

Office of Environmental Management – Grand Junction



Moab UMTRA Project

January 2008 Validation Data Package for the Routine Ground Water and Surface Water Sampling

November 2008



U.S. Department
of Energy

Office of Environmental Management

January 2008 Water Sampling

**Validation Data Package for
Routine Ground Water and
Surface Water Sampling
Moab, Utah**

November 2008

Table of Contents

Section	Page
1.0 Sampling Event Summary	1
1.1 Summary Criteria.....	1
1.2 Executive Summary	3
1.3 Sampling and Analyses.....	7
2.0 Data Assessment Summary	8
2.1 Water Sampling Field Activities Verification	8
2.2 Laboratory Performance Assessment	11
2.3 Field Analyses/Activities	15
2.4 Certification	15
3.0 Data Presentation.....	16
3.1 Minimums and Maximums Report	16
3.2 Anomalous Data Review Checksheet.....	19
3.3 Water Quality Data	20
3.4 Water Level Data	32
3.5 Blanks Report.....	34
Tables	
Table 1. Locations Sampled that Exceeded Selenium and Uranium Ground Water Standards.....	2
Table 2. Surface Water Ammonia Concentrations and Comparisons to State of Utah and Federal Criteria	2
Table 3. Analytes and Methods	11
Table 4. Data Qualifiers.....	12
Table 5. Reason Codes for Data Flags.....	12
Figure	
Figure 1. Routine Ground Water and Surface Water Sampling Locations.....	3
Attachments	
Attachment 1. Trip Report	37
Attachment 2. Acronyms	41

1.0 Sampling Event Summary

This section contains the Summary Criteria with a sample location map (Section 1.1), an Executive Summary (Section 1.2), and the Sampling and Analyses (Section 1.3) for the January 2008 Routine Sampling event.

1.1 Summary Criteria

Site: Moab, Utah

Sampling Period: January 22-24, 2008

The purpose of this sampling was to collect ground water and surface water samples from the standard routine event sampling locations in order to evaluate the overall water quality. This sampling event represents the first routine sampling event for 2008. Sampling locations are shown on Figure 1.

1. Did concentrations in water from any domestic well sampled exceed a ground water standard, primary drinking water standard, or health advisory?

Domestic wells were not sampled during this event.

2. Were standards exceeded at any point-of-compliance wells?

Point of compliance wells have not been established at the Moab site.

3. As a result of this sampling round, is there any indication of unexpected contaminated ground water movement?

There is no indication of unexpected contaminated ground water movement. Ground water contamination in the shallow alluvial aquifer beneath the tailings pile and former mill site area flows southeast toward the Colorado River. Contaminant concentrations in January 2008 have not fluctuated significantly compared to previous river base flow sampling event results. Time versus concentration plots for ammonia, total dissolved solids (TDS), and uranium concentrations over the past two years for wells TP-02 (northeast portion of the site), 0492 (just south of the well field), and TP-17 and TP-19 (located farther south of the well field) are provided in the Executive Summary.

Wells that exceeded ground water quality standards for selenium and uranium are listed in Table 1. A more cost-efficient sampling schedule was implemented in 2008. This schedule took into account when some locations (most notably 0401, 0404, and 0405) were sampled as part of monthly sampling events. To provide a more complete summary (and provide comparable information as in previous routine events), the three locations were added to Table 1 even though they were not all sampled as part of this routine event. Well 0405 was sampled as part of the January 2008 monthly event, and wells 0401 and 0404 were sampled in November 2007. These locations will continue to be sampled in future sampling events.

Table 1. Locations Sampled that Exceeded Selenium and Uranium Ground Water Standards

Analyte	Standard (mg/L)	Locations Exceeding Standards
Selenium	0.01	0401 ^a (0.01), 0404 ^a (0.019), 0405 ^b (0.017), 0437 (0.079)
Uranium	0.044	0401 ^a (2.7), 0404 ^a (1.9), 0405 ^b (1.7), 0437 (4.7), 0439 (0.91), 0492 (2.2), TP-02 (2.6), TP-17 (0.048)

Notes: a – Location sampled in November 2007

b – Location sampled in January 2008 as part of the monthly sampling event

4. Is there statistical evidence that contaminants related to the Moab UMTRA Project were detected in a surface body of water in greater concentrations than upstream ambient water quality?

Since the monitoring of the site began, site contaminants have periodically occurred at elevated concentrations in the Colorado River, primarily adjacent to and just downstream from the tailings pile in isolated pools or slow-moving backwater areas. However, the results from the sampling event in January 2008 indicate that contaminants in the areas sampled are not distinguishable from background.. These low concentrations may be attributable to either the effectiveness of the interim action or dilution from the higher river stage during the sampling time frame.

Table 2 presents a summary of the ammonia concentrations associated with the surface water samples collected during this sampling event. For comparison purposes, the applicable State of Utah and Federal criteria for both acute and chronic concentrations (along with the temperature and pH data used to calculate these concentrations) are provided.

Table 2. Surface Water Ammonia Concentrations and Comparisons to State of Utah and Federal Criteria

Loc	Date	Temp (°C)	pH	Ammonia as N (mg/L)	State/Federal AWQC-Acute Total as N (mg/L) ¹	State/Federal AWQC-Chronic Total as N (mg/L) ²
0201	1/22/08	1.29	8.59	0.1	1.77	0.92
0218	1/23/08	1.02	8.56	0.1	1.77	0.92
0226	1/22/08	1.78	8.18	0.16	3.83	1.79
0228	1/22/08	0.26	8.74	0.12	1.47	0.778
CR1	1/22/08	2.79	8.39	0.1	2.59	1.29
CR3	1/22/08	2.05	8.23	0.13	3.83	1.79

Notes: Loc = Location, Temp = Temperature, AWQC = Ambient Water Quality Criteria

(1) State of Utah, Standards of Quality for Waters of the State (Effective May 1, 2008), Rule R317-2, Table 2.14.2, 1-Hour Average (Acute) Concentration of Total Ammonia as N (mg/L)

(2) State of Utah, Standards of Quality for Waters of the State (Effective May 1, 2008), Rule R317-2, Table 2.14.2, 30-Day Average (Chronic) Concentration of Total Ammonia as N (mg/L), Fish Early Life Stages Present

As shown in Table 2, none of the samples exceeded the state or federal acute or chronic criteria.

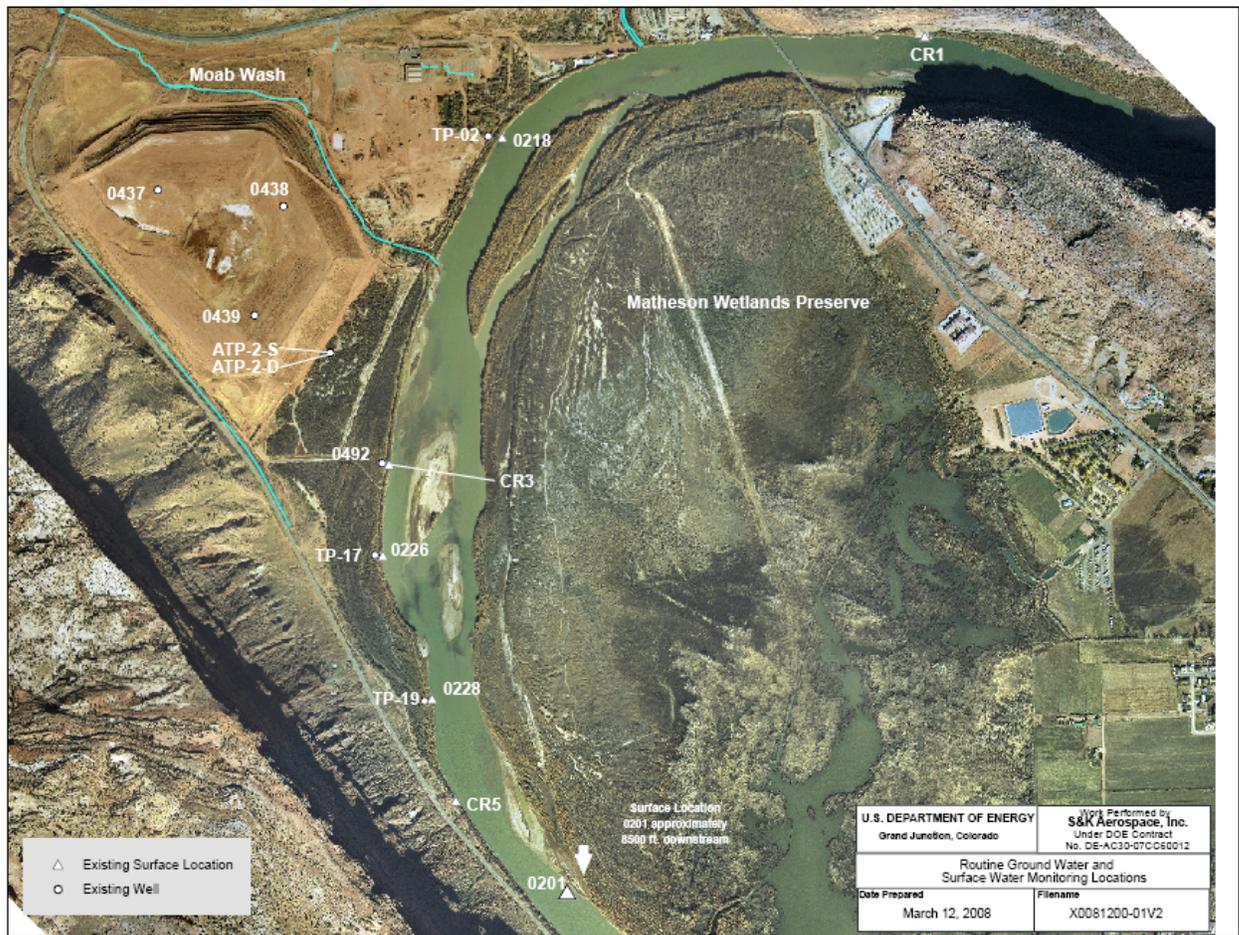


Figure 1. Routine Ground Water and Surface Water Sampling Locations
(may include locations not sampled)

1.2 Executive Summary

This validation data package (VDP) presents the validated data associated with the ground water and surface water samples collected during the January 2008 routine 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 concentration trends based on the January 2008 data is provided for the wells located in the floodplain (along the bank of the Colorado River) and on top of the tailings pile. Time versus

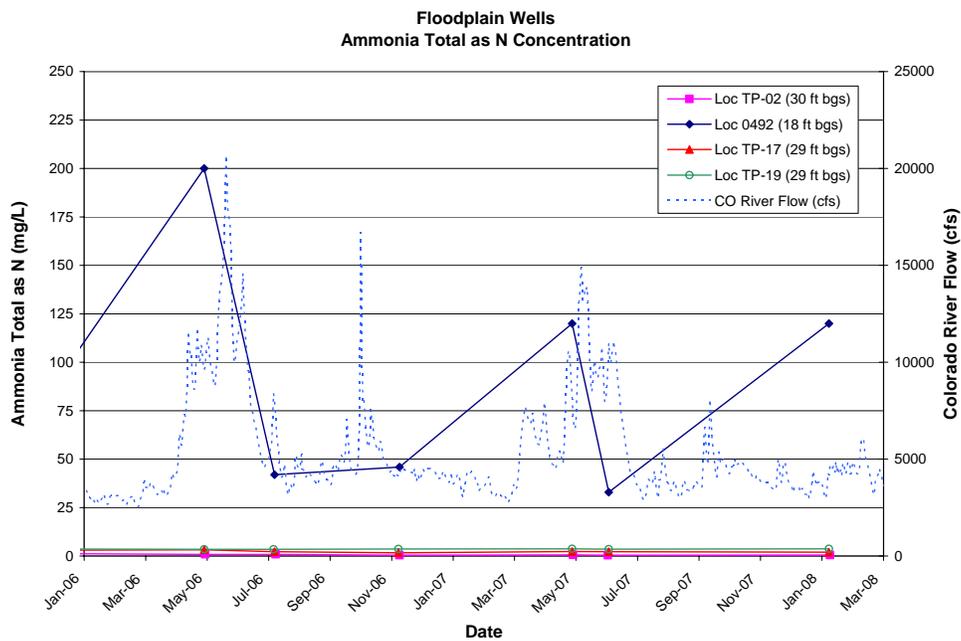
concentration (ammonia, TDS, and uranium) plots for selected monitoring wells are presented to display historical trends exhibited by the data. Colorado River flows over the same time frame are also plotted to determine whether the magnitude of river flows influences analyte concentrations.

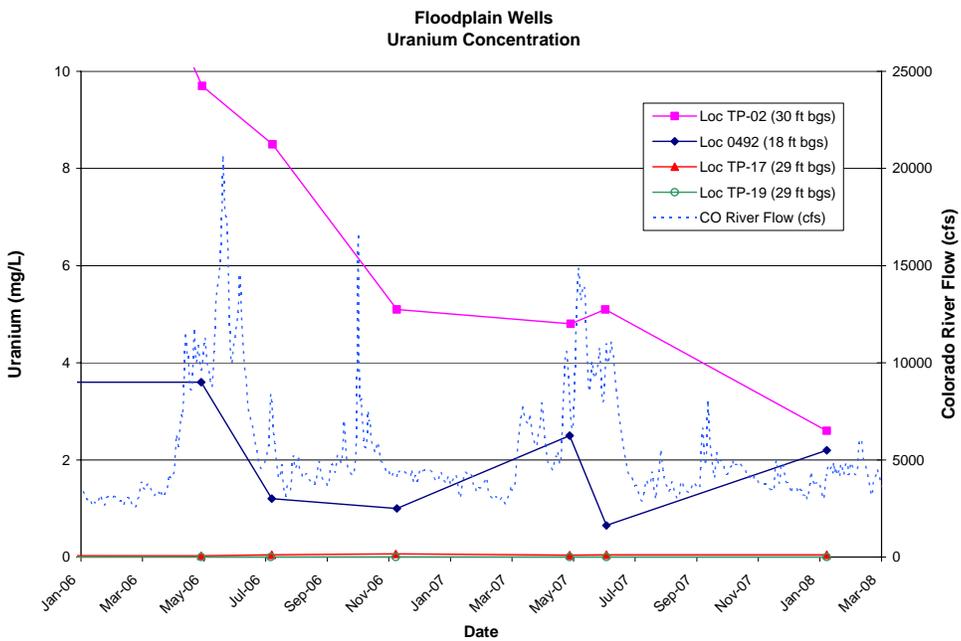
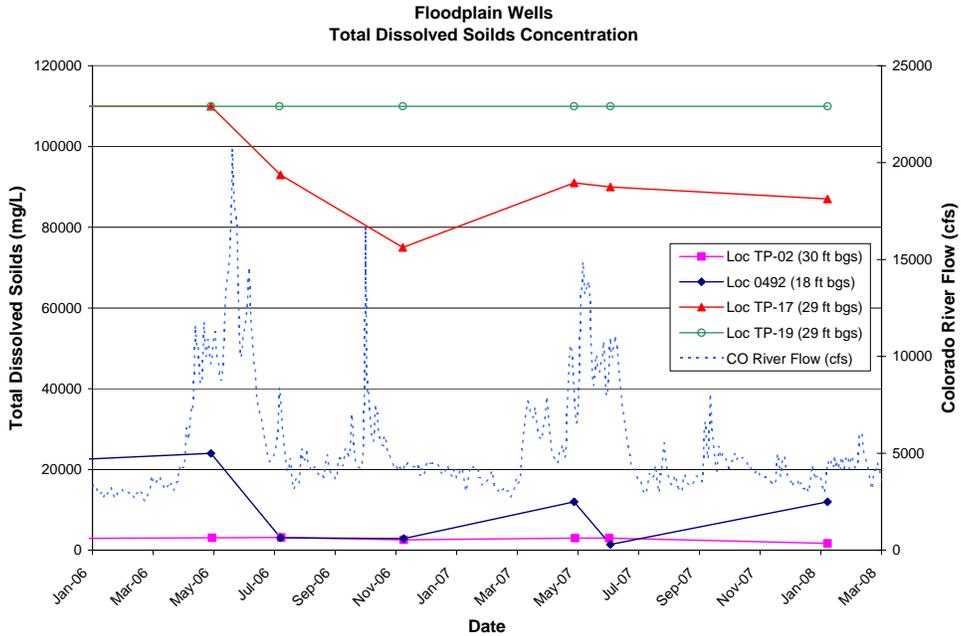
It was not possible to collect a sample from surface water location CR-5 due to safety access issues, and a sampling equipment malfunction prevented the collection of a ground water sample from well 0438.

Flood Plain Wells

Time concentration plots were generated for wells TP-02, 0492, TP-17, and TP-19 (from north to south). These plots exhibit that samples collected from wells TP-02, TP-17, and TP-19 have historically contained low (below 5 milligrams per liter [mg/L]) ammonia concentrations, while the concentration detected in samples from well 0492 fluctuated between 33 and 200 mg/L over the past two years. The TDS plot indicates that TP-19 is screened within brine and that the brine/saline water interface (35,000 mg/L TDS) has been within the screened interval of TP-17 and approached that of well 0492 during various sampling periods.

Well TP-02 has consistently contained less than 6,000 mg/L TDS. Uranium concentrations have steadily declined in samples collected from wells TP-02 and well 0492. Typical of wells screened within the brine, uranium concentrations in wells TP-17 and TP-19 are considerably lower compared to TP-02 and well 0492. Since July 2006 samples collected from well TP-17 have contained uranium concentrations just above the 0.044 mg/L standard. Uranium concentrations in samples collected from well TP-02 remain above 2 mg/L; however concentrations have been steadily decreasing since late 2005.

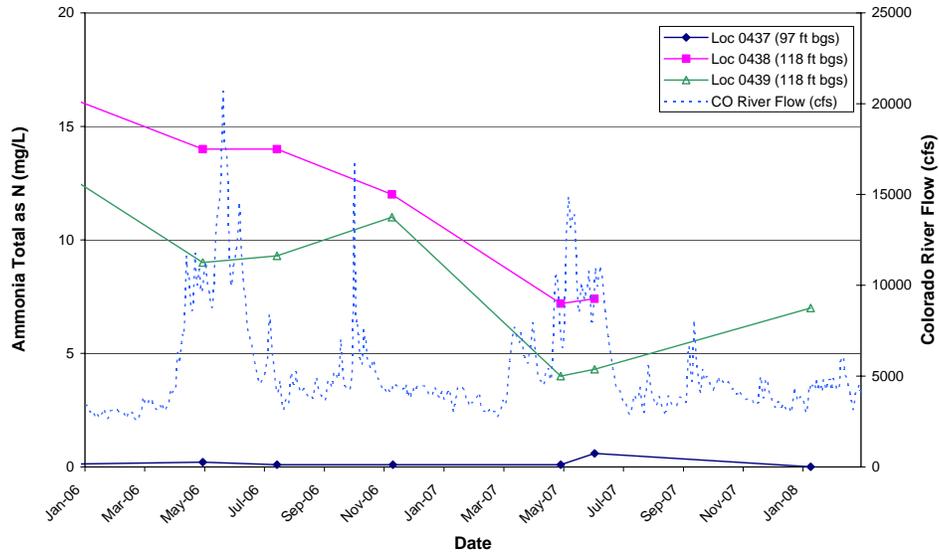




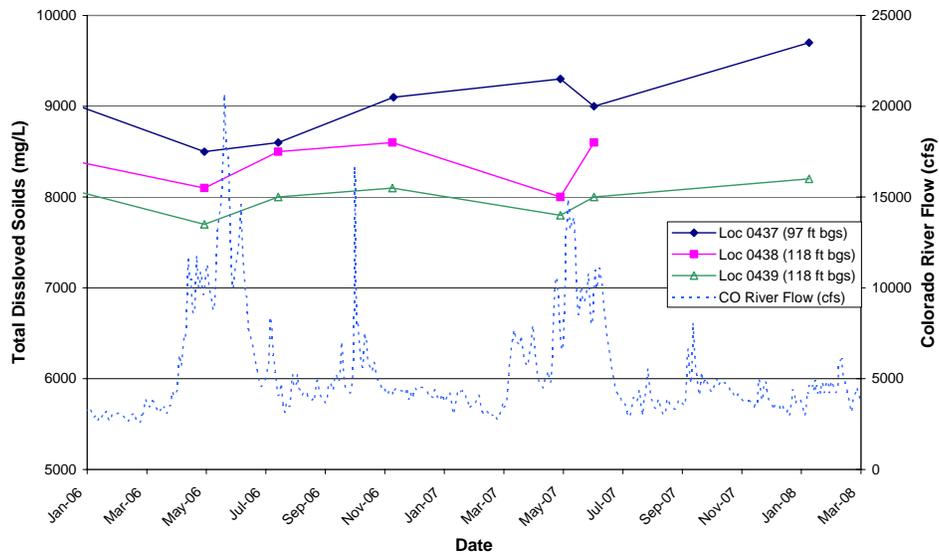
Tailings Pile Wells

The wells located on the tailings pile are all screened within the alluvial material underlying the tailings. Starting in May 2007, ammonia concentrations in well 0439 exhibited a slight increase. In well 0437, which is located upgradient of wells 0438 and 0439, ammonia concentrations remain below 1 mg/L. The TDS time concentration plot displays that all three wells are screened above the brine/saline water interface (all three had concentrations between 8,000 and 10,000 mg/L). The uranium time concentration plots indicate the uranium concentrations have remained stable since mid-2005.

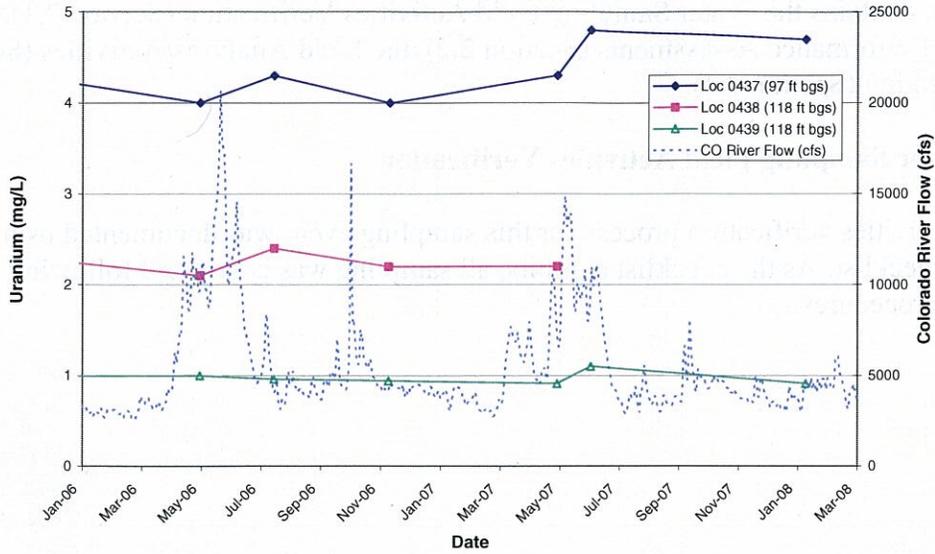
Observation Wells Screened Under Tailings Pile
Ammonia Total as N Concentrations



Observation Wells Screened Under Tailings Pile
Total Dissolved Solids Concentrations



Observation Wells Screened Under Tailings Pile
Uranium Concentrations



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, February 2007*. 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 equipment blanks and duplicates were collected, and all holding times were met. No significant discrepancies were noted regarding sample shipping and receiving, preservation times, instrument calibration, method blanks, or matrix spikes, except as qualified or noted in the Laboratory Performance Assessment (Section 2.2).

There was one location with one anomalous data point. The selenium concentration from location TP-02 was a historic low. Selenium concentrations have been decreasing since 2002 at this location.

According to the U.S. Geological Survey (USGS) Cisco Gaging Station, the mean daily Colorado River flow rates varied between 4,170 and 4,640 cubic feet per second (cfs) during this sampling period.

Ken Pill

11/5/08

Ken Pill
Ground Water Lead

Date

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 following checklist. As the checklist exhibits, all sampling was conducted following the applicable procedures.

Water Sampling Field Activities Verification Checklist

Sampling Event / RIN	Routine Event / 0801007	Date(s) of Water Sampling	January 22 – 24, 2008
Date(s) of Verification	February 13, 2008	Name of Verifier	Ken Pill

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures? List other documents, standard operating procedures, instructions.	Yes	
	NA	
2. Were the sampling locations specified in the planning documents sampled?	No	One location was not sampled because of safety reasons, and another was not sampled due to broken equipment. See attached trip report.
3. Was a pre-trip 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?	Yes	
7. Were the following conditions met when purging a Category I well: Was one pump/tubing volume purged prior to sampling?	Yes	
Did the water level stabilize prior to sampling?	Yes	
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	Yes	Problems meeting turbidity criteria in various locations as noted in field book
Was the flow rate less than 500 milliliters per minute (mL/min)?	Yes	
If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	NA	

2.2 Laboratory Performance Assessment

General Information

Requisition No. (RIN): 0801007

Sample Event: Routine Ground Water and Surface Water Sampling Event – January 2008

Site(s): Moab, UT

Laboratory: Paragon Analytics, Fort Collins, CO

Sample Data Group (SDG) No.: 0801218

Analysis: Metals and Inorganics

Validator: Rebecca Hollis

Review Date: June 20, 2008

This validation was performed according to the *Environmental Procedures Catalog* (STO 6), “Standard Practice for Validation of Laboratory Data,” GT-9(P) (2006). The procedure was applied at Level 1, Data Deliverables Examination on 100 percent of the samples. A Level 1 validation includes review of the chain of custody, case narratives, field and sample identifications, holding times, and preservation and cooler receipt. If the case narrative identifies items of concern, these items are further investigated in a targeted Level 3 validation. See attached Data Validation Worksheets for supporting documentation on the data review and 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 3.

Table 3. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Ammonia as N	WCH-A-005	EPA 350.1	EPA 350.1
Bromide	MIS-A-038	SW-846 9056	SW-846 9056
Chloride	MIS-A-039	SW-846 9056	SW-846 9056
Copper	MET-A-022	SW-846 3005A	SW-846 6010
Manganese	GJO-17	SW-846 3005A	SW-846 6010
Selenium	GJO-14	SW-846 3005A	SW-846 6020
Sulfate	MIS-A-044	SW-846 9056	SW-846 9056
Total Dissolved Solids	WIC-A-033	MCAWW 160.1	MCAWW 160.1
Uranium	GJO-01	SW-846 3005A	SW6020

Data Qualifier Summary

Analytical results were qualified as listed in Table 4. Refer to the attached validation worksheets and Table 5 below for an explanation of the data qualifiers applied.

Table 4. Data Qualifiers

Sample Number	Location	Analyte	Flag	Reason
0801218-2 through -9	0218, 0226, 0228, 0437, 0439, 0492, 0688, 2501	Ammonia as N	J	MS1, RS1

Note: J indicates results are estimated and becomes a UJ for analytical results below the detection limit

Table 5. Reason Codes for Data Flags

Reason Code	Explanation
MS1	Results for the affected analyte(s) are regarded as estimated (J) because the matrix spike sample was (a) from another client, (b) of dissimilar matrix, (c) a field blank or equipment blank, or (d) not analyzed at the proper frequency as stated in the appropriate analytical method.
RS1	Results for the affected analyte(s) are regarded as estimated (J) because the matrix spike sample was (a) from another client, (b) of dissimilar matrix, (c) a field blank or equipment blank, or (d) not analyzed at the proper frequency as stated in the appropriate analytical method.

Sample Shipping/Receiving

Paragon Analytics in Fort Collins, Colorado, received a total of 18 samples for RIN 0801007 that arrived on January 25, 2008, under UPS tracking number 1Z5W1Y510190445198. All sample groups were accompanied by Chain of Custody (COC) forms. 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, with the following exception:

The samples from Configuration 3 monitor well 0688 were preserved incorrectly during the January 2008 sampling event under RIN 0801006. This location and a duplicate were re-sampled during this routine sampling event and were validated with this event. The samples results should be included with RIN 0801006.

Preservation and Holding Times

The sample shipments were received intact with the temperatures within the cooler at 1.6°C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

Case Narratives

The case narratives were reviewed and all results met quality control requirements with the following exceptions:

Matrix Spike and Replicate Analysis

Matrix spike (MS) sample analysis is performed as a measure of the ability to recover analytes in a particular matrix. If the native sample concentration is greater than 4 times the spike

concentration, MS criteria do not apply. Replicate analysis consists of matrix spike duplicate (MSD) samples and field duplicates that are indicators of laboratory precision for each sample matrix.

Method EPA 350.1, Ammonia as N

For ammonia as N analysis, only one duplicate was performed for the 18 samples in SDG 0801218. Method 350.1 requires duplicates to be analyzed for at least 10 percent of the samples. The first ten samples following the MSD in the preparation batch were not qualified. The remaining eight samples were qualified with a “J” flag.

Field Duplicate

Field duplicates are collected during actual sampling activities. They are labeled with false identification numbers and submitted with the regular samples to be analyzed by Paragon Analytics. Sample 0801218-9 (2501) was the field duplicate sample taken from location CR-1. This sample passed the EPA criteria of ± 20 percent relative percent difference 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 copper, manganese, or uranium. As a standard practice, Paragon Analytics does not prepare LCSs for samples that were field filtered and acidified, and then run directly on the instrument without any additional sample preparation. Per national environmental laboratory accreditation requirements provided by the National Environmental Laboratory Accreditation Conference, an MS may be used in place of an LCS provided the acceptance criteria are as stringent. Therefore, no qualification was required because of lack of LCS results. See Matrix Spike and Replicate Analysis section for required qualification.

Detection Limits/Dilutions

The required detection limit (RDL) for all analytes was achieved for this SDG.

Serial dilution samples were required for inductively coupled plasma (ICP) sample analysis (copper, manganese, selenium, and uranium). The percent recovery of the serial dilution samples were out of range for selenium. However, the concentration of the native sample was less than 50 times the practical quantitation limit; therefore, no qualification of the sample was required.

Completeness

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

2.3 Field Analyses/Activities

The following information summarizes the field analyses and activities for this sampling event period.

Field Activities

All monitor wells were purged and sampled using the low-flow sampling method; this method was not used at extraction wells. One equipment blank was collected. One duplicate sample was collected. There are no established regulatory criteria for the evaluation of field duplicate samples; therefore, Environmental Protection Agency (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 relative percent difference 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.

Laboratory Validation Lead:

Rebecca Hollis 11/5/03
Date

Ground Water Lead:

Ken Pill 11/5/03
Date

3.0 Data Presentation

This section contains the Minimums and Maximums Report (Section 3.1), the Anomalous Data Review Checksheet (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 is generated by the Sample Management System (SMS) 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.

Data Validation Minimums and Maximums Report - No Field Parameters

Laboratory: PARAGON (Fort Collins, CO)

RIN: 0801007

Comparison: All Historical Data

Report Date: 7/14/2008

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	0437	01/23/2008	Manganese	0.49		5.14	Q	0.6		12	0
MOA01	0688	01/24/2008	Chloride	1500	J	32000	J	1600	J	29	0
MOA01	0688	01/24/2008	Sulfate	7300		59000	J	8100	J	29	0
MOA01	0688	01/24/2008	Sulfate	6900		59000	J	8100	J	29	0
MOA01	0688	01/24/2008	Total Dissolved Solids	13000		46000	F	14000		29	0
MOA01	ATP-2-D	01/23/2008	Uranium	0.011	J	8.64		0.013	F	45	0
MOA01	ATP-2-S	01/23/2008	Manganese	0.15		6.62		0.18	FQ	16	0
MOA01	TP-02	01/23/2008	Manganese	0.42		0.75		0.445	UF	13	1
MOA01	TP-02	01/23/2008	Selenium	0.00011		0.0076	F	0.00039	J	13	4
MOA01	TP-02	01/23/2008	Total Dissolved Solids	1700		5820		2600	FQ	22	0
MOA01	TP-02	01/23/2008	Uranium	2.6	J	26		4.8		26	0
MOA01	TP-17	01/22/2008	Selenium	0.00073	B	0.11		0.001	U	5	2
MOA01	TP-19	01/22/2008	Copper	0.056	U	0.051	U	0.017		5	3

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 TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.

E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
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: Tentatively identified compound (TIC).
P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
U Analytical result below detection limit.
W Post-digestion 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 3 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.		

3.3 Water Quality Data

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 10/16/2008

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	0201	SL	01/22/2008	0001	0	-	0	168			#		
Alkalinity, Total (As CaCO3)	mg/L	0218	SL	01/23/2008	0001	0	-	0	180			#		
Alkalinity, Total (As CaCO3)	mg/L	0226	SL	01/22/2008	0001	0	-	0	185			#		
Alkalinity, Total (As CaCO3)	mg/L	0228	SL	01/22/2008	0001	0	-	0	146			#		
Alkalinity, Total (As CaCO3)	mg/L	0437	WL	01/23/2008	0001	97	-	97	680			#		
Alkalinity, Total (As CaCO3)	mg/L	0439	WL	01/23/2008	0001	118	-	118	760			#		
Alkalinity, Total (As CaCO3)	mg/L	0492	WL	01/22/2008	0001	18	-	18	826			#		
Alkalinity, Total (As CaCO3)	mg/L	0688	WL	01/24/2008	0001	30.6	-	40.6	700			#		
Alkalinity, Total (As CaCO3)	mg/L	ATP-2-D	WL	01/23/2008	0001	88	-	88	150			#		
Alkalinity, Total (As CaCO3)	mg/L	ATP-2-S	WL	01/23/2008	0001	36	-	36	260			#		
Alkalinity, Total (As CaCO3)	mg/L	CR3	SL	01/22/2008	0001	0	-	0	180			#		
Alkalinity, Total (As CaCO3)	mg/L	TP-02	WL	01/23/2008	0001	30	-	30	390			#		
Alkalinity, Total (As CaCO3)	mg/L	TP-17	WL	01/22/2008	0001	29	-	29	120			#		
Alkalinity, Total (As CaCO3)	mg/L	TP-19	WL	01/22/2008	0001	29	-	29	216			#		
Ammonia Total as N	mg/L	0201	SL	01/22/2008	0001	0	-	0	0.1			#	0.1	
Ammonia Total as N	mg/L	0218	SL	01/23/2008	0001	0	-	0	0.1	U	J	#	0.1	
Ammonia Total as N	mg/L	0226	SL	01/22/2008	0001	0	-	0	0.16		J	#	0.1	
Ammonia Total as N	mg/L	0228	SL	01/22/2008	0001	0	-	0	0.12		J	#	0.1	
Ammonia Total as N	mg/L	0437	WL	01/23/2008	0001	97	-	97	0.1	U	J	#	0.1	
Ammonia Total as N	mg/L	0439	WL	01/23/2008	0001	118	-	118	7		J	#	0.2	
Ammonia Total as N	mg/L	0492	WL	01/22/2008	0001	18	-	18	120		J	#	10	
Ammonia Total as N	mg/L	0688	WL	01/24/2008	0001	30.6	-	40.6	460		J	#	10	
Ammonia Total as N	mg/L	0688	WL	01/24/2008	0002	30.6	-	40.6	410			#	10	
Ammonia Total as N	mg/L	ATP-2-D	WL	01/23/2008	0001	88	-	88	640			#	50	
Ammonia Total as N	mg/L	ATP-2-S	WL	01/23/2008	0001	36	-	36	480			#	10	
Ammonia Total as N	mg/L	CR1	SL	01/22/2008	0001	0	-	0	0.1	U		#	0.1	

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 10/16/2008

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	CR1	SL	01/22/2008	0002	0	-	0	0.1	U	J	#	0.1	
Ammonia Total as N	mg/L	CR3	SL	01/22/2008	0001	0	-	0	0.13			#	0.1	
Ammonia Total as N	mg/L	TP-02	WL	01/23/2008	0001	30	-	30	0.51			#	0.1	
Ammonia Total as N	mg/L	TP-17	WL	01/22/2008	0001	29	-	29	2			#	0.1	
Ammonia Total as N	mg/L	TP-19	WL	01/22/2008	0001	29	-	29	3.8			#	0.1	
Bromide	mg/L	0201	SL	01/22/2008	0001	0	-	0	0.2	U		#	0.2	
Bromide	mg/L	0218	SL	01/23/2008	0001	0	-	0	0.2	U		#	0.2	
Bromide	mg/L	0226	SL	01/22/2008	0001	0	-	0	0.2	U		#	0.2	
Bromide	mg/L	0228	SL	01/22/2008	0001	0	-	0	0.2	U		#	0.2	
Bromide	mg/L	0437	WL	01/23/2008	0001	97	-	97	2	U		#	2	
Bromide	mg/L	0439	WL	01/23/2008	0001	118	-	118	1	U		#	1	
Bromide	mg/L	0492	WL	01/22/2008	0001	18	-	18	2	U		#	2	
Bromide	mg/L	0688	WL	01/24/2008	0001	30.6	-	40.6	2	U		#	2	
Bromide	mg/L	0688	WL	01/24/2008	0002	30.6	-	40.6	2	U		#	2	
Bromide	mg/L	ATP-2-D	WL	01/23/2008	0001	88	-	88	20	U		#	20	
Bromide	mg/L	ATP-2-S	WL	01/23/2008	0001	36	-	36	2	U		#	2	
Bromide	mg/L	CR1	SL	01/22/2008	0001	0	-	0	0.2	U		#	0.2	
Bromide	mg/L	CR1	SL	01/22/2008	0002	0	-	0	0.2	U		#	0.2	
Bromide	mg/L	CR3	SL	01/22/2008	0001	0	-	0	0.2	U		#	0.2	
Bromide	mg/L	TP-02	WL	01/23/2008	0001	30	-	30	0.4	U		#	0.4	
Bromide	mg/L	TP-17	WL	01/22/2008	0001	29	-	29	20	U		#	20	
Bromide	mg/L	TP-19	WL	01/22/2008	0001	29	-	29	20	U		#	20	
Chloride	mg/L	0201	SL	01/22/2008	0001	0	-	0	110			#	2	
Chloride	mg/L	0218	SL	01/23/2008	0001	0	-	0	120			#	2	
Chloride	mg/L	0226	SL	01/22/2008	0001	0	-	0	120			#	2	
Chloride	mg/L	0228	SL	01/22/2008	0001	0	-	0	110			#	2	

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 10/16/2008

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers		Detection Limit	Uncertainty
				Date	ID	Lab	Data	QA					
Chloride	mg/L	0437	WL	01/23/2008	0001	97	-	97	1600		#	20	
Chloride	mg/L	0439	WL	01/23/2008	0001	118	-	118	1200		#	20	
Chloride	mg/L	0492	WL	01/22/2008	0001	18	-	18	2200		#	40	
Chloride	mg/L	0688	WL	01/24/2008	0001	30.6	-	40.6	1600		#	20	
Chloride	mg/L	0688	WL	01/24/2008	0002	30.6	-	40.6	1500		#	20	
Chloride	mg/L	ATP-2-D	WL	01/23/2008	0001	88	-	88	53000		#	1000	
Chloride	mg/L	ATP-2-S	WL	01/23/2008	0001	36	-	36	2400		#	40	
Chloride	mg/L	CR1	SL	01/22/2008	0001	0	-	0	110		#	2	
Chloride	mg/L	CR1	SL	01/22/2008	0002	0	-	0	110		#	2	
Chloride	mg/L	CR3	SL	01/22/2008	0001	0	-	0	110		#	2	
Chloride	mg/L	TP-02	WL	01/23/2008	0001	30	-	30	250		#	4	
Chloride	mg/L	TP-17	WL	01/22/2008	0001	29	-	29	48000		#	1000	
Chloride	mg/L	TP-19	WL	01/22/2008	0001	29	-	29	61000		#	1000	
Copper	mg/L	0201	SL	01/22/2008	0001	0	-	0	0.0011	U	#	0.0011	
Copper	mg/L	0218	SL	01/23/2008	0001	0	-	0	0.0011	U	#	0.0011	
Copper	mg/L	0226	SL	01/22/2008	0001	0	-	0	0.0011	U	#	0.0011	
Copper	mg/L	0228	SL	01/22/2008	0001	0	-	0	0.0011	U	#	0.0011	
Copper	mg/L	0437	WL	01/23/2008	0001	97	-	97	0.0056	U	#	0.0056	
Copper	mg/L	0439	WL	01/23/2008	0001	118	-	118	0.0056	U	#	0.0056	
Copper	mg/L	0492	WL	01/22/2008	0001	18	-	18	0.0056	U	#	0.0056	
Copper	mg/L	0688	WL	01/24/2008	0001	30.6	-	40.6	0.0056	U	#	0.0056	
Copper	mg/L	0688	WL	01/24/2008	0002	30.6	-	40.6	0.0056	U	#	0.0056	
Copper	mg/L	ATP-2-D	WL	01/23/2008	0001	88	-	88	0.056	U	#	0.056	
Copper	mg/L	ATP-2-S	WL	01/23/2008	0001	36	-	36	0.0056	U	#	0.0056	
Copper	mg/L	CR1	SL	01/22/2008	0001	0	-	0	0.0011	U	#	0.0011	
Copper	mg/L	CR1	SL	01/22/2008	0002	0	-	0	0.0011	U	#	0.0011	

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 10/16/2008

Parameter	Units	Location ID	Location Type	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
				Date	ID	(Ft BLS)	Lab	Data		QA				
Copper	mg/L	CR3	SL	01/22/2008	0001	0	-	0	0.0011	U	#	0.0011		
Copper	mg/L	TP-02	WL	01/23/2008	0001	30	-	30	0.0011	U	#	0.0011		
Copper	mg/L	TP-17	WL	01/22/2008	0001	29	-	29	0.056	U	#	0.056		
Copper	mg/L	TP-19	WL	01/22/2008	0001	29	-	29	0.056	U	#	0.056		
Dissolved Oxygen	mg/L	0201	SL	01/22/2008	0001	0	-	0	12.44		#			
Dissolved Oxygen	mg/L	0218	SL	01/23/2008	0001	0	-	0	12		#			
Dissolved Oxygen	mg/L	0226	SL	01/22/2008	0001	0	-	0	14.6		#			
Dissolved Oxygen	mg/L	0228	SL	01/22/2008	0001	0	-	0	10.92		#			
Dissolved Oxygen	mg/L	0437	WL	01/23/2008	0001	97	-	97	1.36		#			
Dissolved Oxygen	mg/L	0439	WL	01/23/2008	0001	118	-	118	1.36		#			
Dissolved Oxygen	mg/L	0492	WL	01/22/2008	0001	18	-	18	3.36		#			
Dissolved Oxygen	mg/L	0688	WL	01/24/2008	0001	30.6	-	40.6	0.83		#			
Dissolved Oxygen	mg/L	ATP-2-D	WL	01/23/2008	0001	88	-	88	0.41		#			
Dissolved Oxygen	mg/L	ATP-2-S	WL	01/23/2008	0001	36	-	36	0.52		#			
Dissolved Oxygen	mg/L	CR1	SL	01/22/2008	0001	0	-	0	11.45		#			
Dissolved Oxygen	mg/L	CR3	SL	01/22/2008	0001	0	-	0	13.69		#			
Dissolved Oxygen	mg/L	TP-02	WL	01/23/2008	0001	30	-	30	0.82		#			
Dissolved Oxygen	mg/L	TP-17	WL	01/22/2008	0001	29	-	29	0.39		#			
Dissolved Oxygen	mg/L	TP-19	WL	01/22/2008	0001	29	-	29	-0.25		#			
Manganese	mg/L	0201	SL	01/22/2008	0001	0	-	0	0.036	E	#	0.00015		
Manganese	mg/L	0218	SL	01/23/2008	0001	0	-	0	0.027		#	0.00015		
Manganese	mg/L	0226	SL	01/22/2008	0001	0	-	0	0.048		#	0.00015		
Manganese	mg/L	0228	SL	01/22/2008	0001	0	-	0	0.033		#	0.00015		
Manganese	mg/L	0437	WL	01/23/2008	0001	97	-	97	0.49		#	0.00076		
Manganese	mg/L	0439	WL	01/23/2008	0001	118	-	118	2.2		#	0.00076		
Manganese	mg/L	0492	WL	01/22/2008	0001	18	-	18	6.7		#	0.00076		

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 10/16/2008

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
				Date	ID					Lab	Data	QA		
Manganese	mg/L	0688	WL	01/24/2008	0001	30.6	-	40.6	4.1			#	0.00076	
Manganese	mg/L	0688	WL	01/24/2008	0002	30.6	-	40.6	4.1			#	0.00076	
Manganese	mg/L	ATP-2-D	WL	01/23/2008	0001	88	-	88	1.7			#	0.0076	
Manganese	mg/L	ATP-2-S	WL	01/23/2008	0001	36	-	36	0.15			#	0.00076	
Manganese	mg/L	CR1	SL	01/22/2008	0001	0	-	0	0.031			#	0.00015	
Manganese	mg/L	CR1	SL	01/22/2008	0002	0	-	0	0.031			#	0.00015	
Manganese	mg/L	CR3	SL	01/22/2008	0001	0	-	0	0.04			#	0.00015	
Manganese	mg/L	TP-02	WL	01/23/2008	0001	30	-	30	0.42			#	0.00015	
Manganese	mg/L	TP-17	WL	01/22/2008	0001	29	-	29	3.5			#	0.0076	
Manganese	mg/L	TP-19	WL	01/22/2008	0001	29	-	29	0.0076	U		#	0.0076	
Oxidation Reduction Potential	mV	0201	SL	01/22/2008	0001	0	-	0	-108			#		
Oxidation Reduction Potential	mV	0218	SL	01/23/2008	0001	0	-	0	42			#		
Oxidation Reduction Potential	mV	0226	SL	01/22/2008	0001	0	-	0	113			#		
Oxidation Reduction Potential	mV	0228	SL	01/22/2008	0001	0	-	0	-184			#		
Oxidation Reduction Potential	mV	0437	WL	01/23/2008	0001	97	-	97	181			#		
Oxidation Reduction Potential	mV	0439	WL	01/23/2008	0001	118	-	118	157			#		
Oxidation Reduction Potential	mV	0492	WL	01/22/2008	0001	18	-	18	25			#		
Oxidation Reduction Potential	mV	0688	WL	01/24/2008	0001	30.6	-	40.6	202			#		
Oxidation Reduction Potential	mV	ATP-2-D	WL	01/23/2008	0001	88	-	88	-250			#		
Oxidation Reduction Potential	mV	ATP-2-S	WL	01/23/2008	0001	36	-	36	19			#		
Oxidation Reduction Potential	mV	CR1	SL	01/22/2008	0001	0	-	0	-45			#		
Oxidation Reduction Potential	mV	CR3	SL	01/22/2008	0001	0	-	0	49			#		
Oxidation Reduction Potential	mV	TP-02	WL	01/23/2008	0001	30	-	30	-86			#		

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 10/16/2008

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	TP-17	WL	01/22/2008	0001	29	-	29	-80			#		
Oxidation Reduction Potential	mV	TP-19	WL	01/22/2008	0001	29	-	29	-287			#		
pH	s.u.	0201	SL	01/22/2008	0001	0	-	0	8.59			#		
pH	s.u.	0218	SL	01/23/2008	0001	0	-	0	8.56			#		
pH	s.u.	0226	SL	01/22/2008	0001	0	-	0	8.18			#		
pH	s.u.	0228	SL	01/22/2008	0001	0	-	0	8.74			#		
pH	s.u.	0437	WL	01/23/2008	0001	97	-	97	7.42			#		
pH	s.u.	0439	WL	01/23/2008	0001	118	-	118	6.86			#		
pH	s.u.	0492	WL	01/22/2008	0001	18	-	18	6.69			#		
pH	s.u.	0688	WL	01/24/2008	0001	30.6	-	40.6	6.85			#		
pH	s.u.	ATP-2-D	WL	01/23/2008	0001	88	-	88	8.24			#		
pH	s.u.	ATP-2-S	WL	01/23/2008	0001	36	-	36	8.67			#		
pH	s.u.	CR1	SL	01/22/2008	0001	0	-	0	8.39			#		
pH	s.u.	CR3	SL	01/22/2008	0001	0	-	0	8.23			#		
pH	s.u.	TP-02	WL	01/23/2008	0001	30	-	30	7.49			#		
pH	s.u.	TP-17	WL	01/22/2008	0001	29	-	29	7.11			#		
pH	s.u.	TP-19	WL	01/22/2008	0001	29	-	29	6.66			#		
Selenium	mg/L	0201	SL	01/22/2008	0001	0	-	0	0.0029			#	1.9E-005	
Selenium	mg/L	0218	SL	01/23/2008	0001	0	-	0	0.0025			#	1.9E-005	
Selenium	mg/L	0226	SL	01/22/2008	0001	0	-	0	0.0027			#	1.9E-005	
Selenium	mg/L	0228	SL	01/22/2008	0001	0	-	0	0.0029			#	1.9E-005	
Selenium	mg/L	0437	WL	01/23/2008	0001	97	-	97	0.079			#	0.00038	
Selenium	mg/L	0439	WL	01/23/2008	0001	118	-	118	0.0018			#	1.9E-005	
Selenium	mg/L	0492	WL	01/22/2008	0001	18	-	18	0.0004			#	1.9E-005	
Selenium	mg/L	0688	WL	01/24/2008	0001	30.6	-	40.6	0.011			#	1.9E-005	

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 10/16/2008

Parameter	Units	Location ID	Location Type	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
				Date	ID	(Ft BLS)	Lab	Data		QA				
Selenium	mg/L	0688	WL	01/24/2008	0002	30.6	-	40.6	0.011			#	1.9E-005	
Selenium	mg/L	ATP-2-D	WL	01/23/2008	0001	88	-	88	0.00089	B		#	0.00019	
Selenium	mg/L	ATP-2-S	WL	01/23/2008	0001	36	-	36	0.0021			#	1.9E-005	
Selenium	mg/L	CR1	SL	01/22/2008	0001	0	-	0	0.0029			#	1.9E-005	
Selenium	mg/L	CR1	SL	01/22/2008	0002	0	-	0	0.0028			#	1.9E-005	
Selenium	mg/L	CR3	SL	01/22/2008	0001	0	-	0	0.003			#	1.9E-005	
Selenium	mg/L	TP-02	WL	01/23/2008	0001	30	-	30	0.00011			#	1.9E-005	
Selenium	mg/L	TP-17	WL	01/22/2008	0001	29	-	29	0.00073	B		#	0.00019	
Selenium	mg/L	TP-19	WL	01/22/2008	0001	29	-	29	0.00087	B		#	0.00019	
Specific Conductance	umhos /cm	0201	SL	01/22/2008	0001	0	-	0	1036			#		
Specific Conductance	umhos /cm	0218	SL	01/23/2008	0001	0	-	0	1057			#		
Specific Conductance	umhos /cm	0226	SL	01/22/2008	0001	0	-	0	1162			#		
Specific Conductance	umhos /cm	0228	SL	01/22/2008	0001	0	-	0	1249			#		
Specific Conductance	umhos /cm	0437	WL	01/23/2008	0001	97	-	97	11786			#		
Specific Conductance	umhos /cm	0439	WL	01/23/2008	0001	118	-	118	9059			#		
Specific Conductance	umhos /cm	0492	WL	01/22/2008	0001	18	-	18	13373			#		
Specific Conductance	umhos /cm	0688	WL	01/24/2008	0001	30.6	-	40.6	15235			#		
Specific Conductance	umhos /cm	ATP-2-D	WL	01/23/2008	0001	88	-	88	116220			#		
Specific Conductance	umhos /cm	ATP-2-S	WL	01/23/2008	0001	36	-	36	16979			#		
Specific Conductance	umhos /cm	CR1	SL	01/22/2008	0001	0	-	0	1086			#		
Specific Conductance	umhos /cm	CR3	SL	01/22/2008	0001	0	-	0	1501			#		
Specific Conductance	umhos /cm	TP-02	WL	01/23/2008	0001	30	-	30	2507			#		
Specific Conductance	umhos /cm	TP-17	WL	01/22/2008	0001	29	-	29	106525			#		

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 10/16/2008

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
				Date	ID					Lab	Data	QA		
Specific Conductance	umhos /cm	TP-19	WL	01/22/2008	0001	29	-	29	130720			#		
Sulfate	mg/L	0201	SL	01/22/2008	0001	0	-	0	230			#	5	
Sulfate	mg/L	0218	SL	01/23/2008	0001	0	-	0	200			#	5	
Sulfate	mg/L	0226	SL	01/22/2008	0001	0	-	0	250			#	5	
Sulfate	mg/L	0228	SL	01/22/2008	0001	0	-	0	230			#	5	
Sulfate	mg/L	0437	WL	01/23/2008	0001	97	-	97	4300			#	50	
Sulfate	mg/L	0439	WL	01/23/2008	0001	118	-	118	3800			#	50	
Sulfate	mg/L	0492	WL	01/22/2008	0001	18	-	18	5800			#	50	
Sulfate	mg/L	0688	WL	01/24/2008	0001	30.6	-	40.6	7300			#	50	
Sulfate	mg/L	0688	WL	01/24/2008	0002	30.6	-	40.6	6900			#	50	
Sulfate	mg/L	ATP-2-D	WL	01/23/2008	0001	88	-	88	5300			#	50	
Sulfate	mg/L	ATP-2-S	WL	01/23/2008	0001	36	-	36	7900			#	100	
Sulfate	mg/L	CR1	SL	01/22/2008	0001	0	-	0	230			#	5	
Sulfate	mg/L	CR1	SL	01/22/2008	0002	0	-	0	220			#	5	
Sulfate	mg/L	CR3	SL	01/22/2008	0001	0	-	0	230			#	5	
Sulfate	mg/L	TP-02	WL	01/23/2008	0001	30	-	30	700			#	10	
Sulfate	mg/L	TP-17	WL	01/22/2008	0001	29	-	29	5700			#	50	
Sulfate	mg/L	TP-19	WL	01/22/2008	0001	29	-	29	4500			#	50	
Temperature	C	0201	SL	01/22/2008	0001	0	-	0	1.29			#		
Temperature	C	0218	SL	01/23/2008	0001	0	-	0	1.02			#		
Temperature	C	0226	SL	01/22/2008	0001	0	-	0	1.78			#		
Temperature	C	0228	SL	01/22/2008	0001	0	-	0	0.26			#		
Temperature	C	0437	WL	01/23/2008	0001	97	-	97	15.27			#		
Temperature	C	0439	WL	01/23/2008	0001	118	-	118	15.16			#		
Temperature	C	0492	WL	01/22/2008	0001	18	-	18	14.46			#		
Temperature	C	0688	WL	01/24/2008	0001	30.6	-	40.6	14.13			#		

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 10/16/2008

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
				Date	ID					Lab	Data	QA		
Temperature	C	ATP-2-D	WL	01/23/2008	0001	88	-	88	15.96			#		
Temperature	C	ATP-2-S	WL	01/23/2008	0001	36	-	36	15.71			#		
Temperature	C	CR1	SL	01/22/2008	0001	0	-	0	2.79			#		
Temperature	C	CR3	SL	01/22/2008	0001	0	-	0	2.05			#		
Temperature	C	TP-02	WL	01/23/2008	0001	30	-	30	14.44			#		
Temperature	C	TP-17	WL	01/22/2008	0001	29	-	29	13.81			#		
Temperature	C	TP-19	WL	01/22/2008	0001	29	-	29	14.11			#		
Total Dissolved Solids	mg/L	0201	SL	01/22/2008	0001	0	-	0	650			#	20	
Total Dissolved Solids	mg/L	0218	SL	01/23/2008	0001	0	-	0	600			#	20	
Total Dissolved Solids	mg/L	0226	SL	01/22/2008	0001	0	-	0	720			#	20	
Total Dissolved Solids	mg/L	0228	SL	01/22/2008	0001	0	-	0	650			#	20	
Total Dissolved Solids	mg/L	0437	WL	01/23/2008	0001	97	-	97	9700			#	200	
Total Dissolved Solids	mg/L	0439	WL	01/23/2008	0001	118	-	118	8200			#	200	
Total Dissolved Solids	mg/L	0492	WL	01/22/2008	0001	18	-	18	12000			#	200	
Total Dissolved Solids	mg/L	0688	WL	01/24/2008	0001	30.6	-	40.6	13000			#	200	
Total Dissolved Solids	mg/L	0688	WL	01/24/2008	0002	30.6	-	40.6	13000			#	200	
Total Dissolved Solids	mg/L	ATP-2-D	WL	01/23/2008	0001	88	-	88	93000			#	2000	
Total Dissolved Solids	mg/L	ATP-2-S	WL	01/23/2008	0001	36	-	36	14000			#	200	
Total Dissolved Solids	mg/L	CR1	SL	01/22/2008	0001	0	-	0	620			#	20	
Total Dissolved Solids	mg/L	CR1	SL	01/22/2008	0002	0	-	0	660			#	20	
Total Dissolved Solids	mg/L	CR3	SL	01/22/2008	0001	0	-	0	650			#	20	
Total Dissolved Solids	mg/L	TP-02	WL	01/23/2008	0001	30	-	30	1700			#	40	
Total Dissolved Solids	mg/L	TP-17	WL	01/22/2008	0001	29	-	29	87000			#	2000	
Total Dissolved Solids	mg/L	TP-19	WL	01/22/2008	0001	29	-	29	110000			#	2000	

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 10/16/2008

Parameter	Units	Location ID	Location Type	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
				Date	ID	(Ft BLS)	Lab	Data		QA				
Turbidity	NTU	0201	SL	01/22/2008	0001	0	-	0	240			#		
Turbidity	NTU	0218	SL	01/23/2008	0001	0	-	0	98.1			#		
Turbidity	NTU	0226	SL	01/22/2008	0001	0	-	0	81.3			#		
Turbidity	NTU	0228	SL	01/22/2008	0001	0	-	0	70.9			#		
Turbidity	NTU	0437	WL	01/23/2008	0001	97	-	97	65.4			#		
Turbidity	NTU	0439	WL	01/23/2008	0001	118	-	118	75.9			#		
Turbidity	NTU	0492	WL	01/22/2008	0001	18	-	18	9.88			#		
Turbidity	NTU	0688	WL	01/24/2008	0001	30.6	-	40.6	3.39			#		
Turbidity	NTU	ATP-2-D	WL	01/23/2008	0001	88	-	88	272			#		
Turbidity	NTU	ATP-2-S	WL	01/23/2008	0001	36	-	36	16.7			#		
Turbidity	NTU	CR1	SL	01/22/2008	0001	0	-	0	116			#		
Turbidity	NTU	CR3	SL	01/22/2008	0001	0	-	0	111			#		
Turbidity	NTU	TP-02	WL	01/23/2008	0001	30	-	30	64.2			#		
Turbidity	NTU	TP-17	WL	01/22/2008	0001	29	-	29	18.5			#		
Turbidity	NTU	TP-19	WL	01/22/2008	0001	29	-	29	8.94			#		
Uranium	mg/L	0201	SL	01/22/2008	0001	0	-	0	0.0054			#	5.9E-006	
Uranium	mg/L	0218	SL	01/23/2008	0001	0	-	0	0.0084			#	5.9E-006	
Uranium	mg/L	0226	SL	01/22/2008	0001	0	-	0	0.0071			#	5.9E-006	
Uranium	mg/L	0228	SL	01/22/2008	0001	0	-	0	0.0067			#	5.9E-006	
Uranium	mg/L	0437	WL	01/23/2008	0001	97	-	97	4.7			#	0.0012	
Uranium	mg/L	0439	WL	01/23/2008	0001	118	-	118	0.91			#	0.0003	
Uranium	mg/L	0492	WL	01/22/2008	0001	18	-	18	2.2			#	0.0003	
Uranium	mg/L	0688	WL	01/24/2008	0001	30.6	-	40.6	2.1			#	0.0003	
Uranium	mg/L	0688	WL	01/24/2008	0002	30.6	-	40.6	2			#	0.0003	
Uranium	mg/L	ATP-2-D	WL	01/23/2008	0001	88	-	88	0.011			#	5.9E-006	
Uranium	mg/L	ATP-2-S	WL	01/23/2008	0001	36	-	36	0.024			#	5.9E-006	

General Water Quality Data by Parameter (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 10/16/2008

Parameter	Units	Location ID	Location Type	Sample		Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
				Date	ID					Lab	Data	QA		
Uranium	mg/L	CR1	SL	01/22/2008	0001	0	-	0	0.0049			#	5.9E-006	
Uranium	mg/L	CR1	SL	01/22/2008	0002	0	-	0	0.0051			#	5.9E-006	
Uranium	mg/L	CR3	SL	01/22/2008	0001	0	-	0	0.0066			#	5.9E-006	
Uranium	mg/L	TP-02	WL	01/23/2008	0001	30	-	30	2.6			#	0.00059	
Uranium	mg/L	TP-17	WL	01/22/2008	0001	29	-	29	0.048			#	3.E-005	
Uranium	mg/L	TP-19	WL	01/22/2008	0001	29	-	29	0.0001			#	5.9E-006	

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 TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- 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: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
- U Analytical result below detection limit.
- W Post-digestion 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 3 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.

QA QUALIFIER:

- # Validated according to quality assurance guidelines.

3.4 Water Level Data

STATIC WATER LEVELS (USEE700) FOR SITE MOA01, Moab Site
REPORT DATE: 7/14/2008

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)	Water Level Flag
0437	O	4048.25	01/23/2008		90.05	3958.2	
0439	O	4055.27	01/23/2008		98.74	3956.53	
0492		3967.64	01/22/2008		15.79	3951.85	
0688		3968.66	01/24/2008		14.46	3954.2	
ATP-2-D	O	3967.05	01/23/2008		14.86	3952.19	
ATP-2-S	O	3967.04	01/23/2008		12.48	3954.56	
TP-02	O	3975.55	01/23/2008		20.58	3954.97	
TP-17	D	3963.69	01/22/2008		31.69	3932	
TP-19	D	3962.17	01/22/2008		11.38	3950.79	

FLOW CODES: B BACKGROUND C CROSS GRADIENT D DOWN GRADIENT O ON SITE
 U UPGRADIENT

WATER LEVEL FLAGS: D Dry

3.5 Blanks Report

The results of the equipment blank collected during this sampling event are presented below. As the results show, ammonia, bromide, chloride, copper, manganese, sulfate, and TDS were at or below the associated detection limit. Selenium and uranium were within five times the detection limit and so the results were due to potential machine error being so close to the detection limit. In addition, chloride and uranium were “J-flagged,” meaning those results are estimated.

BLANKS REPORT
LAB: PARAGON (Fort Collins, CO)
RIN: 0801007
Report Date: 7/14/2008

Parameter	Site Code	Location ID	Sample Date	Sample ID	Units	Result	Qualifiers Lab	Data	Detection Limit	Uncertainty	Sample Type
Ammonia Total as N	MOA01	0999	01/24/2008	0001	mg/L	0.1	U		0.1		E
Bromide	MOA01	0999	01/24/2008	0001	mg/L	0.2	U		0.2		E
Chloride	MOA01	0999	01/24/2008	0001	mg/L	0.2	U	J	0.2		E
Copper	MOA01	0999	01/24/2008	0001	mg/L	0.0011	U		0.0011		E
Manganese	MOA01	0999	01/24/2008	0001	mg/L	0.00015	U		0.00015		E
Selenium	MOA01	0999	01/24/2008	0001	mg/L	3.3E-005	B		1.9E-005		E
Sulfate	MOA01	0999	01/24/2008	0001	mg/L	0.5	U		0.5		E
Total Dissolved Solids	MOA01	0999	01/24/2008	0001	mg/L	20	U		20		E
Uranium	MOA01	0999	01/24/2008	0001	mg/L	5.5E-005	B	J	5.9E-004		E

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 TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- 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: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
- U Analytical result below detection limit.
- W Post-digestion 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 3 bore volumes purged prior to sampling.
U Parameter analyzed for but was not detected.

G Possible grout contamination, pH > 9. J Estimated value.
Q Qualitative result due to sampling technique. R Unusable result.
X Location is undefined.

SAMPLE TYPES:

E Equipment Blank.

Attachment 1

Trip Report



Date: January 28, 2008

To: Ken Pill

From: E.M. Glowiak

Subject: Routine Sampling Trip Report

Site: Moab – Ground Water and Surface Water Sampling Event –January 2008

Date of Sampling Event: January 22-24, 2008

Team Members: K. Pill, S. Back, E. Glowiak

RIN Number Assigned: All samples were assigned to RIN 0801007.

Sample Shipment: The coolers were shipped overnight UPS to Paragon Analytics, Inc. from Moab, Utah, on January 24, 2008 (Tracking No. 90445198).

Number of Locations Sampled: The January routine sampling was conducted during base flow conditions in the Colorado River. Eight monitor wells and six surface water locations were sampled during the January Routine Sampling Event. Including one duplicate and one equipment blank, a total of 16 samples were collected. The information provided in the field variance brings the total to 18 samples submitted with this RIN.

Locations Not Sampled/Reason: Surface water location CR-5 was not sampled due to access/safety issues. The slope leading to the river bank was steep and covered with snow and ice. Monitor well 0438 was not sampled because the connector for the air intake of the bladder pump was leaking air, and there was not enough suction to raise the water column.

Field Variance: Surface water location CR1 was sampled approximately 1,000 ft south of the regular CR1 sampling location. Access was limited due to the construction of the new pedestrian bridge over the Colorado River.

Configuration 3 monitor well 0688 was preserved incorrectly during the January 2008 Interim Action sampling event. This location and a duplicate were resampled during the January 2008 Routine sampling event, but it belongs under RIN 0801006.

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

False ID	True ID	Sample Type	Associated matrix	Ticket Number
2501	CR 1	Duplicate of surface water	Surface Water	NFC 359
2502	N/A	Equipment Blank	DI Water	NFC 369
2550	0688	Duplicate from 31 ft bgs	Ground Water	NFC 368

Location Specific Information: Wells 0437 and 0439 were sampled using dedicated bladder pumps. All other remaining monitor wells were sampled using a peristaltic pump and dedicated tubing. Each surface water sample was collected using a peristaltic pump and hose reel. The table below provides additional information:

Sample ID	Location	Date	Sample Depth	Comments
NFC 358	CR-1	01/22/2008	Unknown	Taken ~1,000 ft south of original CR-1 location, could not access CR-1 due to bridge construction, taken 1.5 ft off bank into main river channel, moderate flow velocity
NFC 351	0492	01/22/2008	18	Collected in conjunction with SW location CR3
NFC 352	CR3	01/22/2008	Unknown	Taken 1.5 ft off bank, main river channel, channel is completely frozen over
NFC 354	TP-17	01/22/2008	~29 ft bgs	Taken 1.74 ft above bottom, top was frozen over, tubing was pulled out as far as possible, sulfur odor
NFC 353	0226	01/22/2008	Unknown	Taken off main river channel, 8-in. from bank, under ~3-in. of ice
NFC 355	TP-19	01/22/2008	29	Sulfur odor, water is gray
NFC 356	0228	01/22/2008	Unknown	Taken ~10 ft off river bank into main river channel, river is low enough that a flat riverbank is present, as opposed to a steep bank which is normally present, moderate velocity, ~5 ft of ice is present off bank
NFC 365	TP-02	01/23/2008	30	High turbidity
NFC 366	0218	01/23/2008	Unknown	Moderate flow velocity, main river channel
NFC 363	ATP-2-S	01/23/2008	36 ft bgs	High turbidity
NFC 364	ATP-2-D	01/23/2008	88 ft bgs	Sulfur odor, preserved samples were clear, non-preserved samples were yellow, high turbidity
NFC 357	0201	01/22/2008	Unknown	Taken 3.5 ft off river bank into main channel, ~ 1 ft of water, moderate velocity
NFC 360	0437	01/23/2008	97 ft bgs	Had to pull pump, ice was jamming up line, high turbidity
NFC 361	0439	01/23/2008	118 ft bgs	Had to pull pump, ice was jamming up line, high turbidity

Notes: ft bws = feet below water surface, ft bgs = feet below ground surface

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

Well No.	Date	Time	Depth to Water (ft btoc)
ATP-2-S	01/23/2008	14:20	12.48
ATP-2-D	01/23/2008	14:44	14.86
0437	01/23/2008	10:19	90.05
0438*	01/23/2008	11:37	97.36
0439	01/23/2008	11:03	98.74
0492	01/22/2008	09:29	15.79
TP-02	01/23/2008	15:57	20.58
TP-17	01/22/2008	13:32	Not obtainable
TP-19	01/22/2008	14:25	11.38

* Not sampled

Well Inspection Summary: A well inspection was not conducted.

Equipment: Connector on well 0438 was not airtight.

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)
01/22/2008	4,170
01/23/2008	4,640
01/24/2008	4,570

Corrective Action Required/Taken: Develop wells prior to next Routine Sampling Event and replace connector on well 0438.

cc: J.D. Ritchey, P2S
K. G. Pill, P2S
E. M. Glowiak, P2S
M. Mullis, S&K

Attachment 2

Acronyms

AWQC	Ambient Water Quality Criteria
bgs	Below Ground Surface
BLS	Below Land Surface
btoc	Below Top of Casing
cfs	Cubic Feet per Second
COC	Chain of Custody
DO	Dissolved Oxygen
EDD	Electronic Data Deliverable
EPA	Environment Protection Agency
ft	Feet
LCS	Laboratory Control Samples
mg/L	Milligram per Liter
mL/m	Milliliter per Minute
MS	Matrix Spike
MSD	Matrix Spike Duplicate
µmhos/cm	Micro Mhos per Centimeter
µS/cm	Micro Siemens per Centimeter
mV	Millivolt
NTU	Nephelometric Turbidity Unit
ORP	Oxidation Reduction Potential
RIN	Report Identification Number
SDG	Sample Data Group
Spec. Cond.	Special Conditions
SU	Standard Unit
TDS	Total Dissolved Solids
Turb.	Turbidity
UMTRA	Uranium Mill Tailings Remedial Action
USGS	U.S. Geological Survey
VDP	Validation Data Package