

Office of Environmental Management – Grand Junction



Moab UMTRA Project
January 2009 Validation Data Package
for the Site Wide Ground Water
Sampling Event

April 2009



U.S. Department
of Energy

Office of Environmental Management

**Moab UMTRA Project
January 2009 Validation Data Package for
the Site Wide Ground Water Sampling Event**

April 2009

**Moab UMTRA Project
January 2009 Site Wide Ground Water Sampling Event VDP**

Revision 0

Review and Approval

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4/29/09

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Revision No.	Date	Reason/Basis for Revision
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Attachment

Attachment 1. January 2009 Site Wide Sampling Trip Report	
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Acronyms and Abbreviations

COC	chain of custody
EB	equipment blank
EDD	electronic data deliverable
EPA	Environment Protection Agency
ft	feet
IDL	instrument detection limit
LCS	laboratory control sample
mg/L	milligrams per liter
MS	matrix spike
MSD	matrix spike duplicate
RDL	required detection limit
RIN	report identification number
RPD	relative percent difference
RS	replicate sample
SD	serial dilution
SDG	sample data group
UMTRA	Uranium Mill Tailings Remedial Action
USGS	U.S. Geological Survey
VDP	validation data package

1.0 Introduction

The purpose of this document is to summarize the results of the data validation process associated with ground water and/or surface water samples collected from the Moab Uranium Mill Tailings Remedial Action (UMTRA) site. This data validation follows the criteria according to the *Environmental Procedures Catalog*, “Standard Practice for Validation of Laboratory Data,” GT-9(P) (2006).

As part of the scope of this document, the complete results of this data validation process are provided. Section 1 presents the Summary Criteria, Sampling Event Summary, and Sampling and Analyses. Section 2 provides the Data Assessment Summaries, including the Field Activity Verification, Laboratory Performance Assessment, Field Analyses/Activities, and Certification. All flagged data, and the reasons for the applicable flags, are also presented in Section 2. The Data Presentation is contained in Section 3, which includes a summary of the anomalous data generated by the validation process. Various appendices contain the Water Quality Data, Water Level Data, the Minimums and Maximums Report tables, and the Blanks Report. Attachment 1 contains the trip report. All Colorado River flow discussed in this document are measured from the U.S. Geological Survey (USGS) Cisco gaging station No. 09180500.

This section contains the Summary Criteria with a sample location map (Section 1.1), the Sampling Event Summary (Section 1.2), and the Sampling and Analyses (Section 1.3) for the January 2009 site wide sampling event.

1.1 Summary Criteria

Sampling Period: January 7 through 23, 2009

The purpose of this sampling was to collect ground water samples from a variety of locations across the site in order to update contaminant plume maps. In some instances, these locations have not been sampled since 2002. Sampling locations are shown on Figure 1.

1. As a result of this sampling event, is there any indication of anomalous data that may be related to well field pump rate changes, river flow, or other known causes?

No.

2. Were all interim action well field pumps operating within the planned parameters?

Yes. The well field was shut down during the majority of the time this event occurred due to the upgrade of the plumbing inside the Configurations 1, 3, and 4 vaults.

3. Was the evaporation pond functioning properly?

Yes. The evaporation pond level was approximately 6.0 feet (ft) during this event and did not fluctuate due to the shut down of the well field and the sprinkler system.

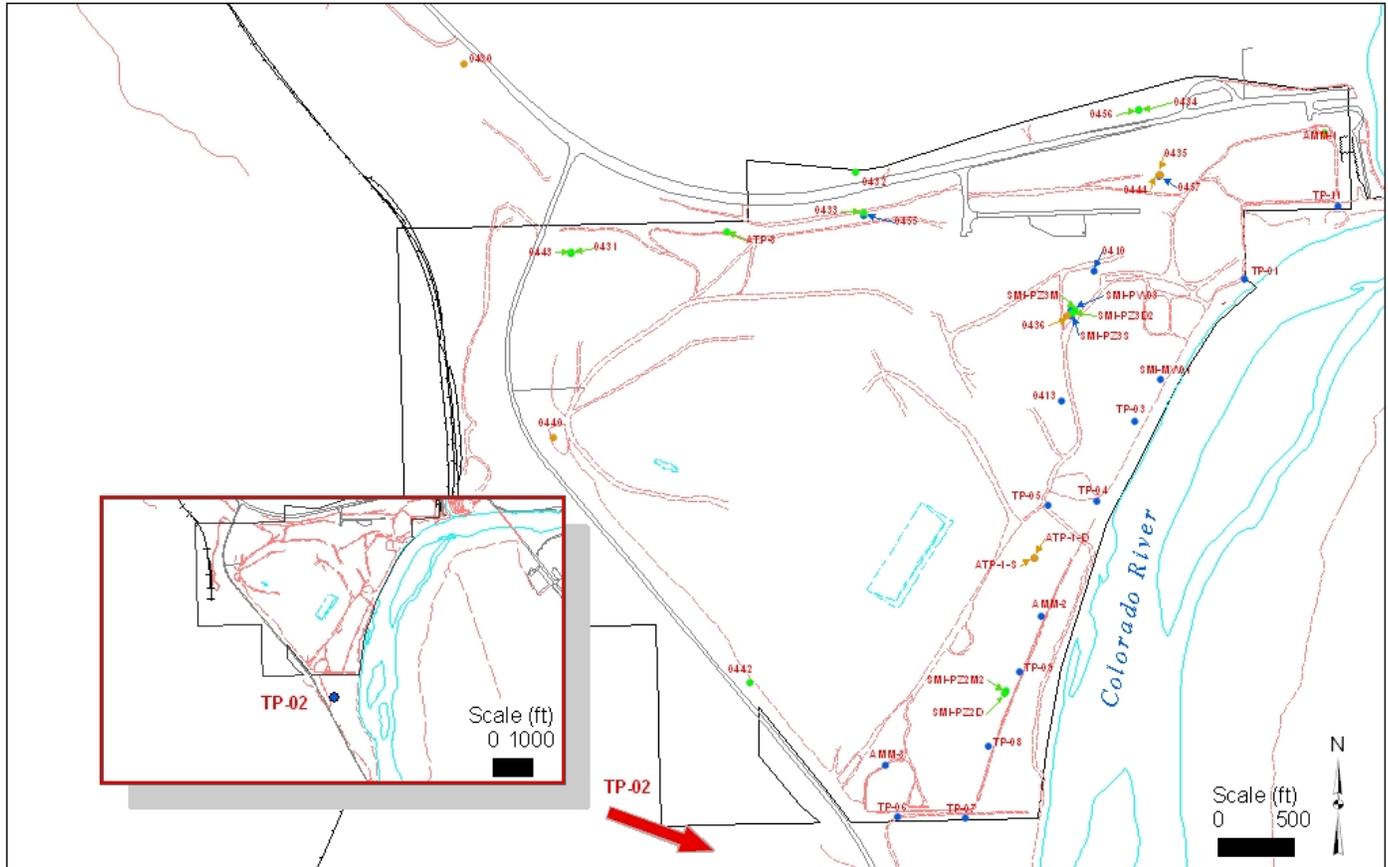
4. Were all proposed well (ground water) and surface water locations sampled during this event?

No. Monitor well 0411 contained less than 1 foot of water in the casing, and the well did

not recharge after the initial purge. Monitor wells TP-03, TP-04, TP-06, 0546, and 0547 were not located in the field and may have been accidentally destroyed.

5. Were there any site activities that have impacted or may impact the interim action system?

Yes. As mentioned above, the well field was undergoing a planned shutdown to upgrade the vault plumbing.



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U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	SS/K Aerospace, Inc. 12000 E. Center Suite 100 Littleton, CO 80120
Site Wide Ground Water Sampling Locations	
April 10, 2009	Moab

- Deep Locations (100'+)
- Mid Locations (50-100')
- Shallow Locations (0-50')
- Moab UMTRA Site Boundary

Figure 1. Site Wide Ground Water Sampling Locations (may include locations not sampled)

1.2 Sampling Event Summary

This validation data package (VDP) presents the validated data associated with the ground water and surface water samples collected during the January 2009 site wide sampling event at the former uranium tailings processing site in Moab, Utah. This VDP includes a discussion of the data validation process in Section 2.0 with a description of how these data are qualified based on

field and laboratory verification assessments (Sections 2.1 and 2.2). Attachment 1 contains the trip report detailing the field events associated with this sampling event.

A list of flagged data is presented in Table 4 in Section 2.2. No data were rejected (flagged as “R”) as a result of this validation process. A Minimums and Maximums Report (presented in Section 3.1) was generated to determine if the data are within a normal statistical range. Any anomalous data, based on the results of the Minimums and Maximums Report, are presented in Section 3.2.

While independent of the data validation process, a brief summary of the most recent ammonia and uranium concentration trends based on the January 2009 data is provided. A table comparing the 2009 results to the most recent sample located from respective wells is provided.

Site Wide Event

A total of 34 samples were collected from 33 locations during this event (samples were collected from two depths at location AMM-1). Table 1 presents the results of this event compared to the most recent samplings for these locations. A review of Table 1 indicates that high concentrations of ammonia and uranium have decreased in specific wells and that a higher ammonia detection limit was used in the January 2009 samples.

One of the key wells for contaminant plume delineation along the southwest boundary of the site (location 0442) could not be resampled because it was destroyed during the July 2006 flash flood.

Table 1. Comparison of Sampling Results from the January 2009 Site Wide Sampling Event

Location	Ammonia Data (mg/L)		Uranium Data (mg/L)	
	Jan 09	Dec 02	Jan 09	Dec 02
410	0.1	0.03 ^a	0.73	0.53 ^a
413	11	8.85 ^a	1.5	1.73 ^a
430	0.1	0.003	0.012	0.011
431	0.1	0.03	0.01	0.009
432	0.1	0.003	0.002	0.002
433	0.1	0.003	0.002	0.002
434	0.1	0.09	0.023	0.015
435	2	2.76	0.022	0.02
436	3.4	3.84	0.007	0
440	0.1	0.05	0.043	0.03
442 ^b		1374		10.8
443	0.1	0.003	0.012	0.01
444	1.8	2.38	0.017	0
455	0.1	0.003	0.005	0
456	0.1	0.003	0.027	0.02
457	0.1	0.01	0.002	0
AMM-1	0.1 (15 ft) 0.1 (53 ft)	0.003	0.005 (15 ft) 0.005 (53 ft)	0.01

Table 1. Comparison of Sampling Results from the January 2009 Site Wide Sampling Event (continued)

Location	Ammonia Data (mg/L)		Uranium Data (mg/L)	
	Jan 09	Dec 02	Jan 09	Dec 02
AMM-2	660	939	2.1	1.95
AMM-3	240	109	1.7	1.92
ATP-1-S	3.6	3.63	0.001	0
ATP-3	0.1	0.03	0.003	0.01
SMI-MW01	1.5	2.30 ^c	4.4	13.20 ^c
SMI-PW03	35	53 ^d	0.6	1.51 ^d
SMI-PZ2D	1200	1150 ^d	0.55	0.60 ^d
SMI-PZ2M2	1500	4600 ^d	1.3	1.81 ^d
SMI-PZ3D2	510	455	1.9	2.37
SMI-PZ3M	67	38.2	1.9	0.67
SMI-PZ3S	3.8	10.8	1.7	3.24
TP-01	0.12	0.003	0.12	0.23
TP-07	130	68.4	2.7	2.63
TP-08	330	367 ^e	2.4	2.58 ^e
TP-09	370	947 ^e	2.4	3.75 ^e
TP-11	0.68	1.17	0.001	0
TP-20	3.3	4.39	0.005	0

Notes: a – Result from sample collected September 2002
 b – Location destroyed in July 2006; could not resample in 2009
 c – Result from sample collected November 2000
 d – Result from sample collected February 2002
 e – Result from sample collected August 2002
 mg/L = milligrams per liter

1.3 Sampling and Analyses

Sampling and analyses were conducted in accordance with the *Operations, Maintenance, and Performance Monitoring Plan for the Interim Action Ground Water Treatment System, April 2008*. Please refer to the attached trip report (Attachment 1) for specific sampled locations.

The data validations indicate that the data meet the quality-control criteria specified for this project. An adequate number of duplicates were collected, and all holding times were met. No equipment blanks (EBs) were collected. No significant discrepancies were noted regarding sample shipping and receiving, preservation times, instrument calibration, method blanks, or matrix spikes (MSs), except as qualified or noted in the Laboratory Performance Assessment (Section 2.2).

There were five locations with a total of five anomalous data points. Wells TP-08 and 0430 had historic low values for manganese. Wells 0444 and SMI-PZ3M had historic high values for uranium, and well ATP-3 had a historic high value for manganese.

The mean daily Colorado River flow was not available from the USGS Cisco gaging station due to ice build-up at the station, but was estimated to be approximately 3,000 cubic feet per second while this event was taking place.

2.0 Data Assessment Summary

This section contains the Water Sampling Field Activities Verification (Section 2.1), the Laboratory Performance Assessments (Section 2.2), the Field Analyses/Activities (Section 2.3), and Certification (Section 2.4).

2.1 Water Sampling Field Activities Verification

The field activities verification process for this sampling event was documented using the list provided in Appendix A. As the list exhibits, all sampling was conducted following the applicable procedures.

2.2 Laboratory Performance Assessment

General Information

Report Identification No. (RIN): 0901026
Sample Event: Interim Action Well Field Routine Sampling Event – January 2009
Site(s): Moab, Utah
Laboratory: Paragon Analytics, Fort Collins, Colorado
Sample Data Groups (SDGs): 0901055, 0901135, and 0901221
Analysis: Metals and Inorganics
Validator: Rachel Cowan
Review Date: March 16, 2009

This validation was performed according to the *Environmental Procedures Catalog*, “Standard Practice for Validation of Laboratory Data,” GT-9(P) (2006). The procedure was applied at Level 1, Data Deliverables Examination. The Level 1 validation was performed on 100 percent of the samples, which included review of the chain of custody (COC), case narratives, field and sample identifications, holding times, preservation, and cooler receipt. When the case narrative identified items of concern, these items were further investigated in a targeted Level 3 validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 2.

Table 2. Analytes and Methods

Analyte	Line Item Code	Preparation Method	Analytical Method
Ammonia	WCH-A-005	EPA 350.1	EPA 350.1
Chloride	MIS-A-039	SW-846 9056	SW-846 9056
Manganese	G17	SW-846 6010B	SW-846 6010B
Selenium	G14	SW-846 6020A	SW-846 6020A
Sulfate	MIS-A-044	SW-846 9056	SW-846 9056
Total Dissolved Solids	WCH-A-033	MCAWW 160.1	MCAWW 160.1
Uranium	G1	SW-846 6020A	SW-846 6020A

Data Qualifier Summary

Analytical results were qualified as listed in Table 3. Refer to Table 4 for an explanation of the data qualifiers applied.

Table 3. Data Qualifiers

Sample Number	Location	Analyte	Flag	Reason
All 0901055 samples	All 0901055 locations	All analytes	J	P1
0901221-2 through -9; all 0901135 samples	AMM-2, AMM-3, SMI-MW01, SMI-PW03, SMI-PZ2D, SMI-PZ2M2, and SMI-PZ3D2; all 0901135 locations	Ammonia	J	MS1
All 0901135 samples; all 0901221 samples	All 0901135 locations; all 0901221 locations	Manganese, Uranium	J	MS1, LCS1, SD1

Notes: Flags are for detects. See reason codes below for nondetect codes.

Table 4. Reason Codes for Data Flags

Reason Code	Qualifier (Detects)	Qualifier (Nondetects)	Explanation
LCS1	J	UJ	Results for the affected analyte(s) are regarded as estimated (J) because the laboratory control sample was not analyzed at the proper frequency as stated in the appropriate analytical method.
MS1	J	UJ	Results for the affected analyte(s) are regarded as estimated (J) because the MS sample was (a) from another client, (b) of dissimilar matrix, (c) a field blank or EB, or (d) not analyzed at the proper frequency as stated in the appropriate analytical method.
P1	J	J or R	Results for the affected analyte(s) are regarded as estimated (J) because the samples were received outside the temperature criteria.
SD1	J	N/A	Results for the affected analyte(s) are regarded as estimated (J) because the frequency requirements for serial dilution analysis were not met, and the sample result is greater than or equal to 50 times the practical quantitation limit.

Sample Shipping/Receiving

Paragon Analytics in Fort Collins, Colorado, received a total of 38 samples for RIN 0901026. These samples were shipped on: January 10, 2009 (11 samples under UPS tracking number 1Z5W1Y514491209236); January 17, 2009 (10 samples under UPS tracking number 1Z5W1Y514496475029); and January 26, 2009 (17 samples under UPS tracking number 1Z5W1Y514494937284). Paragon Analytics assigned the samples to SDGs 0901055, 0901135, and 0901221, respectively. All samples were accompanied by a COC form. The COC forms were checked to confirm that all of the samples were listed on each form with sample collection dates and times and that signatures and dates were present indicating sample relinquishment and receipt. The sample submittal documents, including the COC forms and the sample tickets, had no errors or omissions, except for the following: Paragon Analytics reported that there were no custody seals on the shipping container for SDG 0901221.

Preservation and Holding Times

The sample shipments were received intact with the temperature within the cooler at 4.6 °C (SDG 0901055), 0.4 °C (SDG 0901135), and 0.8 °C (SDG 0901221). The temperature for SDG 0901055 was not within the temperature acceptance range, and all associated samples were flagged accordingly. All samples in all SDGs were received in the correct container types and had been preserved correctly for the requested analyses. All samples in all SDGs were analyzed within the applicable holding times.

Case Narratives

The case narratives were reviewed, and all detects were found to be within quality-control procedures except for the following.

MS and Replicate Analysis

MS sample analysis, performed at a frequency of one per 20 samples unless otherwise noted, is performed as a measure of the ability to recover analytes in a particular matrix. Replicate sample (RS) analysis consists of matrix spike duplicate (MSD) samples and field duplicates, analyzed at a frequency of one per 20 samples per method or procedural requirements. These RSs are indicators of laboratory precision for each sample matrix.

Method EPA 350.1, Ammonia

For SDG 0901135, one MS was analyzed for the 17 ammonia samples, although method 350.1 requires MSs to be analyzed for at least 10 percent of the samples. Thus, the last seven samples in the preparation batch were “J”-flagged for this reason. For SDG 0901055, one MS was analyzed for the 11 ammonia samples. Based on professional judgment for this smaller group of samples, this frequency was deemed acceptable. There were two field duplicates prepared and analyzed with this RIN (see field duplicate section below for details), and both passed acceptance criteria, so no samples were “J”-flagged for RS.

Method EPA SW-846 6010B, Manganese

No samples from SDG 0901135 and SDG 0901221 were selected for matrix quality control. Thus, all associated samples’ manganese results were “J”-flagged for lack of MS. Since the field duplicates passed acceptance criteria, no manganese results were flagged for RS.

Method EPA SW-846 6020A, Uranium

No samples from SDG 0901135 and SDG 0901221 were selected for matrix quality control. Thus, all associated samples’ uranium results were “J”-flagged for lack of MS. Since the field duplicates passed acceptance criteria, no uranium results were flagged for RS.

Field Duplicates

Field duplicates are collected during sampling activities and may be used as RSs to confirm precision for validation purposes. They are labeled with false identifications and submitted with the samples to be analyzed by Paragon Analytics. Sample 0901135-8 (2002) and 0901055-11 (2001) were the duplicate samples taken from location 0444 (regular sample 0901135-4) and location 0433 (regular sample 0901055-4), respectively. These samples passed the Environmental Protection Agency (EPA) criteria of ± 20 relative percent difference (RPD) for all analytes.

Laboratory Control Sample

A laboratory control sample (LCS) must be analyzed at the correct frequency (one LCS per 20 samples) to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. LCSs were prepared and analyzed as appropriate with the following exception.

LCSs were not reported for manganese or uranium. As a standard practice, Paragon Analytics does not prepare LCSs for samples that are field-filtered and acidified and then run directly on the instrument without any additional sample preparation. Per national environmental laboratory accreditation requirements, an MS may be used in place of an LCS provided the acceptance criteria are as stringent. For SDGs 0901135 and 0901221, no matrix quality-control samples from the SDGs were analyzed; thus, there were no MS samples that could be substituted for LCSs. All associated manganese and uranium results were flagged for this.

Detection Limits/Dilutions

The required detection limit (RDL) for all analytes was achieved for all work orders. Serial dilution (SD) samples were required for inductively coupled plasma sample analysis (manganese, selenium, and uranium). For SDGs 0901135 and 0901221, no matrix quality-control samples from the SDGs were analyzed; thus, there were no SD samples for manganese and uranium. All associated manganese and uranium results were “J”-flagged for this.

Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis. Detected sample results associated with blanks results greater than the method detection limit or instrument detection limit (IDL) (depending on method requirements) were “J”-qualified when the detections were less than five times the associated blank concentration. Nondetects were not qualified. All blanks passed these criteria.

All calibration blanks for uranium in SDG 0901221 were greater than uranium’s associated IDL. None of the related uranium results were less than five times their associated blanks, and so none are “J”-flagged for this reason.

EBs

An EB is a sample of analyte-free media collected from a rinse of nondedicated sampling equipment used to sample surface water. EBs are collected to document adequate decontamination of nondedicated equipment. One EB should be prepared with each preparation batch.

No surface water samples were collected, and so no EBs were collected.

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers.

Electronic Data Deliverable File

The Electronic Data Deliverable (EDD) files arrived on: January 26, 2009 (SDG 0901055); January 28, 2009 (SDG 0901135); and February 6, 2009 (SDG 0901221). The contents of the

EDD were manually examined to verify that the sample results accurately reflected the data contained in the sample data package and that all and only the requested data were delivered.

2.3 Field Analyses/Activities

The following information summarizes the field analyses and activities for the January 2009 sampling event.

Field Activities

All monitor wells were purged and sampled using the low-flow sampling method; this method was not used at extraction wells. There were no EBs collected since nondedicated collection equipment was not used. Two duplicate samples were collected. There are no established regulatory criteria for the evaluation of field duplicate samples; therefore, EPA guidance for laboratory duplicates (which is conservative for field duplicates) was used to assess the precision of the field duplicates. All results met the criteria of ± 20 RPD and are considered acceptable.

2.4 Certification

Results were reported in correct units for all analytes requested. Appropriate contract-required laboratory qualifiers and target analyte lists were used. The RDLs were met when possible, or an explanation of why they were not met was given in the laboratory case narrative. All analytical quality-control criteria were met except as qualified on the Ground Water Quality Data by Parameter, Surface Water Quality by Parameter, or equipment/trip blank database printouts. The meaning of data qualifiers is defined on the database printouts or defined in the EPA *Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media Multi-Concentration*, Document Number ILMO2.0, 1991. All data in this package are considered validated and may be treated as final results.

3.0 Data Presentation

This section contains the Minimums and Maximums Report (Section 3.1), the Anomalous Data Review (Section 3.2), tables containing the Water Quality and Water Level Data (Sections 3.3 and 3.4, respectively), and the Blanks Report (Section 3.5).

3.1 Minimums and Maximums Report

The Minimums and Maximums Report (see Appendix B) is generated by the Sample Management System used to query the SEEPro database. The DataVal program compares the new data set with historical data and lists all new data that fall outside the historical data range. Values listed in the report are further screened, and the results are not considered anomalous if: (1) identified low concentrations are the result of low detection limits; (2) the concentration detected is within 50 percent of historical minimum or maximum values; or (3) there were fewer than five historical samples for comparison.

3.2 Anomalous Data Review

Any results that are considered anomalous based on the Minimums and Maximums Report are listed below.

Loc. No.	Analyte	Type of Anomaly	Disposition
0403	Manganese	Low	Result of low detection limits
0444	Uranium	High	Fewer than 10 samples collected from this location analyzed for this analyte; still establishing range
ATP-3	Manganese	High	Fewer than 10 samples collected from this location analyzed for this analyte; still establishing range
SMI-PZ3M	Uranium	High	Fewer than 10 samples collected from this location analyzed for this analyte; still establishing range
TP-08	Manganese	Low	Undetermined

3.3 Water Quality Data

All water quality data are presented in Appendix C.

3.4 Water Level Data

All water level data are presented in Appendix D.

3.5 Blanks Report

All samples were collected using dedicated equipment, and as a result, EBs were not required for this sampling event.

Appendix A.
Water Sampling Field Activities Verification

Appendix A. Water Sampling Field Activities Verification

Sampling Event / RIN	January Site Wide Event/0901026	Date(s) of Water Sampling	January 7 to 23, 2009
Date(s) of Verification	March 23, 2009	Name of Verifier	Rachel Cowan

	Response (Yes, No, NA)	Comments
1. Is the Sampling Analysis Plan the primary document directing field procedures? List other documents, standard operating procedures, and instructions.	Yes	
	NA	
2. Were the sampling locations specified in the planning documents sampled?	No	Well 0411 did not recharge after the initial purge. Wells TP-03, TP-04, TP-06, 0442, 0546, and 0547 were not located in the field and are assumed to be decommissioned.
3. Was a pretrip calibration conducted as specified in the aforementioned documents?	Yes	
4. Was an operational check of the field equipment conducted twice daily? Did the operational checks meet criteria?	Yes	
	Yes	
5. Were the number and types (alkalinity, temperature, electrical conductivity, pH, turbidity, dissolved oxygen, oxidation reduction potential) of field measurements taken as specified?	Yes	
6. Was the category of the well documented?	No	The categories of wells 0440, 0455, 0456, and TP-08 were not documented.
7. Were the following conditions met when purging a Category I well: Was one pump/tubing volume purged prior to sampling? Did the water level stabilize prior to sampling? Did pH, specific conductance, and turbidity measurements stabilize prior to sampling? Was the flow rate less than 500 milliliters per minute? If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	Yes	
	NA	
8. Were the following conditions met when purging a Category II well: Was the flow rate less than 500 milliliters per minute? Was one pump/tubing volume removed prior to sampling?	Yes	
	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	

Appendix A. Water Sampling Field Activities Verification (continued)

10. Were EBs taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	NA	All samples were collected using dedicated equipment.
11. Were trip blanks prepared and included with each shipment of volatile organic compound samples?	NA	
12. Were quality-control samples assigned a fictitious site identification number?	Yes	
Was the true identity of the samples recorded on the quality assurance sample log?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were COC records completed, and was sample custody maintained?	Yes	
17. Are field data sheets signed and dated by both team members?	Yes	
18. Was all other pertinent information documented on the field data sheets?	Yes	
19. Was the presence or absence of ice in the cooler documented at every sample location?	Yes	
20. Were water levels measured at the locations specified in the planning documents?	Yes	

Appendix B.
Minimums and Maximums Report

Appendix B. Minimums and Maximums Report

Data Validation Minimums and Maximums Report - No Field Parameters

Laboratory: PARAGON (Fort Collins, CO)

RIN: 0901026

Comparison: All Historical Data

Report Date: 3/16/2009

Site Code	Location Code	Sample Date	Analyte	Current		Historical Maximum		Historical Minimum		Count	
				Result	Qualifiers Lab Data	Result	Qualifiers Lab Data	Result	Qualifiers Lab Data	N	N Below Detect
MOA01	0430	01/07/2009	Chloride	2400		1700	F	368	F	5	0
MOA01	0430	01/07/2009	Manganese	0.04		1.04	F	0.251	F	5	0
MOA01	0430	01/07/2009	Sulfate	160		152	F	122	F	5	0
MOA01	0430	01/07/2009	Uranium	0.012		0.011	F	0.0054	F	5	0
MOA01	0436	01/09/2009	Ammonia Total as N	3.4		950		3.835	FJ	8	0
MOA01	0436	01/09/2009	Chloride	64000		59600	F	854		8	0
MOA01	0444	01/15/2009	Chloride	61000		54300	F	1624		8	0
MOA01	0444	01/15/2009	Chloride	62000		54300	F	1624		8	0
MOA01	0444	01/15/2009	Sulfate	4800		4550	F	779		8	0
MOA01	0444	01/15/2009	Sulfate	4600		4550	F	779		8	0
MOA01	0444	01/15/2009	Total Dissolved Solids	94000		93000	F	4625	Q	6	0
MOA01	0444	01/15/2009	Uranium	0.017		0.01	F	0.0017		8	0
MOA01	AMM-2	01/21/2009	Chloride	1600		4600		2050		60	0
MOA01	AMM-2	01/21/2009	Manganese	6.5		9.14		6.91		14	0
MOA01	AMM-3	01/22/2009	Ammonia Total as N	240		225.932		41		16	0
MOA01	ATP-3	01/08/2009	Manganese	0.59		0.39		0.149	F	5	0

Appendix B. Minimums and Maximums Report (continued)

Data Validation Minimums and Maximums Report - No Field Parameters

Laboratory: PARAGON (Fort Collins, CO)

RIN: 0901026

Comparison: All Historical Data

Report Date: 3/16/2009

Site Code	Location Code	Sample Date	Analyte	Current		Historical Maximum		Historical Minimum		Count	
				Result	Qualifiers Lab Data	Result	Qualifiers Lab Data	Result	Qualifiers Lab Data	N	N Below Detect
MOA01	SMI-MW01	01/22/2009	Sulfate	1100		4760		1160		6	0
MOA01	SMI-PW03	01/20/2009	Chloride	2700		2149		1765		9	0
MOA01	SMI-PW03	01/20/2009	Sulfate	1600		2712		1896		10	0
MOA01	SMI-PW03	01/20/2009	Uranium	0.6		2.69		0.9598		11	0
MOA01	SMI-PZ2D	01/21/2009	Uranium	0.55		3.03		0.5948		7	0
MOA01	SMI-PZ3M	01/20/2009	Ammonia Total as N	67		47.671	F	38		6	0
MOA01	SMI-PZ3M	01/20/2009	Manganese	2.1		2.02		1.26	UF	5	1
MOA01	SMI-PZ3M	01/20/2009	Uranium	1.9		0.994		0.672	F	5	0
MOA01	SMI-PZ3S	01/20/2009	Chloride	780		962	F	877		7	0
MOA01	SMI-PZ3S	01/20/2009	Selenium	0.06		0.0527	F	0.0195	F	5	0
MOA01	TP-01	01/23/2009	Manganese	0.7		2	F	0.95		11	1
MOA01	TP-01	01/23/2009	Total Dissolved Solids	6300		14800	F	7900		9	0
MOA01	TP-01	01/23/2009	Uranium	0.12		0.41		0.19		14	0
MOA01	TP-07	01/21/2009	Chloride	1800		2870	J	2050	F	13	0
MOA01	TP-07	01/21/2009	Total Dissolved Solids	16000		17100		16200	F	9	0
MOA01	TP-08	01/21/2009	Ammonia Total as N	330		409		336.18	F	12	0
MOA01	TP-08	01/21/2009	Manganese	0.23		4.61		2.27	F	11	1
MOA01	TP-08	01/21/2009	Total Dissolved Solids	16000		17200	F	16100		7	0

Appendix B. Minimums and Maximums Report (continued)

Data Validation Minimums and Maximums Report - No Field Parameters

Laboratory: PARAGON (Fort Collins, CO)

RIN: 0901026

Comparison: All Historical Data

Report Date: 3/16/2009

Site Code	Location Code	Sample Date	Analyte	Current		Historical Maximum			Historical Minimum			Count	
				Result	Qualifiers Lab Data	Result	Qualifiers Lab Data	Result	Qualifiers Lab Data	N	N Below Detect		
MOA01	TP-08	01/21/2009	Uranium	2.4		4.6		2.58	E	JF	13	0	
MOA01	TP-09	01/21/2009	Ammonia Total as N	370		1895		555.124		F	11	0	
MOA01	TP-09	01/21/2009	Manganese	5		7.27		6.19			9	0	
MOA01	TP-09	01/21/2009	Selenium	0.016		0.0953		0.019			10	0	
MOA01	TP-09	01/21/2009	Sulfate	7100		16010		10400		F	11	0	
MOA01	TP-09	01/21/2009	Total Dissolved Solids	13000		19600		16800		F	7	0	
MOA01	TP-09	01/21/2009	Uranium	2.4		6.76		3.52	E	JF	12	0	

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- > Result above upper detection limit.
- A Tentatively identified compound (TIC) is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and contract-required detection limit. Organic: Analyte also found in method blank.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: TIC.
- P > 25% difference in detected pesticide or Aroclor concentrations between two columns.
- U Analytical result below detection limit.
- W Postdigestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X,Y,Z Laboratory defined qualifier, see case narrative.

DATA QUALIFIERS:

- F Low flow sampling method used.
- L Less than three bore volumes purged prior to sampling.
- U Parameter analyzed for but was not detected.
- G Possible grout contamination, pH > 9.
- Q Qualitative result due to sampling technique.
- X Location is undefined.
- J Estimated value.
- R Unusable result.

Appendix C.
Water Quality Data

Appendix C. Water Quality Data

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)		Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID	Lab	Data QA					
Alkalinity, Total (As CaCO3)	mg/L	0403	WL	01/14/2009	0001	18	- 18	738		#		
Alkalinity, Total (As CaCO3)	mg/L	0407	WL	01/14/2009	0001	17	- 17	588		#		
Alkalinity, Total (As CaCO3)	mg/L	0410	WL	01/20/2009	0001	23.5	- 23.5	406		#		
Alkalinity, Total (As CaCO3)	mg/L	0413	WL	01/20/2009	0001	10.5	- 10.5	200		#		
Alkalinity, Total (As CaCO3)	mg/L	0430	WL	01/07/2009	0001	101	- 101	125		#		
Alkalinity, Total (As CaCO3)	mg/L	0431	WL	01/08/2009	0001	91	- 91	236		#		
Alkalinity, Total (As CaCO3)	mg/L	0432	WL	01/07/2009	0001	55	- 55	210		#		
Alkalinity, Total (As CaCO3)	mg/L	0433	WL	01/08/2009	0001	99	- 99	218		#		
Alkalinity, Total (As CaCO3)	mg/L	0434	WL	01/07/2009	0001	35	- 35	282		#		
Alkalinity, Total (As CaCO3)	mg/L	0435	WL	01/15/2009	0001	173	- 173	132		#		
Alkalinity, Total (As CaCO3)	mg/L	0436	WL	01/09/2009	0001	197	- 197	94		#		
Alkalinity, Total (As CaCO3)	mg/L	0440	WL	01/08/2009	0001	117	- 117	154		#		
Alkalinity, Total (As CaCO3)	mg/L	0443	WL	01/08/2009	0001	73	- 73	210		#		
Alkalinity, Total (As CaCO3)	mg/L	0444	WL	01/15/2009	0001	116	- 116	196		#		
Alkalinity, Total (As CaCO3)	mg/L	0455	WL	01/15/2009	0001	46	- 46	260		#		
Alkalinity, Total (As CaCO3)	mg/L	0456	WL	01/14/2009	0001	53	- 53	270		#		
Alkalinity, Total (As CaCO3)	mg/L	0457	WL	01/15/2009	0001	29	- 29	224		#		
Alkalinity, Total (As CaCO3)	mg/L	AMM-1	WL	01/15/2009	0001	19	- 19	140		#		
Alkalinity, Total (As CaCO3)	mg/L	AMM-1	WL	01/15/2009	0001	53	- 53	162		#		
Alkalinity, Total (As CaCO3)	mg/L	AMM-2	WL	01/21/2009	0001	48	- 48	768		#		
Alkalinity, Total (As CaCO3)	mg/L	AMM-3	WL	01/22/2009	0001	48	- 48	850		#		
Alkalinity, Total (As CaCO3)	mg/L	ATP-1-S	WL	01/09/2009	0001	137	- 137	62		#		
Alkalinity, Total (As CaCO3)	mg/L	ATP-3	WL	01/08/2009	0001	51	- 51	238		#		
Alkalinity, Total (As CaCO3)	mg/L	SMI-MW01	WL	01/22/2009	0001	16	- 16	460		#		
Alkalinity, Total (As CaCO3)	mg/L	SMI-PW03	WL	01/20/2009	0001	60	- 60	242		#		
Alkalinity, Total (As CaCO3)	mg/L	SMI-PZ2D	WL	01/21/2009	0001	75	- 75	310		#		

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
				Date	ID	Lab	Data	QA						
Alkalinity, Total (As CaCO3)	mg/L	SMI-PZ2M2	WL	01/22/2009	0001	56	-	56	432			#		
Alkalinity, Total (As CaCO3)	mg/L	SMI-PZ3D2	WL	01/20/2009	0001	78	-	78	640			#		
Alkalinity, Total (As CaCO3)	mg/L	SMI-PZ3M	WL	01/20/2009	0001	59	-	59	380			#		
Alkalinity, Total (As CaCO3)	mg/L	SMI-PZ3S	WL	01/20/2009	0001	25	-	25	556			#		
Alkalinity, Total (As CaCO3)	mg/L	TP-01	WL	01/23/2009	0001	22	-	22	420			#		
Alkalinity, Total (As CaCO3)	mg/L	TP-07	WL	01/21/2009	0001	29	-	29	916			#		
Alkalinity, Total (As CaCO3)	mg/L	TP-08	WL	01/21/2009	0001	29	-	29	824			#		
Alkalinity, Total (As CaCO3)	mg/L	TP-09	WL	01/21/2009	0001	26	-	26	874			#		
Alkalinity, Total (As CaCO3)	mg/L	TP-11	WL	01/23/2009	0001	30	-	30	408			#		
Alkalinity, Total (As CaCO3)	mg/L	TP-20	WL	01/23/2009	0001	32	-	32	170			#		
Ammonia Total as N	mg/L	0403	WL	01/14/2009	0001	18	-	18	160		J	#	10	
Ammonia Total as N	mg/L	0407	WL	01/14/2009	0001	17	-	17	320		J	#	10	
Ammonia Total as N	mg/L	0410	WL	01/20/2009	0001	23.5	-	23.5	0.1	UN		#	0.1	
Ammonia Total as N	mg/L	0413	WL	01/20/2009	0001	10.5	-	10.5	11		J	#	2	
Ammonia Total as N	mg/L	0430	WL	01/07/2009	0001	101	-	101	0.1	U		#	0.1	
Ammonia Total as N	mg/L	0431	WL	01/08/2009	0001	91	-	91	0.1	U		#	0.1	
Ammonia Total as N	mg/L	0432	WL	01/07/2009	0001	55	-	55	0.1	U		#	0.1	
Ammonia Total as N	mg/L	0433	WL	01/08/2009	0002	99	-	99	0.1	U		#	0.1	
Ammonia Total as N	mg/L	0434	WL	01/07/2009	0001	35	-	35	0.1	U		#	0.1	
Ammonia Total as N	mg/L	0435	WL	01/15/2009	0001	173	-	173	2		J	#	0.1	
Ammonia Total as N	mg/L	0436	WL	01/09/2009	0001	197	-	197	3.4		J	#	0.1	
Ammonia Total as N	mg/L	0440	WL	01/08/2009	0001	117	-	117	0.1	U		#	0.1	
Ammonia Total as N	mg/L	0443	WL	01/08/2009	0001	73	-	73	0.1	U		#	0.1	
Ammonia Total as N	mg/L	0444	WL	01/15/2009	0002	116	-	116	1.8		J	#	0.1	
Ammonia Total as N	mg/L	0455	WL	01/15/2009	0001	46	-	46	0.1	U	J	#	0.1	
Ammonia Total as N	mg/L	0456	WL	01/14/2009	0001	53	-	53	0.1	U	J	#	0.1	
Ammonia Total as N	mg/L	0457	WL	01/15/2009	0001	29	-	29	0.1	U	J	#	0.1	

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
				Date	ID	(Ft BLS)	Lab		Data	QA			
Ammonia Total as N	mg/L	AMM-1	WL	01/15/2009	0001	53	- 53	0.1	U		#	0.1	
Ammonia Total as N	mg/L	AMM-2	WL	01/21/2009	0001	48	- 48	660		J	#	50	
Ammonia Total as N	mg/L	AMM-3	WL	01/22/2009	0001	48	- 48	240		J	#	10	
Ammonia Total as N	mg/L	ATP-1-S	WL	01/09/2009	0001	137	- 137	3.6		J	#	0.1	
Ammonia Total as N	mg/L	ATP-3	WL	01/08/2009	0001	51	- 51	0.1	U		#	0.1	
Ammonia Total as N	mg/L	SMI-MW01	WL	01/22/2009	0001	16	- 16	1.5		J	#	0.1	
Ammonia Total as N	mg/L	SMI-PW03	WL	01/20/2009	0001	60	- 60	35		J	#	2	
Ammonia Total as N	mg/L	SMI-PZ2D	WL	01/21/2009	0001	75	- 75	1200		J	#	50	
Ammonia Total as N	mg/L	SMI-PZ2M2	WL	01/22/2009	0001	56	- 56	1500		J	#	50	
Ammonia Total as N	mg/L	SMI-PZ3D2	WL	01/20/2009	0001	78	- 78	510		J	#	20	
Ammonia Total as N	mg/L	SMI-PZ3M	WL	01/20/2009	0001	59	- 59	67			#	10	
Ammonia Total as N	mg/L	SMI-PZ3S	WL	01/20/2009	0001	25	- 25	3.8			#	0.1	
Ammonia Total as N	mg/L	TP-01	WL	01/23/2009	0001	22	- 22	0.12			#	0.1	
Ammonia Total as N	mg/L	TP-07	WL	01/21/2009	0001	29	- 29	130			#	10	
Ammonia Total as N	mg/L	TP-08	WL	01/21/2009	0001	29	- 29	330			#	10	
Ammonia Total as N	mg/L	TP-09	WL	01/21/2009	0001	26	- 26	370			#	10	
Ammonia Total as N	mg/L	TP-11	WL	01/23/2009	0001	30	- 30	0.68			#	0.1	
Ammonia Total as N	mg/L	TP-20	WL	01/23/2009	0001	32	- 32	3.3			#	0.1	
Chloride	mg/L	0403	WL	01/14/2009	0001	18	- 18	1300			#	20	
Chloride	mg/L	0407	WL	01/14/2009	0001	17	- 17	2600			#	40	
Chloride	mg/L	0410	WL	01/20/2009	0001	23.5	- 23.5	210			#	10	
Chloride	mg/L	0413	WL	01/20/2009	0001	10.5	- 10.5	650			#	10	
Chloride	mg/L	0430	WL	01/07/2009	0001	101	- 101	2400		J	#	40	
Chloride	mg/L	0431	WL	01/08/2009	0001	91	- 91	12000		J	#	400	
Chloride	mg/L	0432	WL	01/07/2009	0001	55	- 55	730		J	#	10	
Chloride	mg/L	0433	WL	01/08/2009	0001	99	- 99	1400		J	#	20	

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range		Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID	(Ft BLS)	Lab		Data	QA		
Chloride	mg/L	0433	WL	01/08/2009	0002	99	- 99	1300	J	#	20	
Chloride	mg/L	0434	WL	01/07/2009	0001	35	- 35	18000	J	#	200	
Chloride	mg/L	0435	WL	01/15/2009	0001	173	- 173	61000		#	1000	
Chloride	mg/L	0436	WL	01/09/2009	0001	197	- 197	64000	J	#	1000	
Chloride	mg/L	0440	WL	01/08/2009	0001	117	- 117	1700	J	#	20	
Chloride	mg/L	0443	WL	01/08/2009	0001	73	- 73	1700	J	#	20	
Chloride	mg/L	0444	WL	01/15/2009	0001	116	- 116	61000		#	1000	
Chloride	mg/L	0444	WL	01/15/2009	0002	116	- 116	62000		#	1000	
Chloride	mg/L	0455	WL	01/15/2009	0001	46	- 46	670		#	10	
Chloride	mg/L	0456	WL	01/14/2009	0001	53	- 53	2500		#	40	
Chloride	mg/L	0457	WL	01/15/2009	0001	29	- 29	1500		#	20	
Chloride	mg/L	AMM-1	WL	01/15/2009	0001	19	- 19	3900		#	100	
Chloride	mg/L	AMM-1	WL	01/15/2009	0001	53	- 53	3900		#	100	
Chloride	mg/L	AMM-2	WL	01/21/2009	0001	48	- 48	1600		#	40	
Chloride	mg/L	AMM-3	WL	01/22/2009	0001	48	- 48	1300		#	40	
Chloride	mg/L	ATP-1-S	WL	01/09/2009	0001	137	- 137	66000	J	#	1000	
Chloride	mg/L	ATP-3	WL	01/08/2009	0001	51	- 51	560	J	#	10	
Chloride	mg/L	SMI-MW01	WL	01/22/2009	0001	16	- 16	570		#	10	
Chloride	mg/L	SMI-PW03	WL	01/20/2009	0001	60	- 60	2700		#	40	
Chloride	mg/L	SMI-PZ2D	WL	01/21/2009	0001	75	- 75	52000		#	1000	
Chloride	mg/L	SMI-PZ2M2	WL	01/22/2009	0001	56	- 56	31000		#	400	
Chloride	mg/L	SMI-PZ3D2	WL	01/20/2009	0001	78	- 78	4000		#	100	
Chloride	mg/L	SMI-PZ3M	WL	01/20/2009	0001	59	- 59	2100		#	40	
Chloride	mg/L	SMI-PZ3S	WL	01/20/2009	0001	25	- 25	780		#	10	
Chloride	mg/L	TP-01	WL	01/23/2009	0001	22	- 22	2000		#	40	
Chloride	mg/L	TP-07	WL	01/21/2009	0001	29	- 29	1800		#	40	

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID	(Ft BLS)	Lab	Data		QA			
Chloride	mg/L	TP-08	WL	01/21/2009	0001	29	-	29	2100		#	40	
Chloride	mg/L	TP-09	WL	01/21/2009	0001	26	-	26	1600		#	40	
Chloride	mg/L	TP-11	WL	01/23/2009	0001	30	-	30	8600		#	100	
Chloride	mg/L	TP-20	WL	01/23/2009	0001	32	-	32	65000		#	1000	
Dissolved Oxygen	mg/L	0403	WL	01/14/2009	0001	18	-	18	0.59		#		
Dissolved Oxygen	mg/L	0407	WL	01/14/2009	0001	17	-	17	0.46		#		
Dissolved Oxygen	mg/L	0410	WL	01/20/2009	0001	23.5	-	23.5	4.81		#		
Dissolved Oxygen	mg/L	0413	WL	01/20/2009	0001	10.5	-	10.5	0.61		#		
Dissolved Oxygen	mg/L	0430	WL	01/07/2009	0001	101	-	101	1.02		#		
Dissolved Oxygen	mg/L	0431	WL	01/08/2009	0001	91	-	91	2.36		#		
Dissolved Oxygen	mg/L	0432	WL	01/07/2009	0001	55	-	55	4.27		#		
Dissolved Oxygen	mg/L	0433	WL	01/08/2009	0001	99	-	99	2.7		#		
Dissolved Oxygen	mg/L	0434	WL	01/07/2009	0001	35	-	35	0.47		#		
Dissolved Oxygen	mg/L	0435	WL	01/15/2009	0001	173	-	173	0.42		#		
Dissolved Oxygen	mg/L	0436	WL	01/09/2009	0001	197	-	197	0.19		#		
Dissolved Oxygen	mg/L	0440	WL	01/08/2009	0001	117	-	117	5.21		#		
Dissolved Oxygen	mg/L	0443	WL	01/08/2009	0001	73	-	73	2.4		#		
Dissolved Oxygen	mg/L	0444	WL	01/15/2009	0001	116	-	116	0.22		#		
Dissolved Oxygen	mg/L	0455	WL	01/15/2009	0001	46	-	46	6.21		#		
Dissolved Oxygen	mg/L	0456	WL	01/14/2009	0001	53	-	53	2.01		#		
Dissolved Oxygen	mg/L	0457	WL	01/15/2009	0001	29	-	29	0.4		#		
Dissolved Oxygen	mg/L	AMM-1	WL	01/15/2009	0001	53	-	53	1.19		#		
Dissolved Oxygen	mg/L	AMM-1	WL	01/15/2009	0001	19	-	19	2.5		#		
Dissolved Oxygen	mg/L	AMM-2	WL	01/21/2009	0001	48	-	48	0.57		#		
Dissolved Oxygen	mg/L	AMM-3	WL	01/22/2009	0001	48	-	48	0.26		#		
Dissolved Oxygen	mg/L	ATP-1-S	WL	01/09/2009	0001	137	-	137	2.14		#		
Dissolved Oxygen	mg/L	ATP-3	WL	01/08/2009	0001	51	-	51	1.38		#		

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
				Date	ID					Lab	Data	QA		
Dissolved Oxygen	mg/L	SMI-MW01	WL	01/22/2009	0001	16	-	16	0.56			#		
Dissolved Oxygen	mg/L	SMI-PW03	WL	01/20/2009	0001	60	-	60	0.49			#		
Dissolved Oxygen	mg/L	SMI-PZ2D	WL	01/21/2009	0001	75	-	75	0.21			#		
Dissolved Oxygen	mg/L	SMI-PZ2M2	WL	01/22/2009	0001	56	-	56	0.28			#		
Dissolved Oxygen	mg/L	SMI-PZ3D2	WL	01/20/2009	0001	78	-	78	0.35			#		
Dissolved Oxygen	mg/L	SMI-PZ3M	WL	01/20/2009	0001	59	-	59	0.55			#		
Dissolved Oxygen	mg/L	SMI-PZ3S	WL	01/20/2009	0001	25	-	25	0.68			#		
Dissolved Oxygen	mg/L	TP-01	WL	01/23/2009	0001	22	-	22	0.65			#		
Dissolved Oxygen	mg/L	TP-07	WL	01/21/2009	0001	29	-	29	0.34			#		
Dissolved Oxygen	mg/L	TP-08	WL	01/21/2009	0001	29	-	29	0.31			#		
Dissolved Oxygen	mg/L	TP-09	WL	01/21/2009	0001	26	-	26	0.39			#		
Dissolved Oxygen	mg/L	TP-11	WL	01/23/2009	0001	30	-	30	0.78			#		
Dissolved Oxygen	mg/L	TP-20	WL	01/23/2009	0001	32	-	32	0.54			#		
Manganese	mg/L	0403	WL	01/14/2009	0001	18	-	18	3.3		J	#	0.00048	
Manganese	mg/L	0407	WL	01/14/2009	0001	17	-	17	3.2		J	#	0.00048	
Manganese	mg/L	0410	WL	01/20/2009	0001	23.5	-	23.5	0.19		J	#	0.00019	
Manganese	mg/L	0413	WL	01/20/2009	0001	10.5	-	10.5	0.13		J	#	0.00019	
Manganese	mg/L	0430	WL	01/07/2009	0001	101	-	101	0.04		J	#	0.00048	
Manganese	mg/L	0431	WL	01/08/2009	0001	91	-	91	0.41		J	#	0.0048	
Manganese	mg/L	0432	WL	01/07/2009	0001	55	-	55	0.00019	U		#	0.00019	
Manganese	mg/L	0433	WL	01/08/2009	0001	99	-	99	0.00019	U		#	0.00019	
Manganese	mg/L	0433	WL	01/08/2009	0002	99	-	99	0.00048	U		#	0.00048	
Manganese	mg/L	0434	WL	01/07/2009	0001	35	-	35	0.88		J	#	0.0024	
Manganese	mg/L	0435	WL	01/15/2009	0001	173	-	173	1.1		J	#	0.0048	
Manganese	mg/L	0436	WL	01/09/2009	0001	197	-	197	3.9		J	#	0.0048	
Manganese	mg/L	0440	WL	01/08/2009	0001	117	-	117	0.0036	B	J	#	0.00048	

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
				Date	ID	(Ft BLS)	Lab		Data	QA			
Manganese	mg/L	0443	WL	01/08/2009	0001	73	- 73	0.012	B	J	#	0.00048	
Manganese	mg/L	0444	WL	01/15/2009	0001	116	- 116	2		J	#	0.0048	
Manganese	mg/L	0444	WL	01/15/2009	0002	116	- 116	2		J	#	0.0048	
Manganese	mg/L	0455	WL	01/15/2009	0001	46	- 46	0.058		J	#	0.00019	
Manganese	mg/L	0456	WL	01/14/2009	0001	53	- 53	0.008	B	J	#	0.00048	
Manganese	mg/L	0457	WL	01/15/2009	0001	29	- 29	0.48		J	#	0.00048	
Manganese	mg/L	AMM-1	WL	01/15/2009	0001	53	- 53	0.006	B	J	#	0.00048	
Manganese	mg/L	AMM-1	WL	01/15/2009	0001	19	- 19	0.0076	B	J	#	0.00048	
Manganese	mg/L	AMM-2	WL	01/21/2009	0001	48	- 48	6.5		J	#	0.00097	
Manganese	mg/L	AMM-3	WL	01/22/2009	0001	48	- 48	3.3		J	#	0.00097	
Manganese	mg/L	ATP-1-S	WL	01/09/2009	0001	137	- 137	0.38		J	#	0.0048	
Manganese	mg/L	ATP-3	WL	01/08/2009	0001	51	- 51	0.59		J	#	9.7E-005	
Manganese	mg/L	SMI-MW01	WL	01/22/2009	0001	16	- 16	0.45		J	#	0.00048	
Manganese	mg/L	SMI-PW03	WL	01/20/2009	0001	60	- 60	1.3		J	#	0.00048	
Manganese	mg/L	SMI-PZ2D	WL	01/21/2009	0001	75	- 75	8		J	#	0.0097	
Manganese	mg/L	SMI-PZ2M2	WL	01/22/2009	0001	56	- 56	10		J	#	0.0048	
Manganese	mg/L	SMI-PZ3D2	WL	01/20/2009	0001	78	- 78	0.89		J	#	0.00097	
Manganese	mg/L	SMI-PZ3M	WL	01/20/2009	0001	59	- 59	2.1		J	#	0.00048	
Manganese	mg/L	SMI-PZ3S	WL	01/20/2009	0001	25	- 25	0.027		J	#	0.00048	
Manganese	mg/L	TP-01	WL	01/23/2009	0001	22	- 22	0.7		J	#	0.00048	
Manganese	mg/L	TP-07	WL	01/21/2009	0001	29	- 29	4.5		J	#	0.00097	
Manganese	mg/L	TP-08	WL	01/21/2009	0001	29	- 29	0.23		J	#	0.00097	
Manganese	mg/L	TP-09	WL	01/21/2009	0001	26	- 26	5		J	#	0.00097	
Manganese	mg/L	TP-11	WL	01/23/2009	0001	30	- 30	3.5		J	#	0.00097	
Manganese	mg/L	TP-20	WL	01/23/2009	0001	32	- 32	0.23	B	J	#	0.0097	
Oxidation Reduction Potential	mV	0403	WL	01/14/2009	0001	18	- 18	-29			#		

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID					Lab	Data QA		
Oxidation Reduction Potential	mV	0407	WL	01/14/2009	0001	17	-	17	-28		#		
Oxidation Reduction Potential	mV	0410	WL	01/20/2009	0001	23.5	-	23.5	50		#		
Oxidation Reduction Potential	mV	0413	WL	01/20/2009	0001	10.5	-	10.5	-62		#		
Oxidation Reduction Potential	mV	0430	WL	01/07/2009	0001	101	-	101	-8		#		
Oxidation Reduction Potential	mV	0431	WL	01/08/2009	0001	91	-	91	37		#		
Oxidation Reduction Potential	mV	0432	WL	01/07/2009	0001	55	-	55	141		#		
Oxidation Reduction Potential	mV	0433	WL	01/08/2009	0001	99	-	99	-16		#		
Oxidation Reduction Potential	mV	0434	WL	01/07/2009	0001	35	-	35	-37		#		
Oxidation Reduction Potential	mV	0435	WL	01/15/2009	0001	173	-	173	-153		#		
Oxidation Reduction Potential	mV	0436	WL	01/09/2009	0001	197	-	197	-197		#		
Oxidation Reduction Potential	mV	0440	WL	01/08/2009	0001	117	-	117	27		#		
Oxidation Reduction Potential	mV	0443	WL	01/08/2009	0001	73	-	73	1		#		
Oxidation Reduction Potential	mV	0444	WL	01/15/2009	0001	116	-	116	-167		#		
Oxidation Reduction Potential	mV	0455	WL	01/15/2009	0001	46	-	46	-37		#		
Oxidation Reduction Potential	mV	0456	WL	01/14/2009	0001	53	-	53	-31		#		
Oxidation Reduction Potential	mV	0457	WL	01/15/2009	0001	29	-	29	-133		#		
Oxidation Reduction Potential	mV	AMM-1	WL	01/15/2009	0001	53	-	53	-33		#		
Oxidation Reduction Potential	mV	AMM-1	WL	01/15/2009	0001	19	-	19	-15		#		
Oxidation Reduction Potential	mV	AMM-2	WL	01/21/2009	0001	48	-	48	74		#		
Oxidation Reduction Potential	mV	AMM-3	WL	01/22/2009	0001	48	-	48	-94		#		
Oxidation Reduction Potential	mV	ATP-1-S	WL	01/09/2009	0001	137	-	137	-156		#		
Oxidation Reduction Potential	mV	ATP-3	WL	01/08/2009	0001	51	-	51	-87		#		

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
				Date	ID					Lab	Data	QA		
Oxidation Reduction Potential	mV	SMI-MW01	WL	01/22/2009	0001	16	-	16	12			#		
Oxidation Reduction Potential	mV	SMI-PW03	WL	01/20/2009	0001	60	-	60	27			#		
Oxidation Reduction Potential	mV	SMI-PZ2D	WL	01/21/2009	0001	75	-	75	78			#		
Oxidation Reduction Potential	mV	SMI-PZ2M2	WL	01/22/2009	0001	56	-	56	51			#		
Oxidation Reduction Potential	mV	SMI-PZ3D2	WL	01/20/2009	0001	78	-	78	89			#		
Oxidation Reduction Potential	mV	SMI-PZ3M	WL	01/20/2009	0001	59	-	59	-70			#		
Oxidation Reduction Potential	mV	SMI-PZ3S	WL	01/20/2009	0001	25	-	25	-66			#		
Oxidation Reduction Potential	mV	TP-01	WL	01/23/2009	0001	22	-	22	-158			#		
Oxidation Reduction Potential	mV	TP-07	WL	01/21/2009	0001	29	-	29	13			#		
Oxidation Reduction Potential	mV	TP-08	WL	01/21/2009	0001	29	-	29	39			#		
Oxidation Reduction Potential	mV	TP-09	WL	01/21/2009	0001	26	-	26	63			#		
Oxidation Reduction Potential	mV	TP-11	WL	01/23/2009	0001	30	-	30	-108			#		
Oxidation Reduction Potential	mV	TP-20	WL	01/23/2009	0001	32	-	32	-202.1			#		
pH	s.u.	0403	WL	01/14/2009	0001	18	-	18	6.59			#		
pH	s.u.	0407	WL	01/14/2009	0001	17	-	17	6.9			#		
pH	s.u.	0410	WL	01/20/2009	0001	23.5	-	23.5	6.93			#		
pH	s.u.	0413	WL	01/20/2009	0001	10.5	-	10.5	7.44			#		
pH	s.u.	0430	WL	01/07/2009	0001	101	-	101	7.03			#		
pH	s.u.	0431	WL	01/08/2009	0001	91	-	91	6.69			#		
pH	s.u.	0432	WL	01/07/2009	0001	55	-	55	7.16			#		
pH	s.u.	0433	WL	01/08/2009	0001	99	-	99	7.17			#		
pH	s.u.	0434	WL	01/07/2009	0001	35	-	35	6.74			#		
pH	s.u.	0435	WL	01/15/2009	0001	173	-	173	6.68			#		
pH	s.u.	0436	WL	01/09/2009	0001	197	-	197	6.95			#		

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)		Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID	Lab	Data QA					
pH	s.u.	0440	WL	01/08/2009	0001	117	- 117	6.9		#		
pH	s.u.	0443	WL	01/08/2009	0001	73	- 73	6.96		#		
pH	s.u.	0444	WL	01/15/2009	0001	116	- 116	6.65		#		
pH	s.u.	0455	WL	01/15/2009	0001	46	- 46	7.37		#		
pH	s.u.	0456	WL	01/14/2009	0001	53	- 53	7.3		#		
pH	s.u.	0457	WL	01/15/2009	0001	29	- 29	7.61		#		
pH	s.u.	AMM-1	WL	01/15/2009	0001	53	- 53	7.07		#		
pH	s.u.	AMM-1	WL	01/15/2009	0001	19	- 19	7.18		#		
pH	s.u.	AMM-2	WL	01/21/2009	0001	48	- 48	6.9		#		
pH	s.u.	AMM-3	WL	01/22/2009	0001	48	- 48	6.97		#		
pH	s.u.	ATP-1-S	WL	01/09/2009	0001	137	- 137	7.03		#		
pH	s.u.	ATP-3	WL	01/08/2009	0001	51	- 51	7.18		#		
pH	s.u.	SMI-MW01	WL	01/22/2009	0001	16	- 16	7.3		#		
pH	s.u.	SMI-PW03	WL	01/20/2009	0001	60	- 60	7.23		#		
pH	s.u.	SMI-PZ2D	WL	01/21/2009	0001	75	- 75	6.72		#		
pH	s.u.	SMI-PZ2M2	WL	01/22/2009	0001	56	- 56	6.63		#		
pH	s.u.	SMI-PZ3D2	WL	01/20/2009	0001	78	- 78	6.76		#		
pH	s.u.	SMI-PZ3M	WL	01/20/2009	0001	59	- 59	7.08		#		
pH	s.u.	SMI-PZ3S	WL	01/20/2009	0001	25	- 25	7.8		#		
pH	s.u.	TP-01	WL	01/23/2009	0001	22	- 22	7.37		#		
pH	s.u.	TP-07	WL	01/21/2009	0001	29	- 29	6.92		#		
pH	s.u.	TP-08	WL	01/21/2009	0001	29	- 29	6.83		#		
pH	s.u.	TP-09	WL	01/21/2009	0001	26	- 26	6.77		#		
pH	s.u.	TP-11	WL	01/23/2009	0001	30	- 30	6.92		#		
pH	s.u.	TP-20	WL	01/23/2009	0001	32	- 32	7		#		
Selenium	mg/L	0413	WL	01/20/2009	0001	10.5	- 10.5	0.24		#	0.00084	

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID	Lab	Data	QA					
Selenium	mg/L	0440	WL	01/08/2009	0001	117	-	117	0.034	J	#	5.6E-005	
Selenium	mg/L	0456	WL	01/14/2009	0001	53	-	53	0.024		#	8.4E-005	
Selenium	mg/L	SMI-PZ3S	WL	01/20/2009	0001	25	-	25	0.06		#	0.00017	
Selenium	mg/L	TP-09	WL	01/21/2009	0001	26	-	26	0.016		#	8.4E-005	
Selenium	mg/L	TP-20	WL	01/23/2009	0001	32	-	32	0.001		#	8.4E-005	
Specific Conductance	µmhos/cm	0403	WL	01/14/2009	0001	18	-	18	10086		#		
Specific Conductance	µmhos/cm	0407	WL	01/14/2009	0001	17	-	17	14118		#		
Specific Conductance	µmhos/cm	0410	WL	01/20/2009	0001	23.5	-	23.5	2648		#		
Specific Conductance	µmhos/cm	0413	WL	01/20/2009	0001	10.5	-	10.5	3323		#		
Specific Conductance	µmhos/cm	0430	WL	01/07/2009	0001	101	-	101	6389		#		
Specific Conductance	µmhos/cm	0431	WL	01/08/2009	0001	91	-	91	32398		#		
Specific Conductance	µmhos/cm	0432	WL	01/07/2009	0001	55	-	55	2946		#		
Specific Conductance	µmhos/cm	0433	WL	01/08/2009	0001	99	-	99	4470		#		
Specific Conductance	µmhos/cm	0434	WL	01/07/2009	0001	35	-	35	43383		#		
Specific Conductance	µmhos/cm	0435	WL	01/15/2009	0001	173	-	173	116966		#		
Specific Conductance	µmhos/cm	0436	WL	01/09/2009	0001	197	-	197	124195		#		
Specific Conductance	µmhos/cm	0440	WL	01/08/2009	0001	117	-	117	7548		#		
Specific Conductance	µmhos/cm	0443	WL	01/08/2009	0001	73	-	73	5312		#		
Specific Conductance	µmhos/cm	0444	WL	01/15/2009	0001	116	-	116	114387		#		
Specific Conductance	µmhos/cm	0455	WL	01/15/2009	0001	46	-	46	2787		#		
Specific Conductance	µmhos/cm	0456	WL	01/14/2009	0001	53	-	53	7821		#		
Specific Conductance	µmhos/cm	0457	WL	01/15/2009	0001	29	-	29	5149		#		
Specific Conductance	µmhos/cm	AMM-1	WL	01/15/2009	0001	53	-	53	10925		#		

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID					Lab	Data QA		
Specific Conductance	µmhos/cm	AMM-1	WL	01/15/2009	0001	19	-	19	10951		#		
Specific Conductance	µmhos/cm	AMM-2	WL	01/21/2009	0001	48	-	48	18072		#		
Specific Conductance	µmhos/cm	AMM-3	WL	01/22/2009	0001	48	-	48	17228		#		
Specific Conductance	µmhos/cm	ATP-1-S	WL	01/09/2009	0001	137	-	137	122450		#		
Specific Conductance	µmhos/cm	ATP-3	WL	01/08/2009	0001	51	-	51	2262		#		
Specific Conductance	µmhos/cm	SMI-MW01	WL	01/22/2009	0001	16	-	16	4129		#		
Specific Conductance	µmhos/cm	SMI-PW03	WL	01/20/2009	0001	60	-	60	9352		#		
Specific Conductance	µmhos/cm	SMI-PZ2D	WL	01/21/2009	0001	75	-	75	112663		#		
Specific Conductance	µmhos/cm	SMI-PZ2M2	WL	01/22/2009	0001	56	-	56	77322		#		
Specific Conductance	µmhos/cm	SMI-PZ3D2	WL	01/20/2009	0001	78	-	78	21484		#		
Specific Conductance	µmhos/cm	SMI-PZ3M	WL	01/20/2009	0001	59	-	59	9846		#		
Specific Conductance	µmhos/cm	SMI-PZ3S	WL	01/20/2009	0001	25	-	25	4706		#		
Specific Conductance	µmhos/cm	TP-01	WL	01/23/2009	0001	22	-	22	9050		#		
Specific Conductance	µmhos/cm	TP-07	WL	01/21/2009	0001	29	-	29	16520		#		
Specific Conductance	µmhos/cm	TP-08	WL	01/21/2009	0001	29	-	29	17647		#		
Specific Conductance	µmhos/cm	TP-09	WL	01/21/2009	0001	26	-	26	14945		#		
Specific Conductance	µmhos/cm	TP-11	WL	01/23/2009	0001	30	-	30	24403		#		
Specific Conductance	µmhos/cm	TP-20	WL	01/23/2009	0001	32	-	32	126936		#		
Sulfate	mg/L	0403	WL	01/14/2009	0001	18	-	18	4400		#	50	
Sulfate	mg/L	0407	WL	01/14/2009	0001	17	-	17	5000		#	50	
Sulfate	mg/L	0410	WL	01/20/2009	0001	23.5	-	23.5	590		#	25	
Sulfate	mg/L	0413	WL	01/20/2009	0001	10.5	-	10.5	630		#	25	
Sulfate	mg/L	0430	WL	01/07/2009	0001	101	-	101	160	J	#	5	

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID					Lab	Data QA		
Sulfate	mg/L	0431	WL	01/08/2009	0001	91	-	91	18000	J	#	1000	
Sulfate	mg/L	0432	WL	01/07/2009	0001	55	-	55	340	J	#	25	
Sulfate	mg/L	0433	WL	01/08/2009	0001	99	-	99	370	J	#	25	
Sulfate	mg/L	0433	WL	01/08/2009	0002	99	-	99	380	J	#	50	
Sulfate	mg/L	0434	WL	01/07/2009	0001	35	-	35	1700	J	#	250	
Sulfate	mg/L	0435	WL	01/15/2009	0001	173	-	173	4900		#	250	
Sulfate	mg/L	0436	WL	01/09/2009	0001	197	-	197	4700	J	#	1000	
Sulfate	mg/L	0440	WL	01/08/2009	0001	117	-	117	2500	J	#	50	
Sulfate	mg/L	0443	WL	01/08/2009	0001	73	-	73	420	J	#	50	
Sulfate	mg/L	0444	WL	01/15/2009	0001	116	-	116	4600		#	250	
Sulfate	mg/L	0444	WL	01/15/2009	0002	116	-	116	4800		#	250	
Sulfate	mg/L	0455	WL	01/15/2009	0001	46	-	46	320		#	25	
Sulfate	mg/L	0456	WL	01/14/2009	0001	53	-	53	1000		#	50	
Sulfate	mg/L	0457	WL	01/15/2009	0001	29	-	29	500		#	25	
Sulfate	mg/L	AMM-1	WL	01/15/2009	0001	19	-	19	970		#	50	
Sulfate	mg/L	AMM-1	WL	01/15/2009	0001	53	-	53	1000		#	50	
Sulfate	mg/L	AMM-2	WL	01/21/2009	0001	48	-	48	9700		#	100	
Sulfate	mg/L	AMM-3	WL	01/22/2009	0001	48	-	48	10000		#	100	
Sulfate	mg/L	ATP-1-S	WL	01/09/2009	0001	137	-	137	5200	J	#	1000	
Sulfate	mg/L	ATP-3	WL	01/08/2009	0001	51	-	51	270	J	#	25	
Sulfate	mg/L	SMI-MW01	WL	01/22/2009	0001	16	-	16	1100		#	25	
Sulfate	mg/L	SMI-PW03	WL	01/20/2009	0001	60	-	60	1600		#	100	
Sulfate	mg/L	SMI-PZ2D	WL	01/21/2009	0001	75	-	75	5800		#	250	
Sulfate	mg/L	SMI-PZ2M2	WL	01/22/2009	0001	56	-	56	8100		#	1000	
Sulfate	mg/L	SMI-PZ3D2	WL	01/20/2009	0001	78	-	78	8500		#	250	
Sulfate	mg/L	SMI-PZ3M	WL	01/20/2009	0001	59	-	59	2400		#	100	

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID	Lab	Data	QA					
Sulfate	mg/L	SMI-PZ3S	WL	01/20/2009	0001	25	-	25	1000		#	25	
Sulfate	mg/L	TP-01	WL	01/23/2009	0001	22	-	22	1900		#	100	
Sulfate	mg/L	TP-07	WL	01/21/2009	0001	29	-	29	8700		#	100	
Sulfate	mg/L	TP-08	WL	01/21/2009	0001	29	-	29	9200		#	100	
Sulfate	mg/L	TP-09	WL	01/21/2009	0001	26	-	26	7100		#	100	
Sulfate	mg/L	TP-11	WL	01/23/2009	0001	30	-	30	3500		#	250	
Sulfate	mg/L	TP-20	WL	01/23/2009	0001	32	-	32	5100		#	250	
Temperature	C	0403	WL	01/14/2009	0001	18	-	18	14.43		#		
Temperature	C	0407	WL	01/14/2009	0001	17	-	17	14.02		#		
Temperature	C	0410	WL	01/20/2009	0001	23.5	-	23.5	14.14		#		
Temperature	C	0413	WL	01/20/2009	0001	10.5	-	10.5	14.59		#		
Temperature	C	0430	WL	01/07/2009	0001	101	-	101	16.43		#		
Temperature	C	0431	WL	01/08/2009	0001	91	-	91	15.96		#		
Temperature	C	0432	WL	01/07/2009	0001	55	-	55	18.31		#		
Temperature	C	0433	WL	01/08/2009	0001	99	-	99	17.54		#		
Temperature	C	0434	WL	01/07/2009	0001	35	-	35	17.25		#		
Temperature	C	0435	WL	01/15/2009	0001	173	-	173	14.59		#		
Temperature	C	0436	WL	01/09/2009	0001	197	-	197	16.79		#		
Temperature	C	0440	WL	01/08/2009	0001	117	-	117	16.74		#		
Temperature	C	0443	WL	01/08/2009	0001	73	-	73	16.82		#		
Temperature	C	0444	WL	01/15/2009	0001	116	-	116	14.08		#		
Temperature	C	0455	WL	01/15/2009	0001	46	-	46	16.59		#		
Temperature	C	0456	WL	01/14/2009	0001	53	-	53	16.49		#		
Temperature	C	0457	WL	01/15/2009	0001	29	-	29	14.34		#		
Temperature	C	AMM-1	WL	01/15/2009	0001	19	-	19	14.68		#		
Temperature	C	AMM-1	WL	01/15/2009	0001	53	-	53	16.3		#		
Temperature	C	AMM-2	WL	01/21/2009	0001	48	-	48	14.75		#		

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)		Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID	Lab	Data		QA			
Temperature	C	AMM-3	WL	01/22/2009	0001	48	- 48	17.65		#		
Temperature	C	ATP-1-S	WL	01/09/2009	0001	137	- 137	14.87		#		
Temperature	C	ATP-3	WL	01/08/2009	0001	51	- 51	17.5		#		
Temperature	C	SMI-MW01	WL	01/22/2009	0001	16	- 16	14.57		#		
Temperature	C	SMI-PW03	WL	01/20/2009	0001	60	- 60	14.45		#		
Temperature	C	SMI-PZ2D	WL	01/21/2009	0001	75	- 75	15.28		#		
Temperature	C	SMI-PZ2M2	WL	01/22/2009	0001	56	- 56	14.24		#		
Temperature	C	SMI-PZ3D2	WL	01/20/2009	0001	78	- 78	16.48		#		
Temperature	C	SMI-PZ3M	WL	01/20/2009	0001	59	- 59	16.36		#		
Temperature	C	SMI-PZ3S	WL	01/20/2009	0001	25	- 25	17.36		#		
Temperature	C	TP-01	WL	01/23/2009	0001	22	- 22	15.71		#		
Temperature	C	TP-07	WL	01/21/2009	0001	29	- 29	15.15		#		
Temperature	C	TP-08	WL	01/21/2009	0001	29	- 29	14.54		#		
Temperature	C	TP-09	WL	01/21/2009	0001	26	- 26	14.66		#		
Temperature	C	TP-11	WL	01/23/2009	0001	30	- 30	15.49		#		
Temperature	C	TP-20	WL	01/23/2009	0001	32	- 32	16.29		#		
Total Dissolved Solids	mg/L	0403	WL	01/14/2009	0001	18	- 18	8500		#	200	
Total Dissolved Solids	mg/L	0407	WL	01/14/2009	0001	17	- 17	11000		#	200	
Total Dissolved Solids	mg/L	0410	WL	01/20/2009	0001	23.5	- 23.5	1800		#	40	
Total Dissolved Solids	mg/L	0413	WL	01/20/2009	0001	10.5	- 10.5	2200		#	80	
Total Dissolved Solids	mg/L	0430	WL	01/07/2009	0001	101	- 101	4100	J	#	200	
Total Dissolved Solids	mg/L	0431	WL	01/08/2009	0001	91	- 91	22000	J	#	2000	
Total Dissolved Solids	mg/L	0432	WL	01/07/2009	0001	55	- 55	1800	J	#	80	
Total Dissolved Solids	mg/L	0433	WL	01/08/2009	0001	99	- 99	2800	J	#	80	
Total Dissolved Solids	mg/L	0433	WL	01/08/2009	0002	99	- 99	2800	J	#	80	
Total Dissolved Solids	mg/L	0434	WL	01/07/2009	0001	35	- 35	30000	J	#	1000	

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range		Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID	(Ft BLS)	Lab		Data	QA		
Total Dissolved Solids	mg/L	0435	WL	01/15/2009	0001	173	- 173	97000		#	2000	
Total Dissolved Solids	mg/L	0436	WL	01/09/2009	0001	197	- 197	100000	J	#	2000	
Total Dissolved Solids	mg/L	0440	WL	01/08/2009	0001	117	- 117	6200	J	#	200	
Total Dissolved Solids	mg/L	0443	WL	01/08/2009	0001	73	- 73	3600	J	#	200	
Total Dissolved Solids	mg/L	0444	WL	01/15/2009	0001	116	- 116	94000		#	2000	
Total Dissolved Solids	mg/L	0444	WL	01/15/2009	0002	116	- 116	93000		#	2000	
Total Dissolved Solids	mg/L	0455	WL	01/15/2009	0001	46	- 46	1600		#	40	
Total Dissolved Solids	mg/L	0456	WL	01/14/2009	0001	53	- 53	5400		#	200	
Total Dissolved Solids	mg/L	0457	WL	01/15/2009	0001	29	- 29	3100		#	80	
Total Dissolved Solids	mg/L	AMM-1	WL	01/15/2009	0001	19	- 19	7200		#	200	
Total Dissolved Solids	mg/L	AMM-1	WL	01/15/2009	0001	53	- 53	7200		#	200	
Total Dissolved Solids	mg/L	AMM-2	WL	01/21/2009	0001	48	- 48	15000		#	400	
Total Dissolved Solids	mg/L	AMM-3	WL	01/22/2009	0001	48	- 48	18000		#	400	
Total Dissolved Solids	mg/L	ATP-1-S	WL	01/09/2009	0001	137	- 137	100000	J	#	2000	
Total Dissolved Solids	mg/L	ATP-3	WL	01/08/2009	0001	51	- 51	1400	J	#	40	
Total Dissolved Solids	mg/L	SMI-MW01	WL	01/22/2009	0001	16	- 16	2900		#	80	
Total Dissolved Solids	mg/L	SMI-PW03	WL	01/20/2009	0001	60	- 60	6400		#	200	
Total Dissolved Solids	mg/L	SMI-PZ2D	WL	01/21/2009	0001	75	- 75	88000		#	4000	
Total Dissolved Solids	mg/L	SMI-PZ2M2	WL	01/22/2009	0001	56	- 56	54000		#	2000	
Total Dissolved Solids	mg/L	SMI-PZ3D2	WL	01/20/2009	0001	78	- 78	18000		#	400	
Total Dissolved Solids	mg/L	SMI-PZ3M	WL	01/20/2009	0001	59	- 59	7200		#	200	
Total Dissolved Solids	mg/L	SMI-PZ3S	WL	01/20/2009	0001	25	- 25	3300		#	200	
Total Dissolved Solids	mg/L	TP-01	WL	01/23/2009	0001	22	- 22	6300		#	200	
Total Dissolved Solids	mg/L	TP-07	WL	01/21/2009	0001	29	- 29	16000		#	400	
Total Dissolved Solids	mg/L	TP-08	WL	01/21/2009	0001	29	- 29	16000		#	400	
Total Dissolved Solids	mg/L	TP-09	WL	01/21/2009	0001	26	- 26	13000		#	400	

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID					Lab	Data QA		
Total Dissolved Solids	mg/L	TP-11	WL	01/23/2009	0001	30	-	30	18000		#	400	
Total Dissolved Solids	mg/L	TP-20	WL	01/23/2009	0001	32	-	32	100000		#	4000	
Turbidity	NTU	0403	WL	01/14/2009	0001	18	-	18	3.38		#		
Turbidity	NTU	0407	WL	01/14/2009	0001	17	-	17	0.71		#		
Turbidity	NTU	0410	WL	01/20/2009	0001	23.5	-	23.5	150		#		
Turbidity	NTU	0413	WL	01/20/2009	0001	10.5	-	10.5	363		#		
Turbidity	NTU	0430	WL	01/07/2009	0001	101	-	101	1.71		#		
Turbidity	NTU	0431	WL	01/08/2009	0001	91	-	91	2.64		#		
Turbidity	NTU	0432	WL	01/07/2009	0001	55	-	55	45		#		
Turbidity	NTU	0433	WL	01/08/2009	0001	99	-	99	7.48		#		
Turbidity	NTU	0434	WL	01/07/2009	0001	35	-	35	2.49		#		
Turbidity	NTU	0435	WL	01/15/2009	0001	173	-	173	6.31		#		
Turbidity	NTU	0436	WL	01/09/2009	0001	197	-	197	1.09		#		
Turbidity	NTU	0440	WL	01/08/2009	0001	117	-	117	93.3		#		
Turbidity	NTU	0443	WL	01/08/2009	0001	73	-	73	7.17		#		
Turbidity	NTU	0444	WL	01/15/2009	0001	116	-	116	7.19		#		
Turbidity	NTU	0457	WL	01/15/2009	0001	29	-	29	9.99		#		
Turbidity	NTU	AMM-1	WL	01/15/2009	0001	19	-	19	3.79		#		
Turbidity	NTU	AMM-1	WL	01/15/2009	0001	53	-	53	23.1		#		
Turbidity	NTU	AMM-2	WL	01/21/2009	0001	48	-	48	7.42		#		
Turbidity	NTU	AMM-3	WL	01/22/2009	0001	48	-	48	16.2		#		
Turbidity	NTU	ATP-1-S	WL	01/09/2009	0001	137	-	137	5.72		#		
Turbidity	NTU	ATP-3	WL	01/08/2009	0001	51	-	51	0.7		#		
Turbidity	NTU	SMI-MW01	WL	01/22/2009	0001	16	-	16	6.47		#		
Turbidity	NTU	SMI-PW03	WL	01/20/2009	0001	60	-	60	1.94		#		
Turbidity	NTU	SMI-PZ2D	WL	01/21/2009	0001	75	-	75	3.36		#		

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
				Date	ID					Lab	Data	QA		
Turbidity	NTU	SMI-PZ2M2	WL	01/22/2009	0001	56	-	56	208			#		
Turbidity	NTU	SMI-PZ3D2	WL	01/20/2009	0001	78	-	78	8.34			#		
Turbidity	NTU	SMI-PZ3M	WL	01/20/2009	0001	59	-	59	1.81			#		
Turbidity	NTU	SMI-PZ3S	WL	01/20/2009	0001	25	-	25	3.48			#		
Turbidity	NTU	TP-01	WL	01/23/2009	0001	22	-	22	6.57			#		
Turbidity	NTU	TP-07	WL	01/21/2009	0001	29	-	29	9.29			#		
Turbidity	NTU	TP-08	WL	01/21/2009	0001	29	-	29	140			#		
Turbidity	NTU	TP-09	WL	01/21/2009	0001	26	-	26	9.95			#		
Turbidity	NTU	TP-11	WL	01/23/2009	0001	30	-	30	61			#		
Uranium	mg/L	0403	WL	01/14/2009	0001	18	-	18	1.6		J	#	6.2E-005	
Uranium	mg/L	0407	WL	01/14/2009	0001	17	-	17	1.3		J	#	6.2E-005	
Uranium	mg/L	0410	WL	01/20/2009	0001	23.5	-	23.5	0.73		J	#	0.00015	
Uranium	mg/L	0413	WL	01/20/2009	0001	10.5	-	10.5	1.5		J	#	0.00015	
Uranium	mg/L	0430	WL	01/07/2009	0001	101	-	101	0.012		J	#	3.6E-006	
Uranium	mg/L	0431	WL	01/08/2009	0001	91	-	91	0.01		J	#	3.6E-006	
Uranium	mg/L	0432	WL	01/07/2009	0001	55	-	55	0.002		J	#	3.6E-006	
Uranium	mg/L	0433	WL	01/08/2009	0001	99	-	99	0.002		J	#	3.6E-006	
Uranium	mg/L	0433	WL	01/08/2009	0002	99	-	99	0.002		J	#	3.6E-006	
Uranium	mg/L	0434	WL	01/07/2009	0001	35	-	35	0.023		J	#	3.6E-006	
Uranium	mg/L	0435	WL	01/15/2009	0001	173	-	173	0.022		J	#	3.1E-006	
Uranium	mg/L	0436	WL	01/09/2009	0001	197	-	197	0.0068		J	#	3.6E-006	
Uranium	mg/L	0440	WL	01/08/2009	0001	117	-	117	0.043		J	#	3.6E-006	
Uranium	mg/L	0443	WL	01/08/2009	0001	73	-	73	0.012		J	#	3.6E-006	
Uranium	mg/L	0444	WL	01/15/2009	0001	116	-	116	0.017		J	#	3.1E-006	
Uranium	mg/L	0444	WL	01/15/2009	0002	116	-	116	0.017		J	#	3.1E-006	
Uranium	mg/L	0455	WL	01/15/2009	0001	46	-	46	0.0051		J	#	3.1E-006	

Appendix C. Water Quality Data (continued)

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 4/14/2009

Parameter	Units	Location ID	Location Type	Sample		Depth Range		Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID	(Ft BLS)	Lab		Data	QA		
Uranium	mg/L	0456	WL	01/14/2009	0001	53	- 53	0.027	J	#	3.1E-006	
Uranium	mg/L	0457	WL	01/15/2009	0001	29	- 29	0.0021	J	#	3.1E-006	
Uranium	mg/L	AMM-1	WL	01/15/2009	0001	53	- 53	0.005	J	#	3.1E-006	
Uranium	mg/L	AMM-2	WL	01/21/2009	0001	48	- 48	2.1	J	#	0.00015	
Uranium	mg/L	AMM-3	WL	01/22/2009	0001	48	- 48	1.7	J	#	0.00015	
Uranium	mg/L	ATP-1-S	WL	01/09/2009	0001	137	- 137	0.00048	J	#	3.6E-006	
Uranium	mg/L	ATP-3	WL	01/08/2009	0001	51	- 51	0.0025	J	#	3.6E-006	
Uranium	mg/L	SMI-MW01	WL	01/22/2009	0001	16	- 16	4.4	J	#	0.00031	
Uranium	mg/L	SMI-PW03	WL	01/20/2009	0001	60	- 60	0.6	J	#	3.1E-005	
Uranium	mg/L	SMI-PZ2D	WL	01/21/2009	0001	75	- 75	0.55	J	#	3.1E-005	
Uranium	mg/L	SMI-PZ2M2	WL	01/22/2009	0001	56	- 56	1.3	J	#	0.00015	
Uranium	mg/L	SMI-PZ3D2	WL	01/20/2009	0001	78	- 78	1.9	J	#	0.00015	
Uranium	mg/L	SMI-PZ3M	WL	01/20/2009	0001	59	- 59	1.9	J	#	0.00015	
Uranium	mg/L	SMI-PZ3S	WL	01/20/2009	0001	25	- 25	1.7	J	#	0.00015	
Uranium	mg/L	TP-01	WL	01/23/2009	0001	22	- 22	0.12	J	#	3.1E-005	
Uranium	mg/L	TP-07	WL	01/21/2009	0001	29	- 29	2.7	J	#	0.00015	
Uranium	mg/L	TP-08	WL	01/21/2009	0001	29	- 29	2.4	J	#	0.00015	
Uranium	mg/L	TP-09	WL	01/21/2009	0001	26	- 26	2.4	J	#	0.00015	
Uranium	mg/L	TP-11	WL	01/23/2009	0001	30	- 30	0.0012	J	#	3.1E-006	
Uranium	mg/L	TP-20	WL	01/23/2009	0001	32	- 32	0.0053	J	#	3.1E-006	

Note: BLS = below land surface; C = centigrade; µmhos/cm = micromhos per centimeter; mV = millivolt; NTU = nephelometric turbidity unit; SL = surface location; S.U. = standard unit; TS = treatment system; WL = well

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

Appendix C. Water Quality Data (continued)

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- > Result above upper detection limit.
- A Tentatively identified compound (TIC) is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and contract-required detection limit. Organic: Analyte also found in method blank.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: TIC.
- P > 25% difference in detected pesticide or Aroclor concentrations between two columns.
- U Analytical result below detection limit.
- W Postdigestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X,Y,Z Laboratory defined qualifier, see case narrative.

DATA QUALIFIERS:

- | | | | | | |
|---|--|---|---|---|------------------|
| F | Low-flow sampling method used. | G | Possible grout contamination, pH > 9. | J | Estimated value. |
| L | Less than three bore volumes purged prior to sampling. | Q | Qualitative result due to sampling technique. | R | Unusable result. |
| U | Parameter analyzed for but was not detected. | X | Location is undefined. | | |

QA QUALIFIER:

- # Validated according to quality assurance guidelines.

Appendix D.
Water Level Data

Appendix D. Water Level Data

STATIC WATER LEVELS (USEE700) FOR SITE MOA01, Moab Site
REPORT DATE: 3/16/2009

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)	Water Level Flag
0403	O	3968.95	01/14/2009		15.82	3953.13	
0407	O	3969.09	01/14/2009		16.45	3952.64	
0410	O	3979.11	01/20/2009		23.1	3956.01	
0413	O	3965.33	01/20/2009		9.35	3955.98	
0430	U	4022.1	01/07/2009		59.8	3962.3	
0431	O	4007.04	01/08/2009		47.12	3959.92	
0432	U	4001.47	01/07/2009		41.57	3959.9	
0433	O	3989.99	01/08/2009		31.25	3958.74	
0434	U	3990.21	01/07/2009		33.71	3956.5	
0435	O	3971.67	01/15/2009		14.13	3957.54	
0436	O	3970.8	01/09/2009		10.32	3960.48	
0443	O	4006.72	01/08/2009		46.39	3960.33	
0444	O	3970.99	01/15/2009		14.56	3956.43	
0455	O	3990.2	01/15/2009		31.72	3958.48	
0456	U	3990.46	01/14/2009		34.02	3956.44	
0457	O	3971.3	01/15/2009		15.12	3956.18	
AMM-1	U	3972.02	01/15/2009		16.24	3955.78	
AMM-2	O	3967.74	01/21/2009		13.11	3954.63	
AMM-3	O	3967.69	01/22/2009		12.97	3954.72	
ATP-1-S	O	3971.14	01/09/2009		19.3	3951.84	
ATP-3	O	3998.29	01/08/2009		38.42	3959.87	
SMI-MW01	O	3968.32	01/22/2009		13.51	3954.81	
SMI-PW03	O	3975.04	01/20/2009		18.8	3956.24	
SMI-PZ2D	O	3967.38	01/21/2009		15.04	3952.34	
SMI-PZ2M2	O	3967.18	01/22/2009		13.39	3953.79	

Appendix D. Water Level Data (continued)

STATIC WATER LEVELS (USEE700) FOR SITE MOA01, Moab Site
REPORT DATE: 3/16/2009

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)	Water Level Flag
SMI-PZ3D2	O	3975.13	01/20/2009		19.1	3956.03	
SMI-PZ3M	O	3975.23	01/20/2009		19.02	3956.21	
SMI-PZ3S	O	3975.03	01/20/2009		18.23	3956.8	
TP-01	O	3969.39	01/23/2009		12.98	3956.41	
TP-07	O	3965.72	01/21/2009		14.9	3950.82	
TP-08	O	3966.57	01/21/2009		12.64	3953.93	
TP-09	O	3967.38	01/21/2009		12.9	3954.48	
TP-11	O	3967.51	01/23/2009		11.88	3955.63	
TP-20	D	3967.55	01/23/2009		15.52	3952.03	

Flow Codes: B = background; C = cross gradient; D = downgradient; O = on site; U = upgradient
 Water Level Flags: D = dry

Attachment 1.
January 2009 Site Wide Sampling Event

Attachment 1.
January 2009 Site Wide Sampling Event Trip Report



Date: February 12, 2009
To: K. Pill, M. Mullis
From: E.M. Glowiak
Subject: Site Wide Sampling Event

Site: Moab – Site Wide Sampling Event – January 2009

Date of Sampling Event: January 7-23, 2009

Team Members: K. Pill, J. Ritchey, E. Glowiak

RIN Number Assigned: All samples were assigned to RIN 0901026.

Sample Shipment: The coolers were shipped overnight UPS to Paragon Analytics, Inc., from Moab, Utah, on January 9, 16, and 23 (Tracking Nos. 4491209236, 4496475029, and 4494937284).

Number of Locations Sampled: The purpose of the site wide sampling event was to update contaminant plume maps to include wells that have not been sampled recently. Including two duplicates, a total of 36 monitoring wells were sampled during this event. Photos were taken of each location to demonstrate the wells' integrity.

Locations Not Sampled/Reason: Monitor well 0411 contained less than 1 foot of water in the casing, and the well did not recharge after the initial purge. Monitor wells TP-03, TP-04, TP-06, 0546, and 0547 were not located in the field and may have been accidentally destroyed. Well 0442 could not be found, and taking into consideration its location, it is assumed to have been destroyed during a flash flood event that impacted this area in July 2006. Well ATP-1-ID was not sampled due to time constraints.

Field Variance: Sample tickets were not used during this sampling event. While sampling well TP-20, the turbidimeter was not functioning properly.

Quality-Control Sample Cross Reference: Following are the false identifications assigned to the quality-control samples.

False ID	True ID	Sample Type	Associated matrix
2000	0444	Duplicate from 116 ft bgs	Ground Water
2001	0433	Duplicate from 99 ft bgs	Ground Water

Note: ft bgs = feet below ground surface; ID = identification

Attachment 1.
January 2009 Site Wide Sampling Event Trip Report (continued)

Location Specific Information: All of the monitor wells were sampled using a peristaltic pump and dedicated tubing unless otherwise noted. The table below provides additional information.

Location	Date	Sample Depth (ft bgs)	Comments
0403	01/14/2009	18	
0407	01/14/2009	17	
0410	01/20/2009	23.5	
0413	01/20/2009	10.5	Supposed to sample at 9 ft bgs, but the water level was too low
0430	01/07/2009	101	Sampled with dedicated bladder pump
0431	01/08/2009	91	Sampled with dedicated bladder pump
0432	01/07/2009	55	Sampled with dedicated bladder pump
0433	01/08/2009	99	Sampled with dedicated bladder pump
0434	01/07/2009	35	Sampled with dedicated bladder pump
0435	01/15/2009	173	Sulfur odor
0436	01/09/2009	197	Sampled with peristaltic pump; water was gray
0440	01/08/2009	117	Sampled with dedicated bladder pump; cannot obtain water level; analyzed for selenium
0443	01/08/2009	73	Sampled with dedicated bladder pump
0444	01/15/2009	116	Duplicate collected
0455	01/15/2009	46	Sampled with inertia pump; extremely silty; unable to collect water level while pumping
0456	01/14/2009	53	Sampled with inertia pump; unable to collect water level data; very silty; analyzed for selenium
0457	01/15/2009	29	
AMM-1-53	01/15/2009	53	
AMM-1-19	01/15/2009	19	
AMM-2	01/21/2009	48	
AMM-3	01/22/2009	48	Water was reddish; small red flecks in the water; sulfur odor
ATP-1-S	01/09/2009	137	Water was gray; sulfur odor
ATP-3	01/08/2009	51	Sampled with dedicated bladder pump
SMI-MW01	01/22/2009	16	
SMI-PW03	01/20/2009	60	
SMI-PZ2D	01/21/2009	75	
SMI-PZ3D2	01/20/2009	78	
SMI-PZ2M2	01/22/2009	56	Water was gray
SMI-PZ3M	01/20/2009	59	
SMI-PZ3S	01/20/2009	25	Sampled for selenium
TP-01	01/23/2008	22	Strong sulfur odor; unable to collect water level data while pumping
TP-07	01/21/2009	29	Water was gray; unable to collect water level data while pumping
TP-08	01/21/2009	29	Well was bridged with dirt, but field crew was able to poke through the bridge; water was grayish red
TP-09	01/21/2009	26	Added new sample tubing; unable to collect water level data while pumping; analyzed for selenium
TP-11	01/23/2009	30	Water was gray; sulfur odor; unable to collect water level data while pumping
TP-20	01/23/2009	32	Sulfur odor

Notes: ft bgs = feet below ground surface

Attachment 1.
January 2009 Site Wide Sampling Event Trip Report (continued)

Water Level Measurements: Water level data are provided in the table below. These data represent depth to water (ft below top of casing) measurements.

Well No.	Date	Time	Depth to Water (ft btoc)
0403	01/14/2009	14:20	15.82
0407	01/14/2009	14:43	16.45
0410	01/20/2009	15:40	23.10
0413	01/20/2009	10:56	9.35
0430	01/07/2009	16:44	59.80
0431	01/08/2009	13:32	47.12
0432	01/07/2009	15:10	41.57
0433	01/08/2009	10:20	31.25
0434	01/07/2009	16:06	33.71
0435	01/15/2009	09:22	14.13
0436	01/09/2009	10:31	10.32
0440	01/08/2009	16:00	N/A
0443	01/08/2009	14:04	46.39
0444	01/15/2009	10:23	14.56
0455	01/15/2009	13:14	31.72
0456	01/14/2009	15:52	34.02
0457	01/15/2009	09:55	15.12
AMM-1-53	01/15/2009	14:39	16.21
AMM-1-19	01/15/2009	14:59	16.24
AMM-2	01/21/2009	13:21	13.11
AMM-3	01/22/2009	10:00	12.97
ATP-1-S	01/09/2009	09:30	19.30
ATP-3	01/08/2009	09:10	38.42
SMI-MW01	01/22/2009	13:35	13.51
SMI-PW03	01/20/2009	14:54	18.80
SMI-PZ2D	01/21/2009	14:18	15.04
SMI-PZ3D2	01/20/2009	14:20	19.10
SMI-PZ2M2	01/22/2009	09:01	13.39
SMI-PZ3M	01/20/2009	10:13	19.02
SMI-PZ3S	01/20/2009	09:46	18.83
TP-01	01/23/2008	09:01	12.98
TP-07	01/21/2009	15:06	14.90
TP-08	01/21/2009	15:48	12.64
TP-09	01/21/2009	13:46	12.90
TP-11	01/23/2009	08:29	11.88
TP-20	01/23/2009	10:21	15.52

Note: btoc = below top of casing

Attachment 1.
January 2009 Site Wide Sampling Event Trip Report (continued)



Observation Wells 0443 and 0431



Observation Well TP-01

Attachment 1.
January 2009 Site Wide Sampling Event Trip Report (continued)



Observation Well TP-11



Observation Well AMM-1

Attachment 1.
January 2009 Site Wide Sampling Event Trip Report (continued)



Observation Wells 0435, 0457, and 0444



Observation Wells 0433 and 0455

Attachment 1.
January 2009 Site Wide Sampling Event Trip Report (continued)

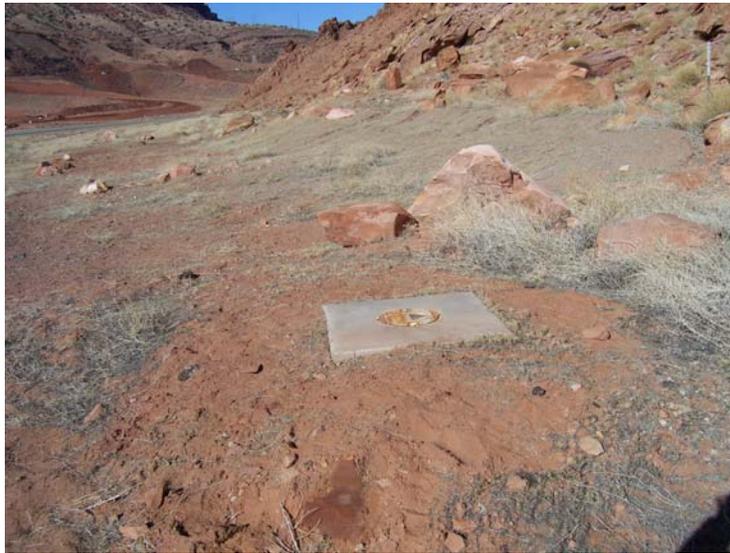


Observation Well ATP-3



Observation Wells 0434 and 0456

Attachment 1.
January 2009 Site Wide Sampling Event Trip Report (continued)



Observation Well 0432



Observation Well 0430

Attachment 1.
January 2009 Site Wide Sampling Event Trip Report (continued)



Observation Well TP-2

Well Inspection Summary: A well inspection was not conducted.

Equipment: No issues.

Regulatory: None.

Site Issues: According to the USGS Cisco gaging station (Station No. 09180500), the mean daily Colorado River flows during this sampling event are provided below:

Date	Daily Mean Flow (cfs)
01/07/2009	Ice
01/08/2009	Ice
01/09/2009	Ice
01/14/2009	Ice
01/15/2009	Ice
01/21/2009	Ice
01/22/2009	Ice
01/23/2009	Ice

Note: cfs = cubic feet per second

Ice has affected the gaging station, and the daily mean flow is unavailable.

Corrective Action Required/Taken: None.