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Watershed/ Monitoring Group/or Dates Included: Mort / Sandia

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☒ Samplers (S) ☐ Water Level (WL)
☐ Waste Management (WM)

DATE/TIME: 11/19/13

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew R-4351, R-4352	crew MG4B, SCI-II	crew	crew A. Vigil
sites M. Green, D. Fellenz	sites A. Stacker, M. Shendo	sites	sites land app workers with LANL

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
— Prep for County wells (5:30 at O-1)
— Food poisoning - be careful what you eat —

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☒ WM ☐ WL ☒ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:

☒ Emergency Communications/Access Control
☒ Point-of-Contact T. McFarland
☒ Fire Danger Status Moderate
☒ Weather 40s-50s
☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Mechanical/Winches/Tools
☒ Biological/Environmental Hazards

☒ Vehicle Safety Inspection
☒ 360° Walk Around
☒ Vehicle Operations
☒ Distracted Driving
No cell phone or 2-way radio use while driving
☐ Towing
☒ Spotter
☒ Generators, Electrical

☒ Pressure Systems/Nitrogen Tank Transport
☒ Sample Collection
☒ Personal Protective Equipment (PPE)
☒ TA-64, TA-59
☒ Fire Extinguishers
☒ First Aid Kit & Blood Borne Pathogen Kit
☒ Unplanned or Abnormal Events
☒ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: Meagan Green		240423
David Fellenz		272463
Andrew Stacker		238908
ANDREW VIGIL		096552
Tracy McFarland		11302

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Watershed/ Monitoring Group/or Dates Included: Mort/Sandia

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☒ Samplers (S) ☐ Water Level (WL)
☐ Waste Management (WM)

DATE/TIME: 11/18/13 700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew Stephen, Green	crew	crew	crew
Shendo			
sites R-46, R-1	sites ~~SCI 1~~ 11/18/13	sites	sites

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Careful Mortandad Road

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☐ WM ☐ WL ☒ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:

☒ Emergency Communications/Access Control
☒ Point-of-Contact T. McFarland
☒ Fire Danger Status Moderate
☒ Weather 50's sunny
☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Mechanical/Winches/Tools
☒ Biological/Environmental Hazards

☒ Vehicle Safety Inspection
☒ 360° Walk Around
☒ Vehicle Operations
☒ Distracted Driving
No cell phone or 2-way radio use while driving
☒ Towing
☒ Spotter
☒ Generators, Electrical

☒ Pressure Systems/Nitrogen Tank Transport
☒ Sample Collection
☒ Personal Protective Equipment (PPE)
☒ TA-64, TA-59
☒ Fire Extinguishers
☒ First Aid Kit & Blood Borne Pathogen Kit
☒ Unplanned or Abnormal Events
☐ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: Megan Green		241423
Andrew Stocker		238908
Tracy McFarland		113027
Maurice Shendo		169197
Kevin Reid		111640

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☒ Samplers (S) ☐ Water Level (WL)
☐ Waste Management (WM)

DATE/TIME:
11/15/2013 7:05 AM

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew A. Stocker, A. Vigil	crew	crew	crew
M. Shendo			
sites R-61 S1	sites JB 11/15/13	sites JB 11/15/13	sites JB 11/15/13

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Careful in adverse weather
- slips, trips, falls
- collapsing roof under weight of snow

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☐ WM ☐ WL ☒ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☒ Emergency Communications/Access Control
☒ Point-of-Contact T. McFarland
☒ Fire Danger Status Moderate
☒ Weather 40s-50s, T-storms + precip. in P.M.
☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Mechanical/Winches/Tools
☒ Biological/Environmental Hazards

☒ Vehicle Safety Inspection
☒ 360° Walk Around
☒ Vehicle Operations
☒ Distracted Driving
No cell phone or 2-way radio use while driving
☒ Towing
☒ Spotter
☒ Generators, Electrical

☒ Pressure Systems/Nitrogen Tank Transport
☒ Sample Collection
☒ Personal Protective Equipment (PPE)
☒ TA-64, TA-59
☒ Fire Extinguishers
☒ First Aid Kit & Blood Borne Pathogen Kit
☒ Unplanned or Abnormal Events
☒ Additional Safety Topics_____

Name (*print*)	Signature	Z Number
Meeting Conducted By: A. Stocker		238905
M. Shendo		169197
ANDREW VIGIL		096552
Tracy McFarland		113022

* This form is intended to encourage identification of potential hazards encountered during sampling activities in accordance with Attachment F10-1 of Exhibit F for the Sampling MTOA.. It is NOT intended to serve as a comprehensive list of all hazards. Further safety information can be found in applicable ISDs, SOPs, IWDs, etc.

Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☒ Samplers (S) ☐ Water Level (WL)
☐ Waste Management (WM)

DATE/TIME: 11/14/13 630

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew D. Fellenz, M. Shendo,	crew M. Green	crew	crew
A. Stacher	A. Vigil		
sites R-61 S2	sites R-60	sites	sites 11/14/13

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
Work Plans – both wells have extra sampling

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☐ WM ☐ WL ☒ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:

☒ Emergency Communications/Access Control
☒ Point-of-Contact T. McFarland
☒ Fire Danger Status Moderate
☒ Weather 40's, sunny
☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Mechanical/Winches/Tools
☒ Biological/Environmental Hazards

☒ Vehicle Safety Inspection
☒ 360° Walk Around
☒ Vehicle Operations
☒ Distracted Driving
No cell phone or 2-way radio use while driving
☒ Towing
☒ Spotter
☒ Generators, Electrical

☒ Pressure Systems/Nitrogen Tank Transport
☒ Sample Collection
☒ Personal Protective Equipment (PPE)
☒ TA-64, TA-59
☒ Fire Extinguishers
☒ First Aid Kit & Blood Borne Pathogen Kit
☒ Unplanned or Abnormal Events
☒ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: Megan Green		240423
Andrew Stacher		238208
Maurice Shendo		169197
David Fellenz		272463
ANDREW VIGIL		096552

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Watershed/ Monitoring Group/or Dates Included: Mort/Sandia

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☐ Waste Management (WM)

DATE/TIME: 11/13/13 700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew A. Stocker	crew D. Fellenz	crew	crew A. Vigil, 2 Duran
M. Shendo	M. Green		
sites R-35a	sites R-35b, R-36	sites	sites Mortandad Waste

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Hydration
- changing weather
- driving in ice & fog

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☒ WM ☐ WL ☒ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
Mobe for R-61
(battle set, calibrate, generator)

☒ Emergency Communications/Access Control
☒ Point-of-Contact T. McFarland
☒ Fire Danger Status Moderate
☒ Weather 40's, sunny
☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Mechanical/Winches/Tools
☒ Biological/Environmental Hazards

☒ Vehicle Safety Inspection
☒ 360° Walk Around
☒ Vehicle Operations
☒ Distracted Driving
No cell phone or 2-way radio use while driving
☒ Towing
☒ Spotter
☒ Generators, Electrical

☒ Pressure Systems/Nitrogen Tank Transport
☒ Sample Collection
☒ Personal Protective Equipment (PPE)
☒ TA-64, TA-59
☒ Fire Extinguishers
☒ First Aid Kit & Blood Borne Pathogen Kit
☒ Unplanned or Abnormal Events
☒ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: Megan Green		240923
Andrew Stocker		23890 S
Maurice Shendo		169197
ANDREW VIGIL		096552
Tracy McFarland		113022

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Watershed/ Monitoring Group/or Dates Included: Mort/Sandia

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☐ Waste Management (WM)

DATE/TIME: 11/12/13 7:00

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew A. Stacker,	crew D. Fellenz,	crew	crew A. Vigil,
M. Green	T. Naibert		Z. Duran
sites 50 S2, 50 S1	sites R-62	sites	sites land apps

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Elk
- sun, heat + sunscreen

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☑ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:

☑ Emergency Communications/Access Control
☑ Point-of-Contact T. McFarland
☑ Fire Danger Status Moderate
☑ Weather 40s-50s, sunny
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☑ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☑ Towing
☑ Spotter
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☐ TA-64, TA-59
☑ Fire Extinguishers
☑ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☑ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: Megan Green		240423
Andrew Stacker		238905
Travis Naibert		240425
ANDREW VIGIL		096552
Tracy McFarland		113022

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Watershed/ Monitoring Group/or Dates Included: Mort/Sandia

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☐ Waste Management (WM)

DATE/TIME:
11/8/13 700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew A. Stacker	crew D. Fellenz	crew	crew
M. Green	M. Sherdo		
sites R-13	sites MCOI-5	sites	sites

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Sunscreen
- Asteroids

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☐ WM ☐ WL ☑ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:

☑ Emergency Communications/Access Control
☑ Point-of-Contact Ray Bohn
☑ Fire Danger Status Moderate
☑ Weather 40s - 50s
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☑ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☑ Towing
☑ Spotter
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☑ TA-64, TA-59
☑ Fire Extinguishers
☑ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☑ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: Megan Green		284423
David Fellenz		272463
Andrew Stacker		238905
Maurice Sherdo		169197

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Watershed/ Monitoring Group/or Dates Included: Mort / Sandia

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☐ Waste Management (WM)

DATE/TIME: 11/7/13 700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew D. Fellenz,	crew Astacker, M. Shendo	crew	crew A. Vigil
M. Green			Z. Durham
sites R-42	sites MCO10 + R-15	sites	sites walk down w/ LANL

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- R-42 coordination with Ops

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☐ WM ☐ WL ☒ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:

☒ Emergency Communications/Access Control
☒ Point-of-Contact Roy Bohn
☒ Fire Danger Status moderate
☒ Weather 40's
☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Mechanical/Winches/Tools
☒ Biological/Environmental Hazards

☒ Vehicle Safety Inspection
☒ 360° Walk Around
☒ Vehicle Operations
☒ Distracted Driving
No cell phone or 2-way radio use while driving
☒ Towing
☒ Spotter
☒ Generators, Electrical

☒ Pressure Systems/Nitrogen Tank Transport
☒ Sample Collection
☒ Personal Protective Equipment (PPE)
☒ TA-64, TA-59
☒ Fire Extinguishers
☒ First Aid Kit & Blood Borne Pathogen Kit
☒ Unplanned or Abnormal Events
☐ Additional Safety Topics_____

Name (*print*)	Signature	Z Number
Meeting Conducted By: Megan Green		240423
David Fellenz		272463
Andrew Stacker		238905
Maurice Shendo		169197
ANDREW VIGIL		096552

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Watershed/ Monitoring Group/or Dates Included: mat/Sandia

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☒ Samplers (S) ☐ Water Level (WL)
☐ Waste Management (WM)

DATE/TIME: 11/6/13

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew A. Stocker,	crew D. Fellenz,	crew	crew
M. Gram	M. Shendo		
sites R-45 S1,	sites R-44 S1	sites	sites 11/6/13
R-45 S2	R-44 S2		

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- pressure systems,
- unattended Canyon road and water wagon traffic

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☒ WM ☐ WL ☒ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities: A. Vigil, Z. Duran Waste Activities

☒ Emergency Communications/Access Control
☒ Point-of-Contact T. McFarland
☒ Fire Danger Status Moderate
☒ Weather 30s-40s, sunny
☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Mechanical/Winches/Tools
☒ Biological/Environmental Hazards

☒ Vehicle Safety Inspection
☒ 360° Walk Around
☒ Vehicle Operations
☒ Distracted Driving
No cell phone or 2-way radio use while driving
☒ Towing
☒ Spotter
☒ Generators, Electrical

☒ Pressure Systems/Nitrogen Tank Transport
☒ Sample Collection
☒ Personal Protective Equipment (PPE)
☒ TA-64, TA-59
☒ Fire Extinguishers
☒ First Aid Kit & Blood Borne Pathogen Kit
☒ Unplanned or Abnormal Events
☒ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: Megan Gram		240420
David Fellenz		272463
Andrew Stocker		238905
Kevin Read		111641
Maurice Shendo		169197

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Watershed/ Monitoring Group/or Dates Included: Mortandad/Sandia MY2014 Q1

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☐ Waste Management (WM)

DATE/TIME:
11/5/13 700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew A. Stocker A. Vigil	crew M. Green	crew	crew
M. Shendo	D. Fellenz		
sites R-11	sites R-14	sites	sites 11/5/13

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Allergies
- Pay extra attention to routine tasks
- driving

Mortandad and Sandia Kick off

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☑ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities: ~~NA~~ A. Vigil, Z. Duran
Make for watershed

☑ Emergency Communications/Access Control
☑ Point-of-Contact I Mc Farland
☑ Fire Danger Status Moderate
☑ Weather 40s, rainy
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☑ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☑ Towing
☑ Spotter
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☑ TA-64, TA-59
☑ Fire Extinguishers
☑ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☐ Additional Safety Topics_____

Name (*print*)	Signature	Z Number
Meeting Conducted By: Meyan Green		240123
Kevin Read	Kevin Read	111640
Maurice Shendo		169197
David Fellenz		272463
Andrew Stocker		238905

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☒ Waste Management (WM)

DATE/TIME: 11/4/13

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew
sites	sites	sites	sites

11/4/13

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
Slow restart

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☐ WM ☐ WL ☐ S Mortandad/ Sandia
☐ WM ☒ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities: R-25 reinstall, land apps

☒ Emergency Communications/Access Control
☒ Point-of-Contact T. McFarland
☒ Fire Danger Status moderate
☒ Weather 50s, sunny
☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Mechanical/Winches/Tools
☒ Biological/Environmental Hazards

☒ Vehicle Safety Inspection
☒ 360° Walk Around
☒ Vehicle Operations
☒ Distracted Driving
No cell phone or 2-way radio use while driving
☒ Towing
☒ Spotter
☒ Generators, Electrical

☒ Pressure Systems/Nitrogen Tank Transport
☒ Sample Collection
☒ Personal Protective Equipment (PPE)
☒ TA-64, TA-59
☒ Fire Extinguishers
☒ First Aid Kit & Blood Borne Pathogen Kit
☒ Unplanned or Abnormal Events
☒ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: Meagan Green		240423
Andrew Stocke		238905
David Fellenz		272463
Andrew Vega		096552

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☑ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 11/1/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew A. Stocker, M. Shundo
sites	sites AS 11/1/13	sites	sites PO1-4, R-26PZ2 CAND APS

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- careful driving
- lift carefully, good form

WATERSHED:
☑ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☐ S Mortandad/ Sandia
☑ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☑ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☑ Emergency Communications/Access Control
☑ Point-of-Contact T.M. Ferland
☑ Fire Danger Status Moderate
☑ Weather 40s-50s, clear
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☑ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☑ Towing
☑ Spotter
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☑ TA-64, TA-59
☑ Fire Extinguishers
☑ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☑ Additional Safety Topics

Name (print)	Signature	Z Number
Meeting Conducted By: Andrew Stocker	Andrew Stocker	238905
Maurice Shundo	Maurice Shundo	169997
Tracy McFarland	Tracy McFarland	113022

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Watershed/ Monitoring Group/or Dates Included: CdV Q4

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
- ☐ Samplers (S) ☑ Water Level (WL)
- ☐ Waste Management (WM)

DATE/TIME: 10/31/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew D. Fellenz, J. Romero	crew A. Stocker + M. Stenko
		T. Naibert, W. Shaw	
sites DF	sites 10/31/13	sites R-25 Transducer Instal	sites LAND App > R-3, R-3:, Pol-4

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Icy
  ↳ If it needs it, spread it!
- Don't eat candy with out checking it first!

WATERSHED:
- ☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
- ☐ WM ☐ WL ☐ S Mortandad/ Sandia
- ☐ WM ☑ WL ☐ S Water/ Cañon de Valle
- ☐ WM ☐ WL ☐ S Ancho
- ☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
- ☐ WM ☐ WL ☐ S White Rock

Other Activities: DF 10/31/13

- ☑ Emergency Communications/Access Control
- ☑ Point-of-Contact T. McFarland
- ☑ Fire Danger Status Moderate
- ☑ Weather 40's, Sunny, Windy (?)
- ☑ Slips/Trips/Falls/Lifting
- ☑ Pinch Points/Crushing
- ☑ Mechanical/Winches/Tools
- ☑ Biological/Environmental Hazards

- ☑ Vehicle Safety Inspection
- ☑ 360° Walk Around
- ☑ Vehicle Operations
- ☑ Distracted Driving
  No cell phone or 2-way radio use while driving
- ☑ Towing
- ☑ Spotter
- ☑ Generators, Electrical

- ☑ Pressure Systems/Nitrogen Tank Transport
- ☑ Sample Collection
- ☑ Personal Protective Equipment (PPE)
- ☑ TA-64, TA-59
- ☑ Fire Extinguishers
- ☑ First Aid Kit & Blood Borne Pathogen Kit
- ☑ Unplanned or Abnormal Events
- ☑ Additional Safety Topics Ice

Name (*print*)	Signature	Z Number
Meeting Conducted By: David Fellenz	[signature]	272463
Travis Naibert	[signature]	240425
Jonathan Romero	[signature]	176877
Tracy McFarland	[signature]	113027
William Shaw	[signature]	234056

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☒ Waste Management (WM)

DATE/TIME: 10/30/2013 1300 PM

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew A.Vigil, M.Shendo
	10/30/2013 A.V.		J. Romero
sites	sites	sites	sites Land Application
			LA, Pueblo

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
Weather – Cold, stay warm
Road Conditions –

WATERSHED:
☒ WM ☐ WL ☐ S Los Alamos/ Pueblo
☐ WM ☐ WL ☐ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
10/30/2013 A.V.

☒ Emergency Communications/Access Control
☒ Point-of-Contact T. McFarlana
☒ Fire Danger Status Moderate
☒ Weather 60° Clouds
☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Mechanical/Winches/Tools
☒ Biological/Environmental Hazards

☒ Vehicle Safety Inspection
☒ 360° Walk Around
☒ Vehicle Operations
☒ Distracted Driving
No cell phone or 2-way radio use while driving
☒ Towing
☒ Spotter
☐ Generators, Electrical N/A

☒ Pressure Systems/Nitrogen Tank Transport
☒ Sample Collection N/A
☒ Personal Protective Equipment (PPE)
☒ TA-64, TA-59
☒ Fire Extinguishers
☒ First Aid Kit & Blood Borne Pathogen Kit
☒ Unplanned or Abnormal Events
☒ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: Andrew Vigil	[signature]	096552
Jonathan Romero	[signature]	176877
Maurice Shendo	[signature]	169197

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Watershed/ Monitoring Group/or Dates Included: Water / CdV Q4 MY2013

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
- ☐ Samplers (S) ☑ Water Level (WL)
- ☐ Waste Management (WM)

DATE/TIME: 10/1/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew D. Fellenz, M. Shendo	crew
		A. Vigil	
sites	sites	sites R-25 YD	sites
		Install	

DF 10/1/13

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Do your 360° walk around
- Stay hydrated even as temps decrease
- Even though the Governments shut down, don't shut down your brain

WATERSHED:
- ☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
- ☐ WM ☐ WL ☐ S Mortandad/ Sandia
- ☐ WM ☑ WL ☐ S Water/ Cañon de Valle
- ☐ WM ☐ WL ☐ S Ancho
- ☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
- ☐ WM ☐ WL ☐ S White Rock

Other Activities:

DF 10/1/13

- ☑ Emergency Communications/Access Control
- ☑ Point-of-Contact R. Bohn
- ☑ Fire Danger Status Moderate
- ☑ Weather 70's, Sunny
- ☑ Slips/Trips/Falls/Lifting
- ☑ Pinch Points/Crushing
- ☑ Mechanical/Winches/Tools
- ☑ Biological/Environmental Hazards

- ☑ Vehicle Safety Inspection
- ☑ 360° Walk Around
- ☑ Vehicle Operations
- ☑ Distracted Driving
  No cell phone or 2-way radio use while driving
- ☑ Towing
- ☑ Spotter
- ☑ Generators, Electrical

- ☑ Pressure Systems/Nitrogen Tank Transport
- ☑ Sample Collection
- ☑ Personal Protective Equipment (PPE)
- ☑ TA-64, TA-59
- ☑ Fire Extinguishers
- ☑ First Aid Kit & Blood Borne Pathogen Kit
- ☑ Unplanned or Abnormal Events
- ☑ Additional Safety Topics PPE

Name (*print*)	Signature	Z Number
Meeting Conducted By: David Fellenz	[signature]	272463
Andrew Vigil	[signature]	096552
Maurice Shendo	[signature]	169197

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☒ Waste Management (WM)

DATE/TIME: 9/30/2013 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew A. VIGIL, M. SHENDO
	9/30/2013 A.V.		
sites	sites	sites	sites LAND APPLICATION

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
Cold weather, stay warm

WATERSHED:
☒ WM ☐ WL ☐ S Los Alamos/ Pueblo
☒ WM ☐ WL ☐ S Mortandad/ Sandia
☒ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☒ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
9/30/2013 A.V

☒ Emergency Communications/Access Control
☒ Point-of-Contact T. Mc Farland
☒ Fire Danger Status moderate
☒ Weather 70°
☒ Slips/Trips/Falls/Lifting
☒ Pinch Points/Crushing
☒ Mechanical/Winches/Tools
☒ Biological/Environmental Hazards

☒ Vehicle Safety Inspection
☒ 360° Walk Around
☒ Vehicle Operations
☒ Distracted Driving
No cell phone or 2-way radio use while driving
☒ Towing
☒ Spotter
☐ Generators, Electrical N/A

☐ Pressure Systems/Nitrogen Tank Transport N/A
☐ Sample Collection N/A
☒ Personal Protective Equipment (PPE)
☒ TA-64, TA-59
☒ Fire Extinguishers
☒ First Aid Kit & Blood Borne Pathogen Kit
☐ Unplanned or Abnormal Events
☒ Additional Safety Topics

Name (*print*)	Signature	Z Number
Meeting Conducted By: ANDREW VIGIL	[signature]	096552
Maurice Shendo	[signature]	169197

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 9/26/13 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew A. Stoke, A. Vigil
sites	sites 9/26/13	sites	sites Lead opps @ R-10, R-10a, R-34, stormwater waste organization

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
• Careful driving

WATERSHED:
☐ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☐ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
None

☑ Emergency Communications/Access Control
☑ Point-of-Contact T. McFarland
☑ Fire Danger Status Moderate
☑ Weather 50-60, possible T-storms
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☑ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☑ Towing
☑ Spotter
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☑ TA-64, TA-59
☑ Fire Extinguishers
☑ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☑ Additional Safety Topics_____

Name (print)	Signature	Z Number
Meeting Conducted By: Andrew Stoke		238905
ANDREW VIGIL		096552

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 9/25/2013 0730

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew A. Stocker, A. Vigil
sites	sites AS 9/25/13	sites	sites Mortandad inspect + decrease, hike to see Lower pueblo

WATERSHED:
☑ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☐ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
• pd ready for stormwater + sign mesa well

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
• careful hiking
- slips, trips, falls
• pay attention

☑ Emergency Communications/Access Control
☑ Point-of-Contact T. McFarland
☑ Fire Danger Status Moderate
☑ Weather 60s-70s, clear
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☑ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☑ Towing
☑ Spotter
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☑ TA-64, TA-59
☑ Fire Extinguishers
☑ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☑ Additional Safety Topics_____

Name (*print*)	Signature	Z Number
Meeting Conducted By: Andrew Stocker	[signature]	238905
Tracy McFarland	Tracy McFarland	113022
ANDREW VIGIL	[signature]	096552

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Watershed/ Monitoring Group/or Dates Included:

Daily Tailgate Safety Form

PROJECT: MTOA T.O. 11; #63485-000-10
ACTIVITY DESCRIPTION: Groundwater Sampling and Site-wide Monitoring Support

FIELD TEAMS:
☐ Samplers (S) ☐ Water Level (WL)
☑ Waste Management (WM)

DATE/TIME: 9/24/2013 0700

DAILY ACTIVITIES:

Intermediate/Regional	Intermediate/Regional	Alluvial/ Water Level	Waste Management
crew	crew	crew	crew A. Vigil + A. Stocke
sites	sites DS 9/24/13	sites	sites LA/Pueblo, Mortandad, Sandia waste site inventory

SPECIAL SAFETY TOPIC OF DAY and/or COMMENTS:
- Road conditions

WATERSHED:
☑ WM ☐ WL ☐ S Los Alamos/ Pueblo
☑ WM ☐ WL ☐ S Mortandad/ Sandia
☐ WM ☐ WL ☐ S Water/ Cañon de Valle
☐ WM ☐ WL ☐ S Ancho
☐ WM ☐ WL ☐ S Pajarito/ Potrillo/ Fence
☐ WM ☐ WL ☐ S White Rock

Other Activities:
NONE

☑ Emergency Communications/Access Control
☑ Point-of-Contact T.M. Farland
☑ Fire Danger Status Moderate
☐ Weather 60-70s, clear
☑ Slips/Trips/Falls/Lifting
☑ Pinch Points/Crushing
☑ Mechanical/Winches/Tools
☐ Biological/Environmental Hazards

☑ Vehicle Safety Inspection
☑ 360° Walk Around
☑ Vehicle Operations
☑ Distracted Driving
No cell phone or 2-way radio use while driving
☐ Towing
☑ Spotter
☑ Generators, Electrical

☑ Pressure Systems/Nitrogen Tank Transport
☑ Sample Collection
☑ Personal Protective Equipment (PPE)
☑ TA-64, TA-59
☑ Fire Extinguishers
☐ First Aid Kit & Blood Borne Pathogen Kit
☑ Unplanned or Abnormal Events
☑ Additional Safety Topics

	Name (*print*)	Signature	Z Number
Meeting Conducted By:	Andrew Stocke		238905
	ANDREW VIGIL		096552

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Appendix D

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10/31/13
R0

Sampling Work Plan for Mortandad/Sandia Q1 MY2014
(Chromium Investigation, MDA C, and General Surveillance Monitoring)
November, 2013

General Guidance: Long-term pumping tests are being conducted at R-28 and SCI-2, and water levels in nearby-wells are being closely monitored to assess pumping influence. Exact measurement of "pump on" and "pump off" times and pumping rates is very important during this campaign to facilitate proper interpretation of the aquifer test data. Note the exact times and pumping rates on the Groundwater Sampling Logs.

TPH-DRO Samples: Samples for TPH-DRO analyses should be collected at 1 CV + DP from R-60, R-61 S1, and R-61 S2.

Additional Well-Specific Guidance

R-28: Excluded from sampling campaign due to ongoing aquifer testing
SCI-2: Excluded from sampling campaign due to ongoing aquifer testing

R-61 S1 and S2: Conduct a 12-CV extended purge on both screens, sampling for the analytes listed in Table 1. The Interim Plan samples for offsite analysis should be collected at 6 CVs (regardless of stability). Monitor field parameters throughout the purge per the Groundwater Sampling SOP. Time-series non-Interim Plan samples should be coded with SAMPLE TYPE "W" and SAMPLE USAGE CODE "TEST".

Table 1. Analytes and frequency intervals for the R-61 S1 and S2 Extended Purges

Suite	Field Prep	Lab	1 CV	3 CVs	6 CVs	9 CVs	12 CVs
Anions	F	GGRL	—	X	X	X	X
Alkalinity/pH	NF	GGRL	—	X	X	X	X
Metals	F	GGRL	—	X	X	X	X
TOC	NF	GGRL	—	X	X	X	X
TPH-DRO	NF	GEL	X	—	—	—	—
Interim Plan Sample	F / NF	GEL	—	—	X	—	—

R-50 S2: Purge R-50 S2 at approximately 1.5 gpm to prevent pump problems.

R-62: Pump at 2 to 2.5 gpm or the maximum possible flow rate that maintains the water level above the top of the screen. Do not vary the pumping rate during the purge and sampling event, if possible.

Fw: QA/QC for low-level VOCs/SVOCs
Pattie Baucom to: Megan Green 10/31/2013 04:19 PM

Pattie C. Baucom
Geologist
TerranearPMC
505-663-7114 (office)
pbaucom@terranearpmc.com
----- Forwarded by Pattie Baucom/PMC on 10/31/2013 04:18 PM -----

From: "Goering, Tim J" <goering@lanl.gov>
To: "Baucom, Pattie C" <pbaucom@terranearpmc.com>
Cc: "Greene, Keith R" <kgreene@lanl.gov>, "McFarland, Tracy L" <tlmcf@lanl.gov>, "Reid, Kevin D" <kreid@terranearpmc.com>
Date: 10/30/2013 03:58 PM
Subject: RE: QA/QC for low-level VOCs/SVOCs

Pattie,

We've spoke with Keith regarding the QA/QC requirements for the low-level VOCs and SVOCs, and he may have additional information for you when you are preparing the paperwork. Please make sure that the well selected for the field-duplicates include the low-level VOCs /SVOCs, so we can collect duplicate data for these analytes. Also, the trip blanks will require extra volumes to ensure we can run the blanks on the low-level VOCs (we will need trip blanks for regular VOAs,low-level VOAs, and method 8011 samples). Keith should be able to help you out on this issue.

Tim

From: PBaucom@TerranearPMC.com [mailto:PBaucom@TerranearPMC.com]
Sent: Wednesday, October 30, 2013 3:03 PM
To: Goering, Tim J
Subject: Re: QA/QC for low-level VOCs/SVOCs

Thank you for the clarification.

Sent from my BlackBerry 10 smartphone on the Verizon Wireless 4G LTE network.

From: Goering, Tim J
Sent: Wednesday, October 30, 2013 2:49 PM
To: Baucom, Pattie C
Cc: McFarland, Tracy L; Rogers, David B
Subject: QA/QC for low-level VOCs/SVOCs

Pattie,

We will require full QC for the low-MDL VOCs and SVOCs analyses (treat them as you would any other organic analyte). Please follow the requirements of Appendix D in the MY2014 Interim Plan regarding

QA/QC for these analytes.
Thanks.

Tim

From: McFarland, Tracy L
Sent: Tuesday, October 29, 2013 3:23 PM
To: Goering, Tim J
Subject: FW: low-level VOCs/SVOCs
Importance: High

From:PBaucom@TerranearPMC.com [mailto:PBaucom@TerranearPMC.com]
Sent: Tuesday, October 29, 2013 1:23 PM
To: McFarland, Tracy L
Cc: Greene, Keith R; Reid, Kevin D
Subject: low-level VOCs/SVOCs

Hi Tracy,

During the sample planning meeting for MY2014 Q1 WRC, we briefly discussed how to handle QAQC samples for locations where low-MDL VOCs/SVOCs are requested. The Low-MDL VOCs/SVOCs were later removed from the MY2014 Q1 WRC sampling plan. However, these analysis are included in the MY2014 Q1 Mortandad/Sandia sampling plan so I have the same questions. Specifically, is it LANL's intention to included analysis of Low-MDL VOCs and SVOCs in the associated FTBs, FBs, FD, and PEBs for these locations. Please let me know as soon as you can.

Thank you.
Pattie

Pattie C. Baucom
Geologist
TerranearPMC
505-663-7114 (office)
pbaucom@terranearpmc.com

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Appendix L

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MORTANDAD.SANDIA Q1 2014—WASTE SUMMARY

Location Name	Sample Date	Contact Waste	Purge Water	Decon Water
CDBO-6	.	.	.	.
MCO-3	.	.	.	.
MCO-4B	11/20/2013	3	3	.
MCO-6	11/20/2013	6	5.5	.
MCO-7	11/21/2013	0.5	13	.
MCOI-5	117/2013	1	53	.
MCOI-6	11/7/2013	0.5	175	.
R-1	11/18/2013	0.5	220	.
R-11	11/5/2013	0.5	190	.
R-13	11/7/2013	0.5	510	.
R-14	11/5/2013	0.5	300	.
R-15	11/8/2013	1	370	.
R-28	.	.	.	.
R-34	.	.	.	.
R-35a	11/13/2013	0.5	794	.
R-35b	11/13/2013	5	250	.
R-36	11/13/2013	0.5	170	.
R-42	11/7/2013	1	437	.
R-43 S1	11/19/2013	0.5	300	.
R-43 S2	11/19/2013	0.5	90	.
R-44 S1	11/6/2013	0.5	251.6	.
R-44 S2	116/2013	0.5	383	.
R-45 S1	11/6/2013	0.5	220	.
R-45 S2	11/6/2013	0.5	320	.
R-46	11/18/2013	0.5	230	.
R-50 S1	11/12/2013	0.5	220	.
R-50 S2	11/12/2013	0.5	360	.
R-60	11/14/2013	0.5	200	.
R-61 S1	11/15/2013	1.5	775	.
R-61 S2	11/14/2013	1	1090	.
R-62	11/12/2013	0.5	200	.
SCI-1	11/19/2013	0.5	50.5	.
SCI-2	.	.	.	.
	Totals	**29.5**	**8180.6**	**0**

*All volumes are given in gallons