

Office of Environmental Management – Grand Junction



October 2005 Water Sampling

**Validation Data Package for
Ground Water Interim Action
Baseline Area Well Field
Monthly Sampling
Moab, Utah**

January 2006



U.S. Department
of Energy

Office of Environmental Management

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Data Package Contents

This data package includes the following information:

<u>Item No.</u>	<u>Description of Contents</u>
1.	Sampling Event Summary
2.	Sample Location Maps
3.	Data Assessment Summary
	Water Sampling Field Activities Verification Checklist
	Laboratory Performance Assessment
	Field Analyses/Activities
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Attachment 1—Data Presentation

Minimums and Maximums Report
Water Quality Data
Water Level Data
Blanks
Time Versus Concentration Graphs

Attachment 2—Trip Report

Sampling Event Summary

Site: Moab, Utah

Sampling Period: October 11-13, 2005

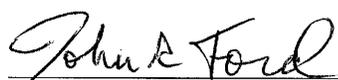
The purpose of this sampling event was to collect data that can be used to evaluate the baseline area well field. This is the third round of sampling of the baseline area well field.

According to the USGS Cisco Gaging Station, the mean daily Colorado River flows varied between 4,700 to 5,300 cubic feet per second (cfs).

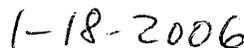
Sampling and analysis were conducted in accordance with the *Operations, Maintenance, and Performance Monitoring Plan for the Interim Action Ground Water Treatment System, February 2004*. Water samples were collected from six observation wells (0488, 0493 [samples collected from 46 and 54 ft below ground surface {bgs}], SMI-PW01, SMI-PZ1D2, SMI-PZ1M, and SMI-PZ1S), six piezometers (0496, 0497, 0598, 0599, 0617, 0618), and one surface water location (0243). Including one duplicate and one equipment blank, a total of 16 samples were collected.

Analysis and interpretation of the validated data presented in this package is presented as part of the *Performance of the Ground Water Interim Action Injection System of the Configuration 2 Well Field, October 2004–October 2005*. However, to monitor performance of the injection effort, time versus concentration graphs are included for certain key indicator wells and major contaminants of concern.

The data validation indicated the data meet the quality control criteria specified for this project. No significant discrepancies were noted regarding sample shipping/receiving, preservation and holding times, instrument calibration, method blanks, matrix spikes, etc., except as qualified.

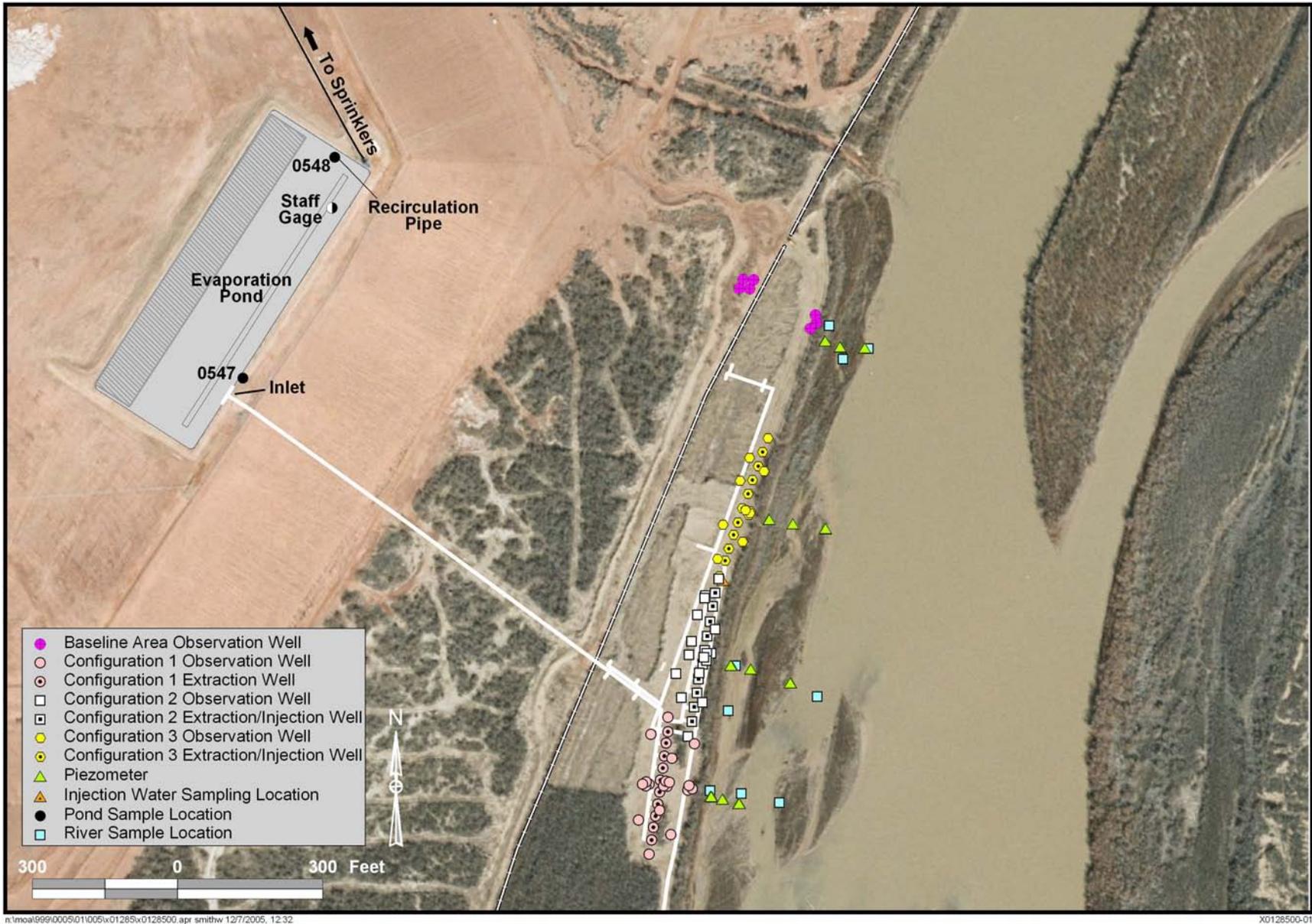


John R. Ford
Ground Water Lead

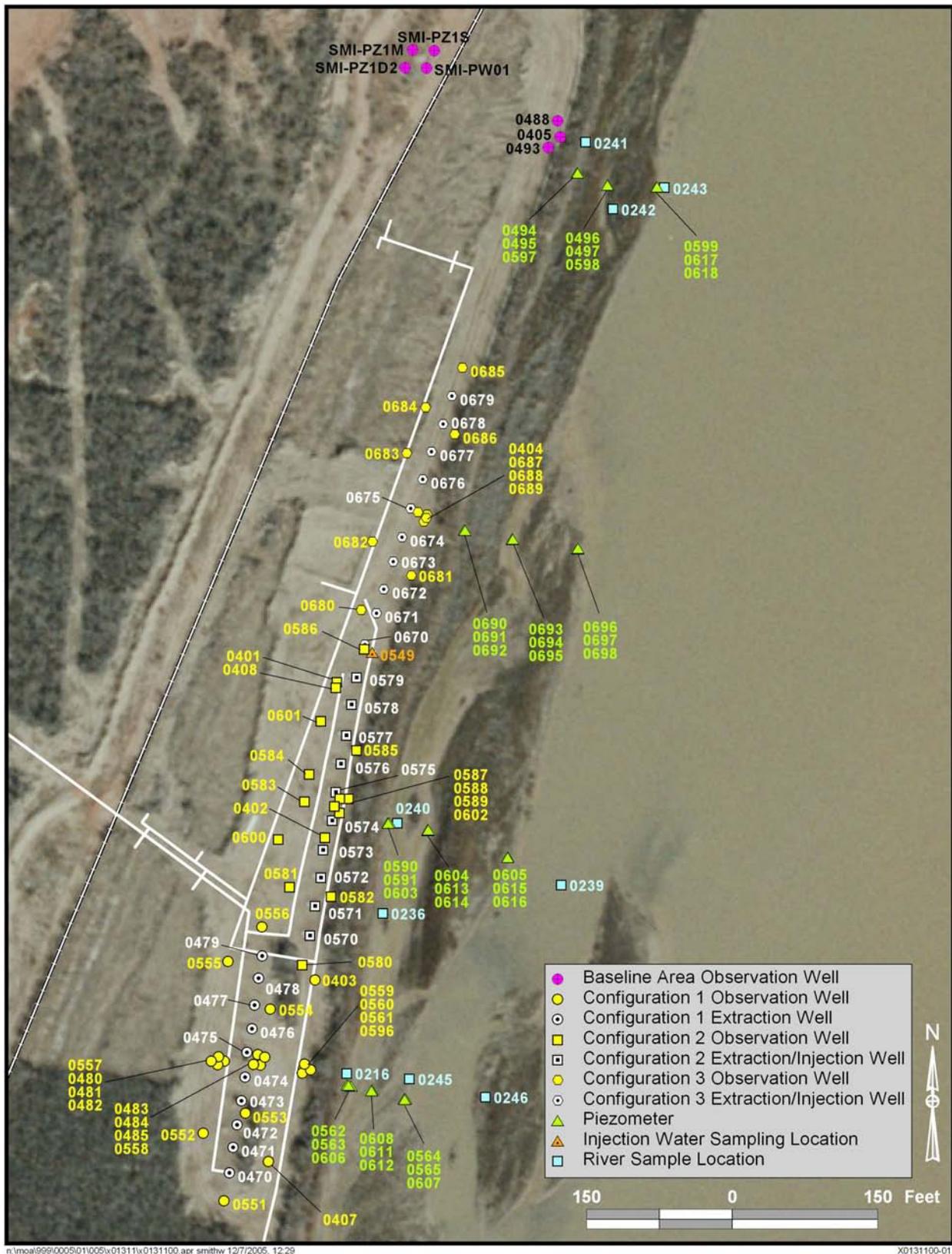


Date

Sample Location Maps



Sample Locations at the Interim Action Well Field and Baseline Area (may include locations not sampled)



Existing Well Locations

Data Assessment Summary

Water Sampling Field Activities Verification Checklist

Project	<u>Moab, Utah</u>	Date(s) of Water Sampling	<u>October 11-13, 2005</u>
Date(s) of Verification	<u>December 19, 2005</u>	Name of Verifier	<u>Jeff Price</u>

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures? List other documents, SOP's, instructions.	<u>Yes</u> <u>NA</u>	
2. Were the sampling locations specified in the planning documents sampled?	<u>No</u>	<u>See trip report for explanation.</u>
3. Was a pre-trip calibration conducted as specified in the above named documents?	<u>Yes</u>	
4. Was an operational check of the field equipment conducted twice daily? Did the operational checks meet criteria?	<u>Yes</u> <u>Yes</u>	
5. Were the number and types (alkalinity, temperature, Ec, pH, turbidity, DO, ORP) of field measurements taken as specified?	<u>Yes</u>	
6. Was the Category of the well documented?	<u>Yes</u>	
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 mL/min? If a portable pump was used, was there a 4 hour delay between pump installation and sampling?	<u>Yes</u> <u>Yes</u> <u>Yes</u> <u>Yes</u> <u>NA</u>	

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well:		
Was the flow rate less than 500 mL/min?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	Yes	
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC 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 chain of custody 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	

Laboratory Performance Assessment

General Information

Requisition No. (RIN): 05100236
Sample Event: October 11-13, 2005
Site(s): Moab, Utah
Laboratory: Paragon Analytics
Work Order No.: 0510156
Analysis: Metals and Inorganics
Validator: Steve Donovan
Review Date: December 8, 2005

This validation was performed according to the *Environmental Procedures Catalog* (STO 6), “Standard Practice for Validation of Laboratory Data”, GT-9(P) (2004). 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 1.

Table 1. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Uranium, U	GJO-01	SW-846 3005A	SW-846 6020A
Chloride, Cl	MIS-A-039	SW-846 9056	SW-846 9056
Sulfate, SO ₄	MIS-A-044	SW-846 9056	SW-846 9056
Ammonia as N, NH ₃ -N	WCH-A-005	MCAWW 350.1	MCAWW 350.1
Total Dissolved Solids, TDS	WCH-A-033	MCAWW 160.1	MCAWW 160.1

Data Qualifier Summary

Analytical results were qualified as listed in Table 2. The total dissolved solids (TDS) result for sample 0510156-13 is qualified as “J” because the holding time was exceeded. The uranium result for sample 0510002-21 is qualified as “U” because the associated calibration blank result is greater than the method detection limit (MDL) and the sample result is less than 5 times the calibration blank result.

Table 2. Data Qualifiers

Sample Number	Location	Analyte	Flag	Reason
0510002-21	2980 (Equip Blank)	U	U	Less than 5 times the calibration blank
0510156-13	SMI-PW01	TDS	J	Holding time exceeded

Sample Shipping/Receiving

Paragon Analytics in Fort Collins, Colorado, received 16 samples on October 15, 2005, accompanied by a Chain of Custody (COC) form. The COC form was checked to confirm that all of the samples were listed on the 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 form and the sample tickets had no errors or omissions.

Preservation and Holding Times

The sample shipment was received cool and intact with the temperature within the cooler of 1.9 °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 with the following exception. The TDS sample from location SMI-PW01 was analyzed outside of the holding time due to an analyst error. The laboratory issued Non-Conformance Report 007153 to document the error. The result from this analysis is qualified with a “J” flag (estimated).

Laboratory Instrument Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for all analytes. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear curve. Compliance requirements for continuing calibration checks are established to ensure that the instrument continues to be capable of producing acceptable qualitative and quantitative data. All laboratory instrument calibrations were performed correctly in accordance with the cited methods.

Method SW-846 6020A

Calibration for uranium was performed on October 20, 2005. The initial calibration was performed using six calibration standards resulting in a calibration curve with a correlation coefficient (r^2) value greater than 0.995. The absolute value of the curve intercept was less than 3 times the MDL. Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification (CCV) checks were made at the required frequency resulting in 12 CCVs. All calibration check results met the acceptance criteria. A reporting limit verification check was made at the required frequency to verify the linearity of the calibration curve near the practical quantitation limit. The check was within the acceptance criteria range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries were stable and within acceptable ranges.

Method SW-846 9056

The initial calibrations for chloride and sulfate were performed using five calibration standards each on October 21, 2005. The calibration curve r^2 values were greater than 0.995 and intercepts

were less than 3 times the MDL. Initial calibration and calibration check standards were prepared from independent sources. Initial and continuing calibration checks were made at the required frequency resulting in five CCVs. The calibration checks met the acceptance criteria.

Method MCAWW 350.1

The initial calibrations for ammonia as N was performed using six calibration standards on October 26, 2005 resulting in calibration curves with r^2 values greater than 0.995 and intercepts less than 3 times the MDL. Initial and continuing calibration checks were made at the required frequency resulting in eight CCVs. All calibration check results met the acceptance criteria.

Method MCAWW 160.1

There are no calibration requirements associated with the determination of TDS.

Method and Calibration Blanks

The uranium initial and continuing calibration blanks (CCB) were below the practical quantitation limits but greater than the MDL. The uranium result for sample 0510002-21 was less than 5 times the concentration of the associated calibration blank and is qualified as “U”. The chloride, sulfate, ammonia as N, and TDS method blanks and calibration blanks were below the MDLs with the exception of chloride CCB2 and CCB3 analyzed on October 22, 2005. There were no samples associated with this CCB.

Inductively Coupled Plasma Interference Check Sample Analysis

Inductively coupled plasma interference check samples were analyzed at the required frequency to verify the instrumental interelement and background correction factors. All check sample results met the acceptance criteria.

Matrix Spike Analysis

Matrix spike and matrix spike duplicate pairs were analyzed for uranium, chloride, sulfate, and ammonia as N as a measure of method performance in the sample matrix. The spike recoveries were not evaluated for chloride or sulfate because the concentration of these analytes in the unspiked sample was greater than 4 times the spike concentration. The spike recoveries met the recovery and precision criteria for all analytes evaluated.

Laboratory Replicate Analysis

The relative percent difference (RPD) values for the laboratory replicate sample and matrix spike duplicate sample results for all analytes were less than 20 percent, indicating acceptable laboratory precision.

Laboratory Control Sample

Laboratory control samples were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. The results were acceptable for all analytes.

Metals Serial Dilution

Serial dilutions were performed during the uranium analysis to monitor physical or chemical interferences that may exist in the sample matrix. The results met the acceptance criteria.

Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. The samples were diluted prior to analysis of uranium to reduce interferences. The required detection limits were achieved for all analytes.

Completeness

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

Chromatography Peak Integration

The integration of analyte peaks was reviewed for all ion chromatography data. There were no manual integrations performed and all peak integrations were satisfactory.

Electronic Data Deliverable File

The electronic data deliverable (EDD) file arrived on November 14, 2005 and the data loaded into SeePro on December 7, 2005. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

Field Analyses/Activities

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

Field Activities

All monitor well results were qualified with an “F” flag in the database, indicating the wells were purged and sampled using the low-flow sampling method. A duplicate sample was collected from well 0488. There are no established regulatory criteria for the evaluation of field duplicate samples; therefore, U.S. Environmental Protection Agency (EPA) guidance for laboratory duplicates (which is conservative for field duplicates) was used to assess the precision of the field duplicates. Duplicate sample results varied by less than +/-20 RPD and are considered acceptable. An equipment blank was collected and analyzed for the same constituents as the regular water samples. Concentrations measured in the equipment blank were below levels of concern; therefore, equipment blank results are considered acceptable.

Certification

Results were reported in correct units for all analytes requested, appropriate contract-required laboratory qualifiers and target analyte lists were used, and the required detection limits 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: Steve Donovan 1-18-06
Steve Donovan Date

Field Activities Validation Lead: J. E. Price 1/19/06
Jeff Price Date

Attachment 1

Data Presentation

Minimums and Maximums Report

Minimums and Maximums Report

The Minimums and Maximums Report is generated by a data validation application (DataVal) used to query the SEEPro database. The DataVal 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 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;
- (3) there were fewer than five historical samples for comparison.

There were no anomalous data identified from this sampling.

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT -- No Field Parameters

LAB CODE: PAR, PARAGON (Fort Collins, CO)

LAB REQUISITION(S): 05100236

HISTORY BEGIN DATE: comparing to all historical data

REPORT DATE: 12/19/05 04:24:42: PM

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	0493	10/11/2005	Ammonia Total as N	800	F	1300	F	960	F	6	0
MOA01	0493	10/11/2005	Uranium	2.5	F	3.4	F	2.7	F	6	0

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

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: Analyte also found in method blank.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- C Pesticide result confirmed by GC-MS.
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- D Analyte determined in diluted sample.
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- > Result above upper detection limit.
- J Estimated

DATA QUALIFIERS:

- J Estimated value.
- L Less than 3 bore volumes purged prior to sampling.
- U Parameter analyzed for but was not detected.
- F Low flow sampling method used.
- R Unusable result.
- Q Qualitative result due to sampling technique
- G Possible grout contamination, pH > 9.
- X Location is undefined.

Water Quality Data

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 12/20/2005 9:43 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Alkalinity, Total (As CaCO3)	mg/L	0243	SL	10/12/2005	0001	0.00 - 0.00	164		#	-
	mg/L	0488	WL	10/11/2005	0001	39.00 - 39.00	1016	F	#	-
	mg/L	0493	WL	10/11/2005	0001	54.00 - 54.00	1232	F	#	-
	mg/L	0493	WL	10/11/2005	0001	46.00 - 46.00	1090	F	#	-
	mg/L	0599	WL, PZ	10/12/2005	0001	9.90 - 9.90	698	F	#	-
	mg/L	SMI-PW01	WL	10/13/2005	0001	40.00 - 40.00	862	F	#	-
	mg/L	SMI-PZ1D2	WL, PZ	10/13/2005	0001	73.00 - 73.00	452	F	#	-
	mg/L	SMI-PZ1M	WL, PZ	10/13/2005	0001	57.00 - 57.00	1196	F	#	-
	mg/L	SMI-PZ1S	WL, PZ	10/13/2005	0001	18.00 - 18.00	712	F	#	-
Ammonia Total as N	mg/L	0243	SL	10/12/2005	0001	0.00 - 0.00	0.1	U	#	0.1
	mg/L	0488	WL	10/11/2005	0001	39.00 - 39.00	760	F	#	50
	mg/L	0488	WL	10/11/2005	0002	39.00 - 39.00	780	F	#	50
	mg/L	0493	WL	10/11/2005	0001	54.00 - 54.00	1100	F	#	50
	mg/L	0493	WL	10/11/2005	0001	46.00 - 46.00	800	F	#	50
	mg/L	0496	WL, PZ	10/12/2005	0001	2.70 - 2.70	370	FQ	#	50
	mg/L	0497	WL, PZ	10/12/2005	0001	4.80 - 4.80	360	FQ	#	50
	mg/L	0598	WL, PZ	10/12/2005	0001	9.60 - 9.60	550	FQ	#	50
	mg/L	0599	WL, PZ	10/12/2005	0001	9.90 - 9.90	490	F	#	50
	mg/L	0617	WL, PZ	10/12/2005	0001	2.20 - 2.20	60	FQ	#	2
	mg/L	0618	WL, PZ	10/12/2005	0001	5.80 - 5.80	200	FQ	#	50
	mg/L	SMI-PW01	WL	10/13/2005	0001	40.00 - 40.00	560	F	#	50
	mg/L	SMI-PZ1D2	WL, PZ	10/13/2005	0001	73.00 - 73.00	1800	F	#	50
	mg/L	SMI-PZ1M	WL, PZ	10/13/2005	0001	57.00 - 57.00	990	F	#	50
	mg/L	SMI-PZ1S	WL, PZ	10/13/2005	0001	18.00 - 18.00	460	F	#	50
Bromide	mg/L	0243	SL	10/12/2005	0001	0.00 - 0.00	0.4	U	#	0.4
	mg/L	0488	WL	10/11/2005	0001	39.00 - 39.00	4	U	F	#

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 12/20/2005 9:43 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID			LAB	DATA	QA		
Bromide	mg/L	0488	WL	10/11/2005	0002	39.00 - 39.00	4	U	F	#	4	-
	mg/L	0493	WL	10/11/2005	0001	46.00 - 46.00	4	U	F	#	4	-
	mg/L	0493	WL	10/11/2005	0001	54.00 - 54.00	10	U	F	#	10	-
	mg/L	0496	WL, PZ	10/12/2005	0001	2.70 - 2.70	4	U	FQ	#	4	-
	mg/L	0497	WL, PZ	10/12/2005	0001	4.80 - 4.80	4	U	FQ	#	4	-
	mg/L	0598	WL, PZ	10/12/2005	0001	9.60 - 9.60	4	U	FQ	#	4	-
	mg/L	0599	WL, PZ	10/12/2005	0001	9.90 - 9.90	4	U	F	#	4	-
	mg/L	0617	WL, PZ	10/12/2005	0001	2.20 - 2.20	4	U	FQ	#	4	-
	mg/L	0618	WL, PZ	10/12/2005	0001	5.80 - 5.80	4	U	FQ	#	4	-
	mg/L	SMI-PW01	WL	10/13/2005	0001	40.00 - 40.00	4	U	F	#	4	-
	mg/L	SMI-PZ1D2	WL, PZ	10/13/2005	0001	73.00 - 73.00	20	U	F	#	20	-
	mg/L	SMI-PZ1M	WL, PZ	10/13/2005	0001	57.00 - 57.00	10	U	F	#	10	-
	mg/L	SMI-PZ1S	WL, PZ	10/13/2005	0001	18.00 - 18.00	4	U	F	#	4	-
Chloride	mg/L	0243	SL	10/12/2005	0001	0.00 - 0.00	92			#	4	-
	mg/L	0488	WL	10/11/2005	0001	39.00 - 39.00	1900		F	#	40	-
	mg/L	0488	WL	10/11/2005	0002	39.00 - 39.00	1900		F	#	40	-
	mg/L	0493	WL	10/11/2005	0001	54.00 - 54.00	7800		F	#	100	-
	mg/L	0493	WL	10/11/2005	0001	46.00 - 46.00	2700		F	#	40	-
	mg/L	0496	WL, PZ	10/12/2005	0001	2.70 - 2.70	2400		FQ	#	40	-
	mg/L	0497	WL, PZ	10/12/2005	0001	4.80 - 4.80	3200		FQ	#	40	-
	mg/L	0598	WL, PZ	10/12/2005	0001	9.60 - 9.60	2500		FQ	#	40	-
	mg/L	0599	WL, PZ	10/12/2005	0001	9.90 - 9.90	2500		F	#	40	-
	mg/L	0617	WL, PZ	10/12/2005	0001	2.20 - 2.20	3300		FQ	#	40	-
	mg/L	0618	WL, PZ	10/12/2005	0001	5.80 - 5.80	2100		FQ	#	40	-
	mg/L	SMI-PW01	WL	10/13/2005	0001	40.00 - 40.00	1800		F	#	40	-
	mg/L	SMI-PZ1D2	WL, PZ	10/13/2005	0001	73.00 - 73.00	53000		F	#	1000	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 12/20/2005 9:43 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID			LAB	DATA	QA		
Chloride	mg/L	SMI-PZ1M	WL, PZ	10/13/2005	0001	57.00 - 57.00	6600	F	#		100	-
	mg/L	SMI-PZ1S	WL, PZ	10/13/2005	0001	18.00 - 18.00	1700	F	#		40	-
Dissolved Oxygen	mg/L	0243	SL	10/12/2005	N001	0.00 - 0.00	10.41		#		-	-
	mg/L	0488	WL	10/11/2005	N001	39.00 - 39.00	0.26	F	#		-	-
	mg/L	0493	WL	10/11/2005	N001	54.00 - 54.00	0.67	F	#		-	-
	mg/L	0493	WL	10/11/2005	N001	46.00 - 46.00	0.76	F	#		-	-
	mg/L	0496	WL, PZ	10/12/2005	N001	2.70 - 2.70	0.80	FQ	#		-	-
	mg/L	0497	WL, PZ	10/12/2005	N001	4.80 - 4.80	2.11	FQ	#		-	-
	mg/L	0598	WL, PZ	10/12/2005	N001	9.60 - 9.60	0.70	FQ	#		-	-
	mg/L	0599	WL, PZ	10/12/2005	N001	9.90 - 9.90	0.98	F	#		-	-
	mg/L	0617	WL, PZ	10/12/2005	N001	2.20 - 2.20	0.55	FQ	#		-	-
	mg/L	0618	WL, PZ	10/12/2005	N001	5.80 - 5.80	1.53	FQ	#		-	-
	mg/L	SMI-PW01	WL	10/13/2005	N001	40.00 - 40.00	0.89	F	#		-	-
	mg/L	SMI-PZ1D2	WL, PZ	10/13/2005	N001	73.00 - 73.00	0.51	F	#		-	-
	mg/L	SMI-PZ1M	WL, PZ	10/13/2005	N001	57.00 - 57.00	1.07	F	#		-	-
	mg/L	SMI-PZ1S	WL, PZ	10/13/2005	N001	18.00 - 18.00	1.67	F	#		-	-
Oxidation Reduction Potent	mV	0243	SL	10/12/2005	N001	0.00 - 0.00	29		#		-	-
	mV	0488	WL	10/11/2005	N001	39.00 - 39.00	83	F	#		-	-
	mV	0493	WL	10/11/2005	N001	46.00 - 46.00	58	F	#		-	-
	mV	0493	WL	10/11/2005	N001	54.00 - 54.00	74	F	#		-	-
	mV	0496	WL, PZ	10/12/2005	N001	2.70 - 2.70	-162	FQ	#		-	-
	mV	0497	WL, PZ	10/12/2005	N001	4.80 - 4.80	-251	FQ	#		-	-
	mV	0598	WL, PZ	10/12/2005	N001	9.60 - 9.60	-82	FQ	#		-	-
	mV	0599	WL, PZ	10/12/2005	N001	9.90 - 9.90	-13	F	#		-	-
	mV	0617	WL, PZ	10/12/2005	N001	2.20 - 2.20	-133	FQ	#		-	-
	mV	0618	WL, PZ	10/12/2005	N001	5.80 - 5.80	-112	FQ	#		-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 12/20/2005 9:43 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID			LAB	DATA	QA		
Oxidation Reduction Potent	mV	SMI-PW01	WL	10/13/2005	N001	40.00 - 40.00	185	F	#	-	-	
	mV	SMI-PZ1D2	WL, PZ	10/13/2005	N001	73.00 - 73.00	219	F	#	-	-	
	mV	SMI-PZ1M	WL, PZ	10/13/2005	N001	57.00 - 57.00	194	F	#	-	-	
	mV	SMI-PZ1S	WL, PZ	10/13/2005	N001	18.00 - 18.00	215	F	#	-	-	
pH	s.u.	0243	SL	10/12/2005	N001	0.00 - 0.00	8.19		#	-	-	
	s.u.	0488	WL	10/11/2005	N001	39.00 - 39.00	6.95	F	#	-	-	
	s.u.	0493	WL	10/11/2005	N001	46.00 - 46.00	6.97	F	#	-	-	
	s.u.	0493	WL	10/11/2005	N001	54.00 - 54.00	6.89	F	#	-	-	
	s.u.	0496	WL, PZ	10/12/2005	N001	2.70 - 2.70	7.72	FQ	#	-	-	
	s.u.	0497	WL, PZ	10/12/2005	N001	4.80 - 4.80	8.90	FQ	#	-	-	
	s.u.	0598	WL, PZ	10/12/2005	N001	9.60 - 9.60	7.96	FQ	#	-	-	
	s.u.	0599	WL, PZ	10/12/2005	N001	9.90 - 9.90	6.75	F	#	-	-	
	s.u.	0617	WL, PZ	10/12/2005	N001	2.20 - 2.20	7.71	FQ	#	-	-	
	s.u.	0618	WL, PZ	10/12/2005	N001	5.80 - 5.80	8.40	FQ	#	-	-	
	s.u.	SMI-PW01	WL	10/13/2005	N001	40.00 - 40.00	6.77	F	#	-	-	
	s.u.	SMI-PZ1D2	WL, PZ	10/13/2005	N001	73.00 - 73.00	6.64	F	#	-	-	
	s.u.	SMI-PZ1M	WL, PZ	10/13/2005	N001	57.00 - 57.00	6.83	F	#	-	-	
	s.u.	SMI-PZ1S	WL, PZ	10/13/2005	N001	18.00 - 18.00	6.71	F	#	-	-	
Specific Conductance	umhos/cm	0243	SL	10/12/2005	N001	0.00 - 0.00	1330		#	-	-	
	umhos/cm	0488	WL	10/11/2005	N001	39.00 - 39.00	22030	F	#	-	-	
	umhos/cm	0493	WL	10/11/2005	N001	54.00 - 54.00	38580	F	#	-	-	
	umhos/cm	0493	WL	10/11/2005	N001	46.00 - 46.00	24810	F	#	-	-	
	umhos/cm	0496	WL, PZ	10/12/2005	N001	2.70 - 2.70	11470	FQ	#	-	-	
	umhos/cm	0497	WL, PZ	10/12/2005	N001	4.80 - 4.80	1610	FQ	#	-	-	
	umhos/cm	0598	WL, PZ	10/12/2005	N001	9.60 - 9.60	19860	FQ	#	-	-	
	umhos/cm	0599	WL, PZ	10/12/2005	N001	9.90 - 9.90	19850	F	#	-	-	

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 12/20/2005 9:43 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID			LAB	DATA	QA		
Specific Conductance	umhos/cm	0617	WL, PZ	10/12/2005	N001	2.20 - 2.20	19240	FQ	#	-	-	
	umhos/cm	0618	WL, PZ	10/12/2005	N001	5.80 - 5.80	3335	FQ	#	-	-	
	umhos/cm	SMI-PW01	WL	10/13/2005	N001	40.00 - 40.00	19070	F	#	-	-	
	umhos/cm	SMI-PZ1D2	WL, PZ	10/13/2005	N001	73.00 - 73.00	110300	F	#	-	-	
	umhos/cm	SMI-PZ1M	WL, PZ	10/13/2005	N001	57.00 - 57.00	36610	F	#	-	-	
	umhos/cm	SMI-PZ1S	WL, PZ	10/13/2005	N001	18.00 - 18.00	16940	F	#	-	-	
Sulfate	mg/L	0243	SL	10/12/2005	0001	0.00 - 0.00	350		#	10	-	
	mg/L	0488	WL	10/11/2005	0001	39.00 - 39.00	12000	F	#	100	-	
	mg/L	0488	WL	10/11/2005	0002	39.00 - 39.00	12000	F	#	100	-	
	mg/L	0493	WL	10/11/2005	0001	46.00 - 46.00	14000	F	#	100	-	
	mg/L	0493	WL	10/11/2005	0001	54.00 - 54.00	18000	F	#	250	-	
	mg/L	0496	WL, PZ	10/12/2005	0001	2.70 - 2.70	8200	FQ	#	100	-	
	mg/L	0497	WL, PZ	10/12/2005	0001	4.80 - 4.80	11000	FQ	#	100	-	
	mg/L	0598	WL, PZ	10/12/2005	0001	9.60 - 9.60	10000	FQ	#	100	-	
	mg/L	0599	WL, PZ	10/12/2005	0001	9.90 - 9.90	9200	F	#	100	-	
	mg/L	0617	WL, PZ	10/12/2005	0001	2.20 - 2.20	11000	FQ	#	100	-	
	mg/L	0618	WL, PZ	10/12/2005	0001	5.80 - 5.80	8700	FQ	#	100	-	
	mg/L	SMI-PW01	WL	10/13/2005	0001	40.00 - 40.00	10000	F	#	100	-	
	mg/L	SMI-PZ1D2	WL, PZ	10/13/2005	0001	73.00 - 73.00	8600	F	#	50	-	
	mg/L	SMI-PZ1M	WL, PZ	10/13/2005	0001	57.00 - 57.00	17000	F	#	250	-	
	mg/L	SMI-PZ1S	WL, PZ	10/13/2005	0001	18.00 - 18.00	8200	F	#	100	-	
Temperature	C	0243	SL	10/12/2005	N001	0.00 - 0.00	14.1		#	-	-	
	C	0488	WL	10/11/2005	N001	39.00 - 39.00	17.6	F	#	-	-	
	C	0493	WL	10/11/2005	N001	54.00 - 54.00	17.7	F	#	-	-	
	C	0493	WL	10/11/2005	N001	46.00 - 46.00	17.6	F	#	-	-	
	C	0496	WL, PZ	10/12/2005	N001	2.70 - 2.70	18.4	FQ	#	-	-	

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 12/20/2005 9:43 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID			LAB	DATA	QA		
Temperature	C	0497	WL, PZ	10/12/2005	N001	4.80 - 4.80	17.0	FQ	#	-	-	
	C	0598	WL, PZ	10/12/2005	N001	9.60 - 9.60	17.9	FQ	#	-	-	
	C	0599	WL, PZ	10/12/2005	N001	9.90 - 9.90	16.6	F	#	-	-	
	C	0617	WL, PZ	10/12/2005	N001	2.20 - 2.20	14.7	FQ	#	-	-	
	C	0618	WL, PZ	10/12/2005	N001	5.80 - 5.80	15.1	FQ	#	-	-	
	C	SMI-PW01	WL	10/13/2005	N001	40.00 - 40.00	18.6	F	#	-	-	
	C	SMI-PZ1D2	WL, PZ	10/13/2005	N001	73.00 - 73.00	18.2	F	#	-	-	
	C	SMI-PZ1M	WL, PZ	10/13/2005	N001	57.00 - 57.00	18.9	F	#	-	-	
	C	SMI-PZ1S	WL, PZ	10/13/2005	N001	18.00 - 18.00	18.2	F	#	-	-	
Total Dissolved Solids	mg/L	0243	SL	10/12/2005	0001	0.00 - 0.00	790		#	40	-	
	mg/L	0488	WL	10/11/2005	0001	39.00 - 39.00	18000	F	#	400	-	
	mg/L	0488	WL	10/11/2005	0002	39.00 - 39.00	18000	F	#	400	-	
	mg/L	0493	WL	10/11/2005	0001	46.00 - 46.00	21000	F	#	400	-	
	mg/L	0493	WL	10/11/2005	0001	54.00 - 54.00	33000	F	#	1000	-	
	mg/L	0496	WL, PZ	10/12/2005	0001	2.70 - 2.70	14000	FQ	#	400	-	
	mg/L	0497	WL, PZ	10/12/2005	0001	4.80 - 4.80	21000	FQ	#	400	-	
	mg/L	0598	WL, PZ	10/12/2005	0001	9.60 - 9.60	17000	FQ	#	400	-	
	mg/L	0599	WL, PZ	10/12/2005	0001	9.90 - 9.90	16000	F	#	400	-	
	mg/L	0617	WL, PZ	10/12/2005	0001	2.20 - 2.20	21000	FQ	#	400	-	
	mg/L	0618	WL, PZ	10/12/2005	0001	5.80 - 5.80	12000	FQ	#	400	-	
	mg/L	SMI-PW01	WL	10/13/2005	0001	40.00 - 40.00	16000	JF	#	400	-	
	mg/L	SMI-PZ1D2	WL, PZ	10/13/2005	0001	73.00 - 73.00	16000	F	#	2000	-	
	mg/L	SMI-PZ1M	WL, PZ	10/13/2005	0001	57.00 - 57.00	31000	F	#	1000	-	
	mg/L	SMI-PZ1S	WL, PZ	10/13/2005	0001	18.00 - 18.00	14000	F	#	400	-	
Turbidity	NTU	0243	SL	10/12/2005	N001	0.00 - 0.00	1000	>	#	-	-	
	NTU	0488	WL	10/11/2005	N001	39.00 - 39.00	2.24	F	#	-	-	

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 12/20/2005 9:43 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID			LAB	DATA	QA		
Turbidity	NTU	0493	WL	10/11/2005	N001	46.00 - 46.00	3.23	F	#	-	-	
	NTU	0493	WL	10/11/2005	N001	54.00 - 54.00	4.08	F	#	-	-	
	NTU	0496	WL, PZ	10/12/2005	N001	2.70 - 2.70	1000	>	FQ	#	-	-
	NTU	0497	WL, PZ	10/12/2005	N001	4.80 - 4.80	1000	>	FQ	#	-	-
	NTU	0598	WL, PZ	10/12/2005	N001	9.60 - 9.60	1000	>	FQ	#	-	-
	NTU	0599	WL, PZ	10/12/2005	N001	9.90 - 9.90	8.36		F	#	-	-
	NTU	0617	WL, PZ	10/12/2005	N001	2.20 - 2.20	1000	>	FQ	#	-	-
	NTU	0618	WL, PZ	10/12/2005	N001	5.80 - 5.80	1000	>	FQ	#	-	-
	NTU	SMI-PW01	WL	10/13/2005	N001	40.00 - 40.00	1.71		F	#	-	-
	NTU	SMI-PZ1D2	WL, PZ	10/13/2005	N001	73.00 - 73.00	5.65		F	#	-	-
	NTU	SMI-PZ1M	WL, PZ	10/13/2005	N001	57.00 - 57.00	7.30		F	#	-	-
	NTU	SMI-PZ1S	WL, PZ	10/13/2005	N001	18.00 - 18.00	9.82		F	#	-	-
	Uranium	mg/L	0243	SL	10/12/2005	0001	0.00 - 0.00	0.0072		#	4.8E-06	-
mg/L		0488	WL	10/11/2005	0001	39.00 - 39.00	2.600	F	#	0.00024	-	
mg/L		0488	WL	10/11/2005	0002	39.00 - 39.00	2.400	F	#	0.00024	-	
mg/L		0493	WL	10/11/2005	0001	46.00 - 46.00	2.500	F	#	0.00048	-	
mg/L		0493	WL	10/11/2005	0001	54.00 - 54.00	3.200	F	#	0.00024	-	
mg/L		0496	WL, PZ	10/12/2005	0001	2.70 - 2.70	0.0037	FQ	#	4.8E-06	-	
mg/L		0497	WL, PZ	10/12/2005	0001	4.80 - 4.80	0.600	FQ	#	4.8E-05	-	
mg/L		0598	WL, PZ	10/12/2005	0001	9.60 - 9.60	0.500	FQ	#	4.8E-05	-	
mg/L		0599	WL, PZ	10/12/2005	0001	9.90 - 9.90	1.800	F	#	0.00024	-	
mg/L		0617	WL, PZ	10/12/2005	0001	2.20 - 2.20	1.600	FQ	#	0.00024	-	
mg/L		0618	WL, PZ	10/12/2005	0001	5.80 - 5.80	0.190	FQ	#	2.4E-05	-	
mg/L		SMI-PW01	WL	10/13/2005	0001	40.00 - 40.00	2.200	F	#	0.00048	-	
mg/L		SMI-PZ1D2	WL, PZ	10/13/2005	0001	73.00 - 73.00	1.400	F	#	9.5E-05	-	
mg/L		SMI-PZ1M	WL, PZ	10/13/2005	0001	57.00 - 57.00	3.400	F	#	0.00048	-	

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 12/20/2005 9:43 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Uranium	mg/L	SMI-PZ1S	WL, PZ	10/13/2005	0001	18.00 - 18.00	1.400	F #	0.00024	-

RECORDS: SELECTED FROM USEE200 WHERE site_code='MOA01' AND location_code in('0488','0493','SMI-PW01','SMI-PZ1D2','SMI-PZ1M','SMI-PZ1S','0496','0497','0598','0599','0617','0618','0243') AND quality_assurance = TRUE AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%') AND DATE_SAMPLED between #10/11/2005# and #10/13/2005#

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

LOCATION TYPES: SL SURFACE LOCATION WL WELL

LOCATION SUBTYPES: PZ Piezometer

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: 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
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Z Laboratory defined (USEPA CLP organic) 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.

Water Level Data

STATIC WATER LEVELS (USEE700) FOR SITE MOA01, Moab Site
 REPORT DATE: 12/20/2005 9:43 am

LOCATION CODE	FLOW CODE	TOP OF CASING ELEVATION (FT)	MEASUREMENT		DEPTH FROM TOP OF CASING (FT)	WATER ELEVATION (FT)	WATER LEVEL FLAG
			DATE	TIME			
0488		3968.48	10/11/2005	16:41	14.26	3954.22	
0493		3967.89	10/11/2005	16:03	13.91	3954.03	
0496		3957.48	10/11/2005	15:22	3.02	3954.46	
0497		3955.66	10/11/2005	15:28	1.63	3954.03	
0598		3957.38	10/11/2005	15:15	3.55	-	
0599		3955.93	10/12/2005	15:00	1.94	-	
0617		3956.76	10/11/2005	15:40	2.95	-	
0618		3954.96	10/11/2005	15:44	1.23	-	
SMI-PW01	O	3968.45	10/13/2005	11:25	14.25	3954.20	
SMI-PZ1D2	O	3968.26	10/13/2005	10:40	14.87	3953.39	
SMI-PZ1M	O	3968.29	10/13/2005	11:07	14.24	3954.05	
SMI-PZ1S	O	3969.13	10/13/2005	09:39	14.95	3954.18	

RECORDS: SELECTED FROM USEE700 WHERE site_code='MOA01' AND location_code in('0488','0493','SMI-PW01','SMI-PZ1D2','SMI-PZ1M','SMI-PZ1S','0496','0497','0598','0599','0617','0618','0243') AND LOG_DATE between #10/11/2005# and #10/13/2005#

FLOW CODES: O ON-SITE

WATER LEVEL FLAGS:

Blanks

BLANKS REPORT

LAB CODE: PAR, PARAGON (Fort Collins, CO)

LAB REQUISITION(S): 05100236

REPORT DATE: 12/19/05 04:24:26: PM

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	10/13/2005	0001	mg/L	0.1	U	0.1		E
Bromide	MOA01	0999	10/13/2005	0001	mg/L	0.2	U	0.2		E
Chloride	MOA01	0999	10/13/2005	0001	mg/L	0.2	U	0.2		E
Sulfate	MOA01	0999	10/13/2005	0001	mg/L	0.5	U	0.5		E
Total Dissolved Solids	MOA01	0999	10/13/2005	0001	mg/L	20	U	20		E
Uranium	MOA01	0999	10/13/2005	0001	mg/L	0.00007	B U	0.0000048		E

BLANKS REPORT

LAB CODE: PAR, PARAGON (Fort Collins, CO)

LAB REQUISITION(S): 05100236

REPORT DATE: 12/19/05 04:24:26: PM

PARAMETER	SITE CODE	LOCATION ID	SAMPLE DATE	ID	UNITS	RESULT	QUALIFIERS LAB DATA	DETECTION LIMIT	UNCERTAINTY	SAMPLE TYPE
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SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: Analyte also found in method blank.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- C Pesticide result confirmed by GC-MS.
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- D Analyte determined in diluted sample.
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- > Result above upper detection limit.
- J Estimated

DATA QUALIFIERS:

- J Estimated value.
- L Less than 3 bore volumes purged prior to sampling.
- U Parameter analyzed for but was not detected.
- F Low flow sampling method used.
- R Unusable result.
- Q Qualitative result due to sampling technique
- G Possible grout contamination, pH > 9.
- X Location is undefined.

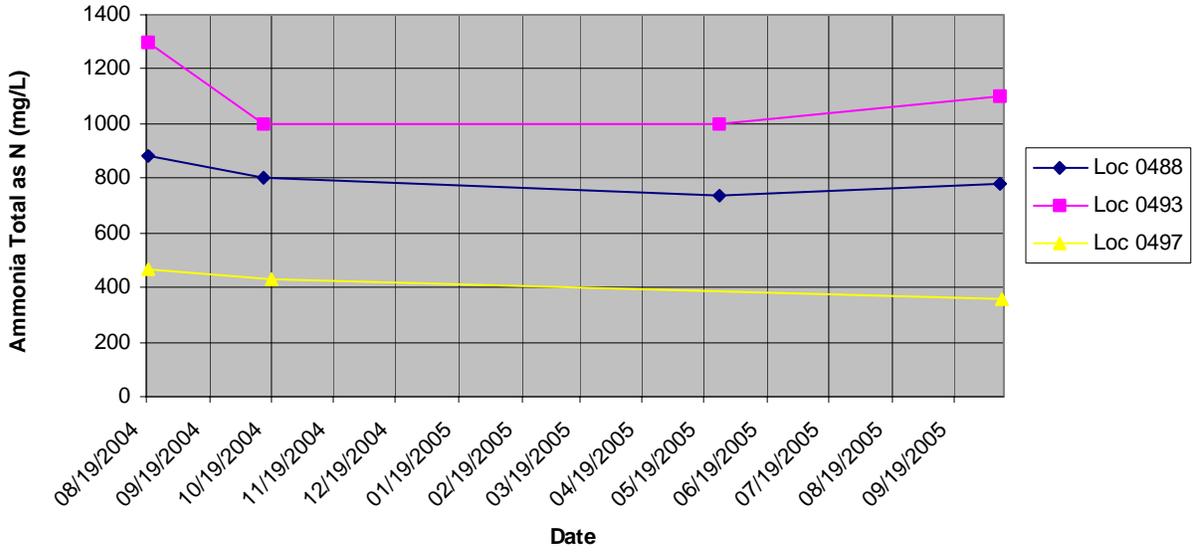
SAMPLE TYPES:

- E EQUIPMENT BLANK

Time Versus Concentration Graphs

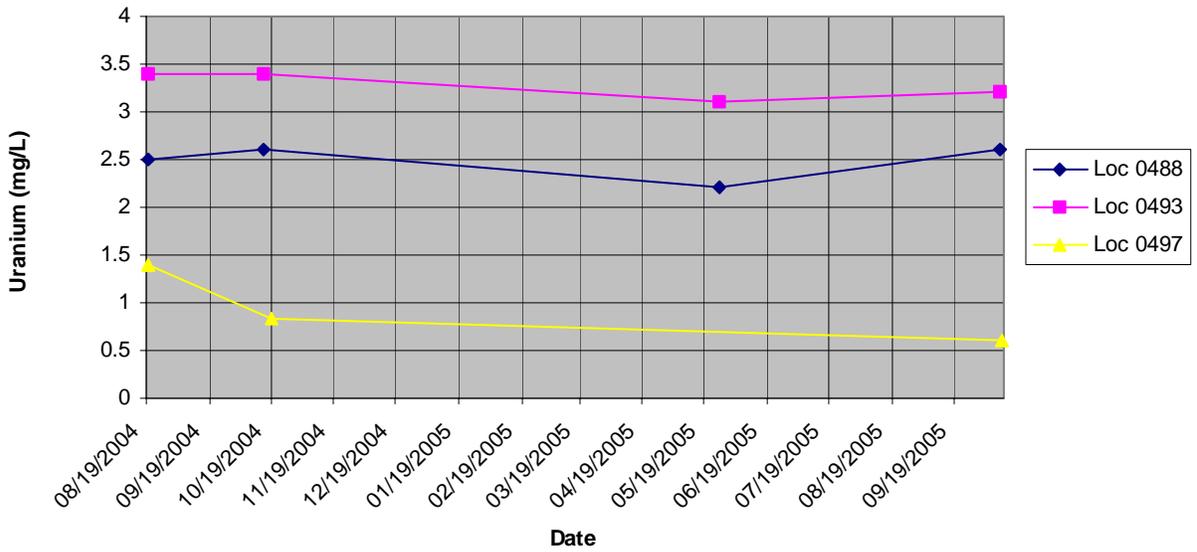
Moab Site (MOA01)

Ammonia Total as N Concentration



Moab Site (MOA01)

Uranium Concentration



Attachment 2

Trip Report

DATE: November 14, 2005

TO: John Ford

FROM: K. G. Pill

SUBJECT: Trip Report

Site: Moab – Interim Action Baseline Area Well Field Monthly Sampling – October 2005

Date of Sampling Event: October 11 through 13, 2005.

Team Members: Ken Pill and Jeff Price

Number of Locations Sampled: 6 observation wells (0488, 0493 [samples collected from 46 and 54 ft bgs], SMI-PW01, SMI-PZ1D2, SMI-PZ1M, and SMI-PZ1S), 6 piezometers (0496, 0497, 0598, 0599, 0617, 0618), and 1 surface water location (0243). Including one duplicate and one equipment blank, a total of 16 samples were collected.

Locations Not Sampled/Reason: Piezometer 0494 was dry, and no sample was collected. Observation wells 0405 and 0488 (from 26 ft bgs) and piezometers 0495 and 0597 will be sampled the week of October 25, 2005 as part of the microbial study sampling event.

Field Variance: Only a 125 ml sample was collected for uranium analysis as opposed to the standard 500 ml sample volume for metals. No other metals are being sampled, and this volume is sufficient for the uranium analysis. Limited sample volume was available for analysis from locations 0496, 0497, 0598, 0617, and 0618. These samples were split and preserved as directed by the laboratory for proper analysis.

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
2227	0488	Duplicate from 39 ft bgs	Ground Water	NDV-304
2228	NA	Equipment Blank – GW Equip	DI Water	NDV-325

RIN Number Assigned: All samples were assigned to RIN 05100236.

Sample Shipment: All samples were shipped in 1 cooler overnight FEDEX to Paragon Analytics, Inc. from Grand Junction on October 14, 2005 (Airbill No. 7917 5636 2962).

Location Specific Information – Observation Wells: All observation wells were sampled using micro-purge techniques with a peristaltic pump and dedicated downhole tubing. Sample depths and water levels for each observation well are listed below.

Well No.	Date	Time	Depth to Water (ft btoc)	Sample Depth (ft bgs)
0488	10/11/05	16:41	14.26	39
0493	10/11/05	16:03	13.91	46 / 54
SMI-PW01	10/13/05	11:25	14.25	40
SMI-PZ1S	10/13/05	09:39	14.95	18
SMI-PZ1M	10/13/05	11:07	14.24	57
SMI-PZ1D2	10/13/05	10:40	14.87	73

Location Specific Information – Piezometer Sampling: The piezometers were initially purged on October 11, and sampled on October 12. The table below presents the water levels, stick up height, and depth to the river surface prior to the initial purge.

PZ No.	Date	Time	Depth to Water (ft btoc)	Stick Up Height (ft)	Depth to River Surface (ft btoc)
0496	10/11/05	15:22	3.02	2.22	Dry at base
0497	10/11/05	15:28	1.63	0.66	Dry at base
0598	10/11/05	15:15	3.55	2.40	Dry at base
0599	10/11/05	15:00	1.94	~2.1	~1.9
0617	10/11/05	15:40	2.95	2.82	2.71
0618	10/11/05	15:44	1.23	1.18	0.94

Approximately 120 mls was collected from 0496, 250 mls from 0497, 175 mls from 0598, 150 mls from 0617, and 350 mls from 0618 for analysis. These samples were split and preserved as directed by the laboratory for proper analysis. Piezometer 0599 recharged instantaneously, and was sampled using standard procedures.

Location Specific Information – Surface Water Sampling: The surface water sample for location 0243 was collected adjacent to piezometer 0618, approximately 5 ft off the bank at a depth of approximately 1 ft below the water surface (photo attached).

Well Inspection Summary: A well inspection was not conducted.

Equipment: No issues to report.

Site Issues: According to the USGS Cisco Gaging Station (Station No. 09180500), the mean daily Colorado River Flows during the time period of this sampling event were:

Date	Daily Mean Flow (cfs)
10/10/2005	5,300
10/11/2005	5,260
10/12/2005	5,060
10/13/2005	4,700

Corrective Action Required/Taken: None.

(KGP/lcg)

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Piezometers 0494, 0495, and 0597



Piezometers 0496, 0497, and 0598



Piezometers 0599, 0617, and 0618, and Surface Location 0243