

March 2005 Water Sampling

**Validation Data Package
for
Configuration 1 Interim Action
Well Field Monthly Sampling
Moab, Utah**

August 2005

Moab, Utah

March 14-16, 2005

Data Package Contents

This data package includes the following information:

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Time Versus Concentration Graphs

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Sampling Event Summary

Site: Moab, Utah

Sampling Period: March 14-16, 2005

The purpose of this sampling was to collect data that can be used to evaluate the performance of Configuration 1 of the interim action well field. The extraction wells had been operating the 2005 pumping season since mid-February 2005. This is the second monthly performance sampling round conducted in 2005 for Configuration 1.

Sampling and analysis was conducted in accordance with the *Operations, Maintenance, and Performance Monitoring Plan for the Interim Action Ground Water Treatment System, February 2004*. Ground water samples were collected from ten extraction wells (0470-0479), six observation wells (0403, 0407, 0483, 0557, 0559, and 0560), four piezometers (0562-0565), and three surface water locations (0216, 0245, and 0547). Including one duplicate and one equipment blank, a total of 25 samples were collected.

A detailed discussion of extraction well field performance is presented in the *Fall 2004 Performance Assessment of the Ground Water Interim Action Well Fields at the Moab, Utah, Project Site, January 2005*. However, time versus concentration graphs for selected key performance indicator wells and major contaminants of concern are included. Data presented in these graphs indicate that contaminant concentrations are at expected levels.

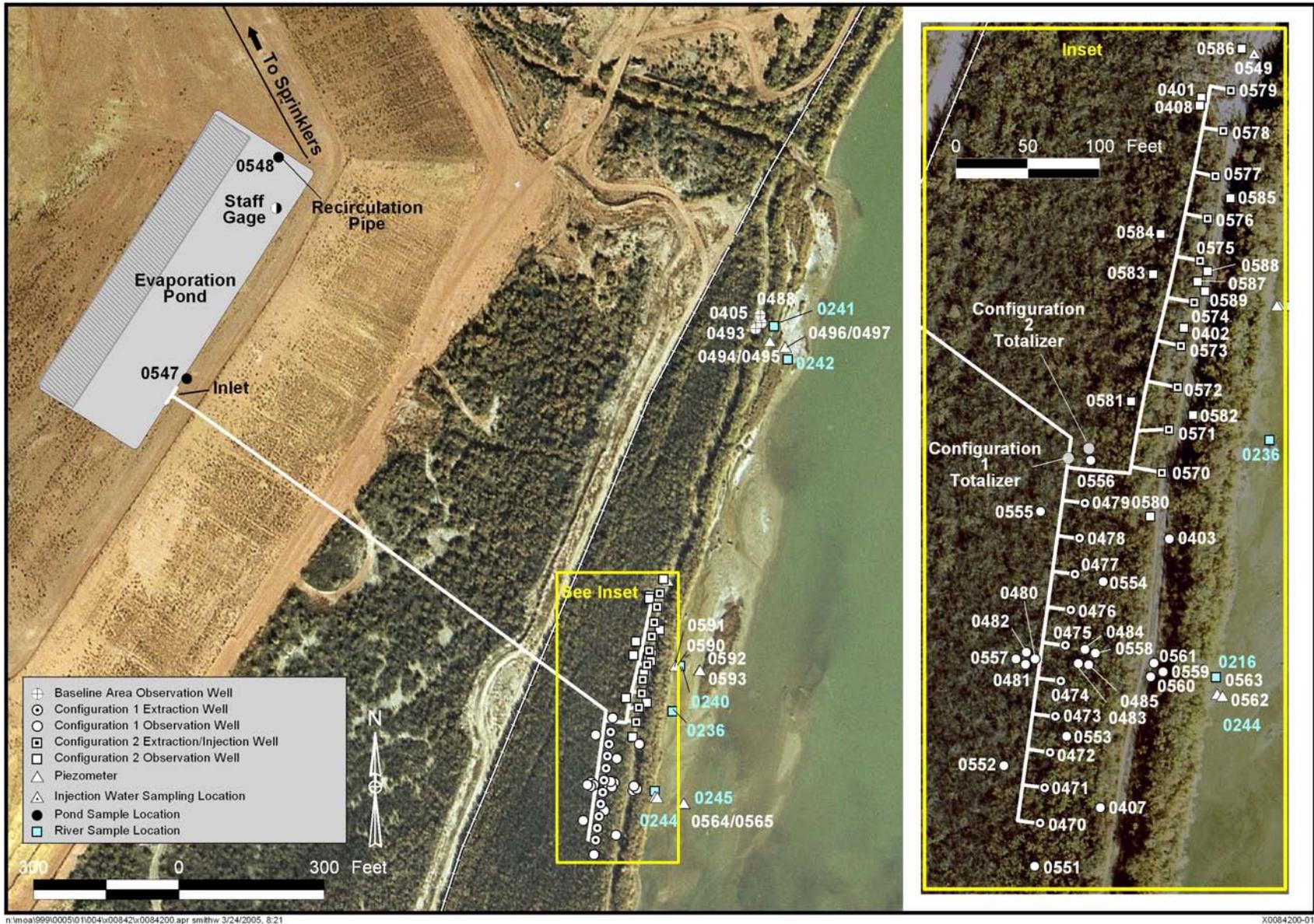


Kenneth E. Karp
Site Lead

9-1-05

Date

Sample Location Map



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

Data Assessment Summary

Water Sampling Field Activities Verification Checklist

Project	<u>Moab, Utah</u>	Date(s) of Water Sampling	<u>March 14-16, 2005</u>
Date(s) of Verification	<u>August 1, 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?	<u>Yes</u>	
Did the water level stabilize prior to sampling?	<u>Yes</u>	
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	<u>Yes</u>	
Was the flow rate less than 500 mL/min?	<u>Yes</u>	
If a portable pump was used, was there a 4 hour delay between pump installation and sampling?	<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.: 05030174
Sample Event: March 14-16, 2005 Water Sampling
Site(s): Moab, Utah
Laboratory: Paragon Analytics
Work Order No.: 0503175
Analysis: Metals and Inorganics
Validator: Steve Donovan
Review Date: April 19, 2005

This validation was performed according to the *Environmental Procedures Catalog* (STO 6), “Standard Practice for Validation of Laboratory Data”, GT-9(P) (2004). The samples in this work order were analyzed concurrently with the samples from requisition 05030175. The two work orders share the same quality control data. 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 6020
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

Two uranium results are qualified as “U” as listed in Table 2.

Table 2. Qualified Results

Sample Number	Location	Analyte	Flag	Reason
0503175-23	0564	Uranium	U	Less than 5 times the blank
0503175-25	2783	Uranium	U	Less than 5 times the blank

Sample Shipping/Receiving

Paragon Analytics in Fort Collins, Colorado, received 19 samples on March 16, 2005 and an additional 6 samples on March 17, 2005 accompanied by Chain of Custody (COC) forms. The COC forms were checked to confirm that all of the samples were listed 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.

Preservation and Holding Times

The sample shipment was received intact with the temperatures within the coolers of 2.0, 2.2, and 1.6 °C, which comply with requirements. All samples had been preserved correctly for the requested analyses and all samples were analyzed within the applicable holding times.

Laboratory Instrument Calibration

All laboratory instrument calibrations were performed correctly in accordance with the cited methods.

Method SW-846 6020

Calibration for uranium was performed on March 12, 2005 using 4 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 method detection limit (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 eight CCVs. All calibration checks met the acceptance criteria. A reporting limit verification check was made at the beginning of the analytical sequence to verify the linearity of the calibration curve near the practical quantitation limit, but failed to meet the acceptance criteria. There were no sample results between the MDL and 5 times the practical quantitation limit requiring qualification. The mass calibration and resolution was checked at the beginning of each analytical run and the internal standard recoveries were stable and within acceptance ranges.

Method SW-846 9056

Initial calibrations were performed for chloride and sulfate using five calibration standards on March 18, 2005. The calibration curve r^2 values were greater than 0.995 and intercepts less than 3 times the MDL. Initial calibration and calibration check standards were prepared from independent sources. Initial and CCV checks were made at the required frequency resulting in 14 CCVs. All calibration checks met the acceptance criteria with the exception of CCV1 analyzed for chloride on March 20, 2005. The samples associated with this CCV were reanalyzed with an acceptable CCV.

Method MCAWW 350.1

The initial calibration for ammonia as N was performed using six calibration standards on March 24, 2005 resulting in a calibration curve with a r^2 value greater than 0.995. Calibration verifications were made at the required frequency, resulting in nine CCVs. All calibration verification checks were within the acceptance criteria.

Method MCAWW 160.1

There is no initial or continuing calibration requirement associated with the determination of total dissolved solids (TDS).

Method and Calibration Blanks

The uranium initial and continuing calibration blanks (CCB) were below the practical quantitation limits. The chloride, sulfate, ammonia as N, and TDS method blanks and calibration blanks were below the MDLs with the exception of CCB4 analyzed for ammonia as N on March 24, 2005. The samples associated with this CCB were reanalyzed with an acceptable CCB.

Inductively Coupled Plasma Interference Check Sample Analysis

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

Matrix Spike Analysis

Matrix spike and matrix spike duplicate samples were analyzed for ammonia as N, chloride, sulfate, and uranium as a measure of method performance in the site-specific sample matrix. The matrix spike recoveries met the acceptance criteria for all analytes.

Laboratory Replicate Analysis

Matrix spike duplicate and laboratory duplicate samples were analyzed as indicators of laboratory precision. The relative percent difference (RPD) values for the duplicate results for ammonia as N, sulfate, TDS, and uranium were less than 20 percent.

Laboratory Control Sample

Laboratory control samples (LCS) 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 LCS results were acceptable for all analytes.

Metals Serial Dilution

A serial dilution was analyzed during the uranium analysis to monitor physical or chemical interferences that may exist in the site-specific sample matrix. The data from sample 0503175-1L were not evaluated because the large dilution factors used resulted in concentrations less than 100 times the practical quantitation limit.

Detection Limits/Dilutions

The samples were diluted prior to analysis of uranium to reduce interferences. Samples were diluted in a consistent and acceptable manner when required. 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 April 15, 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 analyses and 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. Extraction wells are not sampled using the low-flow sampling method.

An equipment blank was collected and analyzed for the same constituents as the Moab environmental samples. Concentrations measured in the equipment blank were below their respective contract required detection limits; therefore, equipment blank results are considered acceptable. Duplicate samples were collected from location 0407. 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 results met the laboratory duplicate criteria of +/- 20 RPD and 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. 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 Donivan 9-1-05
Steve Donivan Date

Field Activities Validation Lead: W.D. For 9/1/05
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. 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 using the following criteria. 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 5 historical samples for comparison.

There were no anomalous values identified from this sampling event.

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

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

LAB REQUISITION(S): 05030174

HISTORY BEGIN DATE: comparing to all historical data

REPORT DATE: 08/01/05 03:13:40: 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	0403	03/15/2005	Ammonia Total as N	31	F	930		38	F	15	0
MOA01	0403	03/15/2005	Chloride	170	F	6973.2		180	F	15	0
MOA01	0403	03/15/2005	Total Dissolved Solids	1000	F	19000	F	1100	F	14	0
MOA01	0471	03/15/2005	Chloride	11000	F	9200		1800	F	17	0
MOA01	0471	03/15/2005	Total Dissolved Solids	28000	F	26975		14000	F	17	0
MOA01	0477	03/15/2005	Ammonia Total as N	360	F	1200	F	390		17	0
MOA01	0478	03/15/2005	Ammonia Total as N	420	F	1400	F	470		17	0
MOA01	0478	03/15/2005	Sulfate	4900	F	11000	F	5200		17	0
MOA01	0478	03/15/2005	Total Dissolved Solids	11000	F	32000	F	12000		17	0
MOA01	0479	03/15/2005	Ammonia Total as N	400	F	1400	F	440		17	0
MOA01	0557	03/15/2005	Uranium	2.1	F	3.1	F	2.5	F	10	0

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

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

LAB REQUISITION(S): 05030174

HISTORY BEGIN DATE: comparing to all historical data

REPORT DATE: 08/01/05 03:13:40: 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

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

BLANKS REPORT

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

LAB REQUISITION(S): 05030174

REPORT DATE: 08/01/05 03:13:16: 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	03/15/2005	0001	mg/L	0.1	U	0.1		E
Chloride	MOA01	0999	03/15/2005	0001	mg/L	0.2	U	0.2		E
Sulfate	MOA01	0999	03/15/2005	0001	mg/L	0.5	U	0.5		E
Total Dissolved Solids	MOA01	0999	03/15/2005	0001	mg/L	20	U	20		E
Uranium	MOA01	0999	03/15/2005	0001	mg/L	0.000043	B U	0.000046		E

BLANKS REPORT

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

LAB REQUISITION(S): 05030174

REPORT DATE: 08/01/05 03:13:16: 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: 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. | F Low flow sampling method used. | G Possible grout contamination, pH > 9. |
| L Less than 3 bore volumes purged prior to sampling. | R Unusable result. | X Location is undefined. |
| U Parameter analyzed for but was not detected. | Q Qualitative result due to sampling technique | |

SAMPLE TYPES:

- E EQUIPMENT BLANK

Water Quality Data

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 8/1/2005 3:21 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			
				DATE	ID			LAB	DATA	QA	DETECTION LIMIT
Alkalinity, Total (As CaCO3	mg/L	0216	SL, RIV	03/14/2005	0001	0.17 - 0.17	192		#	-	-
	mg/L	0245	SL, RIV	03/14/2005	0001	0.25 - 0.25	138		#	-	-
	mg/L	0403	WL	03/15/2005	0001	18.00 - 18.00	208	F	#	-	-
	mg/L	0407	WL	03/15/2005	0001	17.00 - 17.00	346	F	#	-	-
	mg/L	0470	WL, EXT	03/15/2005	0001	10.30 - 19.70	802	F	#	-	-
	mg/L	0471	WL, EXT	03/15/2005	0001	10.30 - 19.70	758	F	#	-	-
	mg/L	0472	WL, EXT	03/15/2005	0001	10.30 - 19.70	772	F	#	-	-
	mg/L	0473	WL, EXT	03/15/2005	0001	10.30 - 19.70	708	F	#	-	-
	mg/L	0474	WL, EXT	03/15/2005	0001	10.30 - 19.70	698	F	#	-	-
	mg/L	0475	WL, EXT	03/15/2005	0001	10.30 - 19.70	610	F	#	-	-
	mg/L	0476	WL, EXT	03/15/2005	0001	10.30 - 19.70	614	F	#	-	-
	mg/L	0477	WL, EXT	03/15/2005	0001	10.30 - 19.70	610	F	#	-	-
	mg/L	0478	WL, EXT	03/15/2005	0001	9.60 - 23.90	604	F	#	-	-
	mg/L	0479	WL, EXT	03/15/2005	0001	9.30 - 23.60	532	F	#	-	-
	mg/L	0483	WL	03/15/2005	0001	18.00 - 18.00	192	F	#	-	-
	mg/L	0547	TS, INFL	03/15/2005	0001	0.00 - 0.00	676		#	-	-
	mg/L	0557	WL	03/15/2005	0001	40.00 - 40.00	822	F	#	-	-
	mg/L	0559	WL	03/14/2005	0001	19.00 - 19.00	326	F	#	-	-
	mg/L	0560	WL	03/14/2005	0001	31.00 - 31.00	444	F	#	-	-
	Ammonia Total as N	mg/L	0216	SL, RIV	03/14/2005	0001	0.17 - 0.17	0.54		#	0.1
mg/L		0245	SL, RIV	03/14/2005	0001	0.25 - 0.25	0.24		#	0.1	-
mg/L		0403	WL	03/15/2005	0001	18.00 - 18.00	31	F	#	10	-
mg/L		0407	WL	03/15/2005	0001	17.00 - 17.00	130	F	#	10	-
mg/L		0407	WL	03/15/2005	0002	17.00 - 17.00	130	F	#	10	-
mg/L		0470	WL, EXT	03/15/2005	0001	10.30 - 19.70	850	F	#	20	-
mg/L		0471	WL, EXT	03/15/2005	0001	10.30 - 19.70	990	F	#	20	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 8/1/2005 3:21 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Ammonia Total as N	mg/L	0472	WL, EXT	03/15/2005	0001	10.30 - 19.70	820	F #	20	-
	mg/L	0473	WL, EXT	03/15/2005	0001	10.30 - 19.70	650	F #	20	-
	mg/L	0474	WL, EXT	03/15/2005	0001	10.30 - 19.70	570	F #	20	-
	mg/L	0475	WL, EXT	03/15/2005	0001	10.30 - 19.70	390	F #	10	-
	mg/L	0476	WL, EXT	03/15/2005	0001	10.30 - 19.70	390	F #	10	-
	mg/L	0477	WL, EXT	03/15/2005	0001	10.30 - 19.70	360	F #	10	-
	mg/L	0478	WL, EXT	03/15/2005	0001	9.60 - 23.90	420	F #	10	-
	mg/L	0479	WL, EXT	03/15/2005	0001	9.30 - 23.60	400	F #	10	-
	mg/L	0483	WL	03/15/2005	0001	18.00 - 18.00	450	F #	10	-
	mg/L	0547	TS, INFL	03/15/2005	0001	0.00 - 0.00	620	#	20	-
	mg/L	0557	WL	03/15/2005	0001	40.00 - 40.00	1000	F #	50	-
	mg/L	0559	WL	03/14/2005	0001	19.00 - 19.00	180	F #	10	-
	mg/L	0560	WL	03/14/2005	0001	31.00 - 31.00	1800	F #	50	-
	mg/L	0562	WL, PZ	03/15/2005	0001	1.53 - 1.53	53	QF #	10	-
	mg/L	0563	WL, PZ	03/15/2005	0001	3.95 - 3.95	110	QF #	10	-
	mg/L	0564	WL, PZ	03/15/2005	0001	1.32 - 1.32	0.62	QF #	0.1	-
	mg/L	0565	WL, PZ	03/15/2005	0001	4.32 - 4.32	28	QF #	1	-
	Chloride	mg/L	0216	SL, RIV	03/14/2005	0001	0.17 - 0.17	110	#	2
mg/L		0245	SL, RIV	03/14/2005	0001	0.25 - 0.25	110	#	2	-
mg/L		0403	WL	03/15/2005	0001	18.00 - 18.00	170	F #	10	-
mg/L		0407	WL	03/15/2005	0001	17.00 - 17.00	910	F #	20	-
mg/L		0407	WL	03/15/2005	0002	17.00 - 17.00	900	F #	20	-
mg/L		0470	WL, EXT	03/15/2005	0001	10.30 - 19.70	8400	F #	100	-
mg/L		0471	WL, EXT	03/15/2005	0001	10.30 - 19.70	11000	F #	400	-
mg/L		0472	WL, EXT	03/15/2005	0001	10.30 - 19.70	7400	F #	100	-
mg/L		0473	WL, EXT	03/15/2005	0001	10.30 - 19.70	4700	F #	200	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 8/1/2005 3:21 pm

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	0474	WL, EXT	03/15/2005	0001	10.30 - 19.70	4300	F	#		200	-
	mg/L	0475	WL, EXT	03/15/2005	0001	10.30 - 19.70	2500	F	#		40	-
	mg/L	0476	WL, EXT	03/15/2005	0001	10.30 - 19.70	2400	F	#		40	-
	mg/L	0477	WL, EXT	03/15/2005	0001	10.30 - 19.70	2100	F	#		40	-
	mg/L	0478	WL, EXT	03/15/2005	0001	9.60 - 23.90	3000	F	#		40	-
	mg/L	0479	WL, EXT	03/15/2005	0001	9.30 - 23.60	3000	F	#		40	-
	mg/L	0483	WL	03/15/2005	0001	18.00 - 18.00	5200	F	#		200	-
	mg/L	0547	TS, INFL	03/15/2005	0001	0.00 - 0.00	5000		#		200	-
	mg/L	0557	WL	03/15/2005	0001	40.00 - 40.00	10000	F	#		400	-
	mg/L	0559	WL	03/14/2005	0001	19.00 - 19.00	1500	F	#		20	-
	mg/L	0560	WL	03/14/2005	0001	31.00 - 31.00	40000	F	#		400	-
	mg/L	0562	WL, PZ	03/15/2005	0001	1.53 - 1.53	250	QF	#		4	-
	mg/L	0563	WL, PZ	03/15/2005	0001	3.95 - 3.95	2000	QF	#		10	-
	mg/L	0564	WL, PZ	03/15/2005	0001	1.32 - 1.32	130	QF	#		4	-
	mg/L	0565	WL, PZ	03/15/2005	0001	4.32 - 4.32	230	QF	#		4	-
Dissolved Oxygen	mg/L	0216	SL, RIV	03/14/2005	N001	0.17 - 0.17	11.62		#		-	-
	mg/L	0245	SL, RIV	03/14/2005	N001	0.25 - 0.25	11.18		#		-	-
	mg/L	0403	WL	03/15/2005	N001	18.00 - 18.00	2.82	F	#		-	-
	mg/L	0407	WL	03/15/2005	N001	17.00 - 17.00	2.53	F	#		-	-
	mg/L	0470	WL, EXT	03/15/2005	N001	10.30 - 19.70	0.57	F	#		-	-
	mg/L	0471	WL, EXT	03/15/2005	N001	10.30 - 19.70	0.24	F	#		-	-
	mg/L	0472	WL, EXT	03/15/2005	N001	10.30 - 19.70	0.21	F	#		-	-
	mg/L	0473	WL, EXT	03/15/2005	N001	10.30 - 19.70	0.39	F	#		-	-
	mg/L	0474	WL, EXT	03/15/2005	N001	10.30 - 19.70	0.30	F	#		-	-
	mg/L	0475	WL, EXT	03/15/2005	N001	10.30 - 19.70	0.27	F	#		-	-
mg/L	0476	WL, EXT	03/15/2005	N001	10.30 - 19.70	1.54	F	#		-	-	

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 8/1/2005 3:21 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID			LAB	DATA	QA		
Dissolved Oxygen	mg/L	0477	WL, EXT	03/15/2005	N001	10.30 - 19.70	0.33	F	#	-	-	
	mg/L	0478	WL, EXT	03/15/2005	N001	9.60 - 23.90	0.26	F	#	-	-	
	mg/L	0479	WL, EXT	03/15/2005	N001	9.30 - 23.60	0.30	F	#	-	-	
	mg/L	0483	WL	03/15/2005	N001	18.00 - 18.00	1.80	F	#	-	-	
	mg/L	0547	TS, INFL	03/15/2005	N001	0.00 - 0.00	3.87		#	-	-	
	mg/L	0557	WL	03/15/2005	N001	40.00 - 40.00	1.14	F	#	-	-	
	mg/L	0559	WL	03/14/2005	N001	19.00 - 19.00	3.11	F	#	-	-	
	mg/L	0560	WL	03/14/2005	N001	31.00 - 31.00	1.83	F	#	-	-	
	mg/L	0562	WL, PZ	03/15/2005	N001	1.53 - 1.53	4.78	QF	#	-	-	
	mg/L	0563	WL, PZ	03/15/2005	N001	3.95 - 3.95	3.55	QF	#	-	-	
	mg/L	0564	WL, PZ	03/15/2005	N001	1.32 - 1.32	5.78	QF	#	-	-	
	mg/L	0565	WL, PZ	03/15/2005	N001	4.32 - 4.32	2.49	QF	#	-	-	
	Oxidation Reduction Potent	mV	0216	SL, RIV	03/14/2005	N001	0.17 - 0.17	123		#	-	-
mV		0245	SL, RIV	03/14/2005	N001	0.25 - 0.25	143		#	-	-	
mV		0403	WL	03/15/2005	N001	18.00 - 18.00	101	F	#	-	-	
mV		0407	WL	03/15/2005	N001	17.00 - 17.00	140	F	#	-	-	
mV		0470	WL, EXT	03/15/2005	N001	10.30 - 19.70	248	F	#	-	-	
mV		0471	WL, EXT	03/15/2005	N001	10.30 - 19.70	228	F	#	-	-	
mV		0472	WL, EXT	03/15/2005	N001	10.30 - 19.70	213	F	#	-	-	
mV		0473	WL, EXT	03/15/2005	N001	10.30 - 19.70	175	F	#	-	-	
mV		0474	WL, EXT	03/15/2005	N001	10.30 - 19.70	99	F	#	-	-	
mV		0475	WL, EXT	03/15/2005	N001	10.30 - 19.70	92	F	#	-	-	
mV		0476	WL, EXT	03/15/2005	N001	10.30 - 19.70	96	F	#	-	-	
mV		0477	WL, EXT	03/15/2005	N001	10.30 - 19.70	119	F	#	-	-	
mV		0478	WL, EXT	03/15/2005	N001	9.60 - 23.90	108	F	#	-	-	
mV		0479	WL, EXT	03/15/2005	N001	9.30 - 23.60	132	F	#	-	-	

GENERAL WATER QUALITY DATA BY PARAMETER (UUSEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 8/1/2005 3:21 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	SAMPLE: ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Oxidation Reduction Potent	mV	0483	WL	03/15/2005	N001	18.00 - 18.00	125	F #	-	-
	mV	0547	TS, INFL	03/15/2005	N001	0.00 - 0.00	258	#	-	-
	mV	0557	WL	03/15/2005	N001	40.00 - 40.00	140	F #	-	-
	mV	0559	WL	03/14/2005	N001	19.00 - 19.00	190	F #	-	-
	mV	0560	WL	03/14/2005	N001	31.00 - 31.00	195	F #	-	-
	mV	0562	WL, PZ	03/15/2005	N001	1.53 - 1.53	-2.5	QF #	-	-
	mV	0563	WL, PZ	03/15/2005	N001	3.95 - 3.95	-220	QF #	-	-
	mV	0564	WL, PZ	03/15/2005	N001	1.32 - 1.32	-74	QF #	-	-
	mV	0565	WL, PZ	03/15/2005	N001	4.32 - 4.32	-259	QF #	-	-
pH	s.u.	0216	SL, RIV	03/14/2005	N001	0.17 - 0.17	8.23	#	-	-
	s.u.	0245	SL, RIV	03/14/2005	N001	0.25 - 0.25	8.24	#	-	-
	s.u.	0403	WL	03/15/2005	N001	18.00 - 18.00	7.50	F #	-	-
	s.u.	0407	WL	03/15/2005	N001	17.00 - 17.00	7.17	F #	-	-
	s.u.	0470	WL, EXT	03/15/2005	N001	10.30 - 19.70	6.71	F #	-	-
	s.u.	0471	WL, EXT	03/15/2005	N001	10.30 - 19.70	6.71	F #	-	-
	s.u.	0472	WL, EXT	03/15/2005	N001	10.30 - 19.70	6.72	F #	-	-
	s.u.	0473	WL, EXT	03/15/2005	N001	10.30 - 19.70	6.74	F #	-	-
	s.u.	0474	WL, EXT	03/15/2005	N001	10.30 - 19.70	6.69	F #	-	-
	s.u.	0475	WL, EXT	03/15/2005	N001	10.30 - 19.70	6.75	F #	-	-
	s.u.	0476	WL, EXT	03/15/2005	N001	10.30 - 19.70	6.75	F #	-	-
	s.u.	0477	WL, EXT	03/15/2005	N001	10.30 - 19.70	6.74	F #	-	-
	s.u.	0478	WL, EXT	03/15/2005	N001	9.60 - 23.90	6.78	F #	-	-
	s.u.	0479	WL, EXT	03/15/2005	N001	9.30 - 23.60	6.85	F #	-	-
	s.u.	0483	WL	03/15/2005	N001	18.00 - 18.00	6.95	F #	-	-
	s.u.	0547	TS, INFL	03/15/2005	N001	0.00 - 0.00	6.90	#	-	-
	s.u.	0557	WL	03/15/2005	N001	40.00 - 40.00	6.74	F #	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 8/1/2005 3:21 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID			LAB	DATA	QA		
pH	s.u.	0559	WL	03/14/2005	N001	19.00 - 19.00	7.15	F	#	-	-	
	s.u.	0560	WL	03/14/2005	N001	31.00 - 31.00	6.59	F	#	-	-	
	s.u.	0562	WL, PZ	03/15/2005	N001	1.53 - 1.53	8.97	QF	#	-	-	
	s.u.	0563	WL, PZ	03/15/2005	N001	3.95 - 3.95	8.67	QF	#	-	-	
	s.u.	0564	WL, PZ	03/15/2005	N001	1.32 - 1.32	7.62	QF	#	-	-	
	s.u.	0565	WL, PZ	03/15/2005	N001	4.32 - 4.32	8.52	QF	#	-	-	
Specific Conductance	umhos/cm	0216	SL, RIV	03/14/2005	N001	0.17 - 0.17	1086		#	-	-	
	umhos/cm	0245	SL, RIV	03/14/2005	N001	0.25 - 0.25	1053		#	-	-	
	umhos/cm	0403	WL	03/15/2005	N001	18.00 - 18.00	1967	F	#	-	-	
	umhos/cm	0407	WL	03/15/2005	N001	17.00 - 17.00	6919	F	#	-	-	
	umhos/cm	0470	WL, EXT	03/15/2005	N001	10.30 - 19.70	35940	F	#	-	-	
	umhos/cm	0471	WL, EXT	03/15/2005	N001	10.30 - 19.70	42520	F	#	-	-	
	umhos/cm	0472	WL, EXT	03/15/2005	N001	10.30 - 19.70	32290	F	#	-	-	
	umhos/cm	0473	WL, EXT	03/15/2005	N001	10.30 - 19.70	25430	F	#	-	-	
	umhos/cm	0474	WL, EXT	03/15/2005	N001	10.30 - 19.70	23620	F	#	-	-	
	umhos/cm	0475	WL, EXT	03/15/2005	N001	10.30 - 19.70	16670	F	#	-	-	
	umhos/cm	0476	WL, EXT	03/15/2005	N001	10.30 - 19.70	16000	F	#	-	-	
	umhos/cm	0477	WL, EXT	03/15/2005	N001	10.30 - 19.70	14990	F	#	-	-	
	umhos/cm	0478	WL, EXT	03/15/2005	N001	9.60 - 23.90	18410	F	#	-	-	
	umhos/cm	0479	WL, EXT	03/15/2005	N001	9.30 - 23.60	16890	F	#	-	-	
	umhos/cm	0483	WL	03/15/2005	N001	18.00 - 18.00	22550	F	#	-	-	
	umhos/cm	0547	TS, INFL	03/15/2005	N001	0.00 - 0.00	25830		#	-	-	
	umhos/cm	0557	WL	03/15/2005	N001	40.00 - 40.00	42530	F	#	-	-	
	umhos/cm	0559	WL	03/14/2005	N001	19.00 - 19.00	9425	F	#	-	-	
	umhos/cm	0560	WL	03/14/2005	N001	31.00 - 31.00	103800	F	#	-	-	
	umhos/cm	0562	WL, PZ	03/15/2005	N001	1.53 - 1.53	3295	QF	#	-	-	

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 8/1/2005 3:21 pm

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	0563	WL, PZ	03/15/2005	N001	3.95 - 3.95	4770	QF	#	-	-	
	umhos/cm	0564	WL, PZ	03/15/2005	N001	1.32 - 1.32	1155	QF	#	-	-	
	umhos/cm	0565	WL, PZ	03/15/2005	N001	4.32 - 4.32	2191	QF	#	-	-	
Sulfate	mg/L	0216	SL, RIV	03/14/2005	0001	0.17 - 0.17	220		#	5	-	
	mg/L	0245	SL, RIV	03/14/2005	0001	0.25 - 0.25	210		#	5	-	
	mg/L	0403	WL	03/15/2005	0001	18.00 - 18.00	460	F	#	25	-	
	mg/L	0407	WL	03/15/2005	0001	17.00 - 17.00	1700	F	#	50	-	
	mg/L	0407	WL	03/15/2005	0002	17.00 - 17.00	1700	F	#	50	-	
	mg/L	0470	WL, EXT	03/15/2005	0001	10.30 - 19.70	9400	F	#	250	-	
	mg/L	0471	WL, EXT	03/15/2005	0001	10.30 - 19.70	9000	F	#	250	-	
	mg/L	0472	WL, EXT	03/15/2005	0001	10.30 - 19.70	8200	F	#	250	-	
	mg/L	0473	WL, EXT	03/15/2005	0001	10.30 - 19.70	7200	F	#	100	-	
	mg/L	0474	WL, EXT	03/15/2005	0001	10.30 - 19.70	6700	F	#	100	-	
	mg/L	0475	WL, EXT	03/15/2005	0001	10.30 - 19.70	5100	F	#	100	-	
	mg/L	0476	WL, EXT	03/15/2005	0001	10.30 - 19.70	4900	F	#	100	-	
	mg/L	0477	WL, EXT	03/15/2005	0001	10.30 - 19.70	4800	F	#	100	-	
	mg/L	0478	WL, EXT	03/15/2005	0001	9.60 - 23.90	4900	F	#	100	-	
	mg/L	0479	WL, EXT	03/15/2005	0001	9.30 - 23.60	4400	F	#	100	-	
	mg/L	0483	WL	03/15/2005	0001	18.00 - 18.00	3900	F	#	100	-	
	mg/L	0547	TS, INFL	03/15/2005	0001	0.00 - 0.00	6600		#	50	-	
	mg/L	0557	WL	03/15/2005	0001	40.00 - 40.00	10000	F	#	250	-	
	mg/L	0559	WL	03/14/2005	0001	19.00 - 19.00	2300	F	#	50	-	
	mg/L	0560	WL	03/14/2005	0001	31.00 - 31.00	8800	F	#	50	-	
	mg/L	0562	WL, PZ	03/15/2005	0001	1.53 - 1.53	930	QF	#	10	-	
	mg/L	0563	WL, PZ	03/15/2005	0001	3.95 - 3.95	4700	QF	#	25	-	
	mg/L	0564	WL, PZ	03/15/2005	0001	1.32 - 1.32	230	QF	#	10	-	

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 8/1/2005 3:21 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID			LAB	DATA	QA		
Sulfate	mg/L	0565	WL, PZ	03/15/2005	0001	4.32 - 4.32	460	QF	#		10	-
Temperature	C	0216	SL, RIV	03/14/2005	N001	0.17 - 0.17	10.24		#		-	-
	C	0245	SL, RIV	03/14/2005	N001	0.25 - 0.25	10.01		#		-	-
	C	0403	WL	03/15/2005	N001	18.00 - 18.00	10.34	F	#		-	-
	C	0407	WL	03/15/2005	N001	17.00 - 17.00	14.80	F	#		-	-
	C	0470	WL, EXT	03/15/2005	N001	10.30 - 19.70	14.19	F	#		-	-
	C	0471	WL, EXT	03/15/2005	N001	10.30 - 19.70	15.24	F	#		-	-
	C	0472	WL, EXT	03/15/2005	N001	10.30 - 19.70	14.82	F	#		-	-
	C	0473	WL, EXT	03/15/2005	N001	10.30 - 19.70	15.32	F	#		-	-
	C	0474	WL, EXT	03/15/2005	N001	10.30 - 19.70	14.66	F	#		-	-
	C	0475	WL, EXT	03/15/2005	N001	10.30 - 19.70	13.90	F	#		-	-
	C	0476	WL, EXT	03/15/2005	N001	10.30 - 19.70	13.51	F	#		-	-
	C	0477	WL, EXT	03/15/2005	N001	10.30 - 19.70	13.44	F	#		-	-
	C	0478	WL, EXT	03/15/2005	N001	9.60 - 23.90	15.37	F	#		-	-
	C	0479	WL, EXT	03/15/2005	N001	9.30 - 23.60	14.70	F	#		-	-
	C	0483	WL	03/15/2005	N001	18.00 - 18.00	14.33	F	#		-	-
	C	0547	TS, INFL	03/15/2005	N001	0.00 - 0.00	15.29		#		-	-
	C	0557	WL	03/15/2005	N001	40.00 - 40.00	14.44	F	#		-	-
	C	0559	WL	03/14/2005	N001	19.00 - 19.00	12.39	F	#		-	-
	C	0560	WL	03/14/2005	N001	31.00 - 31.00	11.54	F	#		-	-
	C	0562	WL, PZ	03/15/2005	N001	1.53 - 1.53	9.59	QF	#		-	-
C	0563	WL, PZ	03/15/2005	N001	3.95 - 3.95	9.51	QF	#		-	-	
C	0564	WL, PZ	03/15/2005	N001	1.32 - 1.32	8.25	QF	#		-	-	
C	0565	WL, PZ	03/15/2005	N001	4.32 - 4.32	8.35	QF	#		-	-	
Total Dissolved Solids	mg/L	0216	SL, RIV	03/14/2005	0001	0.17 - 0.17	630		#		20	-
	mg/L	0245	SL, RIV	03/14/2005	0001	0.25 - 0.25	630		#		20	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 8/1/2005 3:21 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID			LAB	DATA	QA		
Total Dissolved Solids	mg/L	0403	WL	03/15/2005	0001	18.00 - 18.00	1000	F	#	40	-	
	mg/L	0407	WL	03/15/2005	0001	17.00 - 17.00	3900	F	#	80	-	
	mg/L	0407	WL	03/15/2005	0002	17.00 - 17.00	3800	F	#	200	-	
	mg/L	0470	WL, EXT	03/15/2005	0001	10.30 - 19.70	25000	F	#	400	-	
	mg/L	0471	WL, EXT	03/15/2005	0001	10.30 - 19.70	28000	F	#	400	-	
	mg/L	0472	WL, EXT	03/15/2005	0001	10.30 - 19.70	22000	F	#	400	-	
	mg/L	0473	WL, EXT	03/15/2005	0001	10.30 - 19.70	17000	F	#	400	-	
	mg/L	0474	WL, EXT	03/15/2005	0001	10.30 - 19.70	16000	F	#	400	-	
	mg/L	0475	WL, EXT	03/15/2005	0001	10.30 - 19.70	11000	F	#	400	-	
	mg/L	0476	WL, EXT	03/15/2005	0001	10.30 - 19.70	11000	F	#	400	-	
	mg/L	0477	WL, EXT	03/15/2005	0001	10.30 - 19.70	9900	F	#	200	-	
	mg/L	0478	WL, EXT	03/15/2005	0001	9.60 - 23.90	11000	F	#	400	-	
	mg/L	0479	WL, EXT	03/15/2005	0001	9.30 - 23.60	10000	F	#	400	-	
	mg/L	0483	WL	03/15/2005	0001	18.00 - 18.00	13000	F	#	400	-	
	mg/L	0547	TS, INFL	03/15/2005	0001	0.00 - 0.00	17000		#	400	-	
	mg/L	0557	WL	03/15/2005	0001	40.00 - 40.00	29000	F	#	400	-	
	mg/L	0559	WL	03/14/2005	0001	19.00 - 19.00	5600	F	#	200	-	
	mg/L	0560	WL	03/14/2005	0001	31.00 - 31.00	68000	F	#	2000	-	
	mg/L	0562	WL, PZ	03/15/2005	0001	1.53 - 1.53	1800	QF	#	80	-	
	mg/L	0563	WL, PZ	03/15/2005	0001	3.95 - 3.95	4300	QF	#	200	-	
	mg/L	0564	WL, PZ	03/15/2005	0001	1.32 - 1.32	740	QF	#	80	-	
	mg/L	0565	WL, PZ	03/15/2005	0001	4.32 - 4.32	1200	QF	#	80	-	
	Turbidity	NTU	0216	SL, RIV	03/14/2005	N001	0.17 - 0.17	248		#	-	-
NTU		0245	SL, RIV	03/14/2005	N001	0.25 - 0.25	304		#	-	-	
NTU		0403	WL	03/15/2005	N001	18.00 - 18.00	4.31	F	#	-	-	
NTU		0407	WL	03/15/2005	N001	17.00 - 17.00	4.36	F	#	-	-	

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 8/1/2005 3:21 pm

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	0470	WL, EXT	03/15/2005	N001	10.30 - 19.70	29.4	F	#	-	-	
	NTU	0471	WL, EXT	03/15/2005	N001	10.30 - 19.70	9.80	F	#	-	-	
	NTU	0472	WL, EXT	03/15/2005	N001	10.30 - 19.70	5.28	F	#	-	-	
	NTU	0473	WL, EXT	03/15/2005	N001	10.30 - 19.70	1.85	F	#	-	-	
	NTU	0474	WL, EXT	03/15/2005	N001	10.30 - 19.70	2.17	F	#	-	-	
	NTU	0475	WL, EXT	03/15/2005	N001	10.30 - 19.70	0.91	F	#	-	-	
	NTU	0476	WL, EXT	03/15/2005	N001	10.30 - 19.70	2.18	F	#	-	-	
	NTU	0477	WL, EXT	03/15/2005	N001	10.30 - 19.70	1.10	F	#	-	-	
	NTU	0478	WL, EXT	03/15/2005	N001	9.60 - 23.90	0.66	F	#	-	-	
	NTU	0483	WL	03/15/2005	N001	18.00 - 18.00	0.64	F	#	-	-	
	NTU	0547	TS, INFL	03/15/2005	N001	0.00 - 0.00	0.42		#	-	-	
	NTU	0557	WL	03/15/2005	N001	40.00 - 40.00	7.50	F	#	-	-	
	NTU	0559	WL	03/14/2005	N001	19.00 - 19.00	3.12	F	#	-	-	
	NTU	0560	WL	03/14/2005	N001	31.00 - 31.00	1.23	F	#	-	-	
	NTU	0562	WL, PZ	03/15/2005	N001	1.53 - 1.53	12.1	QF	#	-	-	
	NTU	0563	WL, PZ	03/15/2005	N001	3.95 - 3.95	23.4	QF	#	-	-	
	NTU	0564	WL, PZ	03/15/2005	N001	1.32 - 1.32	53.7	QF	#	-	-	
	NTU	0565	WL, PZ	03/15/2005	N001	4.32 - 4.32	198	QF	#	-	-	
Uranium	mg/L	0216	SL, RIV	03/14/2005	0001	0.17 - 0.17	0.012	E	#	4.6E-06	-	
	mg/L	0245	SL, RIV	03/14/2005	0001	0.25 - 0.25	0.0093		#	4.6E-06	-	
	mg/L	0403	WL	03/15/2005	0001	18.00 - 18.00	0.130	F	#	4.5E-05	-	
	mg/L	0407	WL	03/15/2005	0001	17.00 - 17.00	0.500	F	#	4.5E-05	-	
	mg/L	0407	WL	03/15/2005	0002	17.00 - 17.00	0.480	F	#	4.5E-05	-	
	mg/L	0470	WL, EXT	03/15/2005	0001	10.30 - 19.70	2.700	F	#	0.00046	-	
	mg/L	0471	WL, EXT	03/15/2005	0001	10.30 - 19.70	2.300	F	#	0.00046	-	
	mg/L	0472	WL, EXT	03/15/2005	0001	10.30 - 19.70	2.100	F	#	0.00046	-	

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 8/1/2005 3:21 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID			LAB	DATA	QA		
Uranium	mg/L	0473	WL, EXT	03/15/2005	0001	10.30 - 19.70	2.400	F	#		0.00046	-
	mg/L	0474	WL, EXT	03/15/2005	0001	10.30 - 19.70	1.900	F	#		0.00046	-
	mg/L	0475	WL, EXT	03/15/2005	0001	10.30 - 19.70	1.600	F	#		0.00046	-
	mg/L	0476	WL, EXT	03/15/2005	0001	10.30 - 19.70	1.600	F	#		0.00046	-
	mg/L	0477	WL, EXT	03/15/2005	0001	10.30 - 19.70	1.400	F	#		0.00046	-
	mg/L	0478	WL, EXT	03/15/2005	0001	9.60 - 23.90	1.300	F	#		0.00046	-
	mg/L	0479	WL, EXT	03/15/2005	0001	9.30 - 23.60	1.200	F	#		0.00046	-
	mg/L	0483	WL	03/15/2005	0001	18.00 - 18.00	1.000	F	#		0.00046	-
	mg/L	0547	TS, INFL	03/15/2005	0001	0.00 - 0.00	2.100		#		0.00046	-
	mg/L	0557	WL	03/15/2005	0001	40.00 - 40.00	2.100	F	#		0.00046	-
	mg/L	0559	WL	03/14/2005	0001	19.00 - 19.00	0.680	F	#		4.5E-05	-
	mg/L	0560	WL	03/14/2005	0001	31.00 - 31.00	1.100	F	#		0.00046	-
	mg/L	0562	WL, PZ	03/15/2005	0001	1.53 - 1.53	0.0027	QF	#		4.6E-06	-
	mg/L	0563	WL, PZ	03/15/2005	0001	3.95 - 3.95	0.063	QF	#		4.5E-05	-
	mg/L	0564	WL, PZ	03/15/2005	0001	1.32 - 1.32	0.00007	B UQF	#		4.6E-06	-
	mg/L	0565	WL, PZ	03/15/2005	0001	4.32 - 4.32	0.00075	QF	#		4.6E-06	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 8/1/2005 3:21 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
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RECORDS: SELECTED FROM USEE200 WHERE site_code='MOA01' AND location_code in('0470','0471','0472','0473','0474','0475','0476','0477','0478','0479','0403','0407','0483','0557','0559','0560','0562','0563','0564','0565','0216','0245','0547') 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 #3/14/2005# and #3/16/2005#

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

LOCATION TYPES: SL SURFACE LOCATION TS TREATMENT SYSTEM WL WELL
 LOCATION SUBTYPES: EXT Extraction Well INFL Treatment System Influent PZ Piezometer RIV River

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: 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. | 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. | |

QA QUALIFIER: # = validated according to Quality Assurance guidelines.

Water Level Data

STATIC WATER LEVELS (USEE700) FOR SITE MOA01, Moab Site
 REPORT DATE: 8/1/2005 3:21 pm

LOCATION CODE	FLOW CODE	TOP OF CASING ELEVATION (FT)	MEASUREMENT		DEPTH FROM TOP OF CASING (FT)	WATER ELEVATION (FT)	WATER LEVEL FLAG
			DATE	TIME			
0403	O	3968.95	03/15/2005	10:57	16.34	3952.61	
0407	O	3969.09	03/15/2005	11:40	17.22	3951.87	
0470		3968.49	03/15/2005	08:05	18.20	3950.29	
0471		3968.83	03/15/2005	08:22	18.34	3950.49	
0472		3968.81	03/15/2005	08:37	18.58	3950.23	
0473		3969.05	03/15/2005	08:54	20.34	3948.71	
0474		3969.22	03/15/2005	09:11	17.89	3951.33	
0475		3969.46	03/15/2005	09:21	19.34	3950.12	
0476		3969.48	03/15/2005	09:38	18.38	3951.10	
0477		3969.40	03/15/2005	09:54	18.82	3950.58	
0478		3969.49	03/15/2005	10:06	18.96	3950.53	
0479		3969.27	03/15/2005	10:26	18.72	3950.55	
0483		3968.90	03/15/2005	12:06	17.12	3951.78	
0557		3968.85	03/15/2005	12:22	15.41	3953.44	
0559		3969.92	03/14/2005	17:24	17.67	3952.25	
0560		3968.77	03/14/2005	17:49	16.21	3952.56	
0562		3956.29	03/14/2005	13:32	3.84	3952.45	
0563		3955.05	03/14/2005	13:40	2.86	3952.19	
0564		3956.39	03/14/2005	14:25	3.71	3952.68	
0565		3954.05	03/14/2005	14:30	1.75	3952.30	

RECORDS: SELECTED FROM USEE700 WHERE site_code='MOA01' AND location_code in('0470','0471','0472','0473','0474','0475','0476','0477','0478','0479','0403','0407','0483','0557','0559','0560','0562','0563','0564','0565','0216','0245','0547') AND LOG_DATE between #3/14/2005# and #3/16/2005#

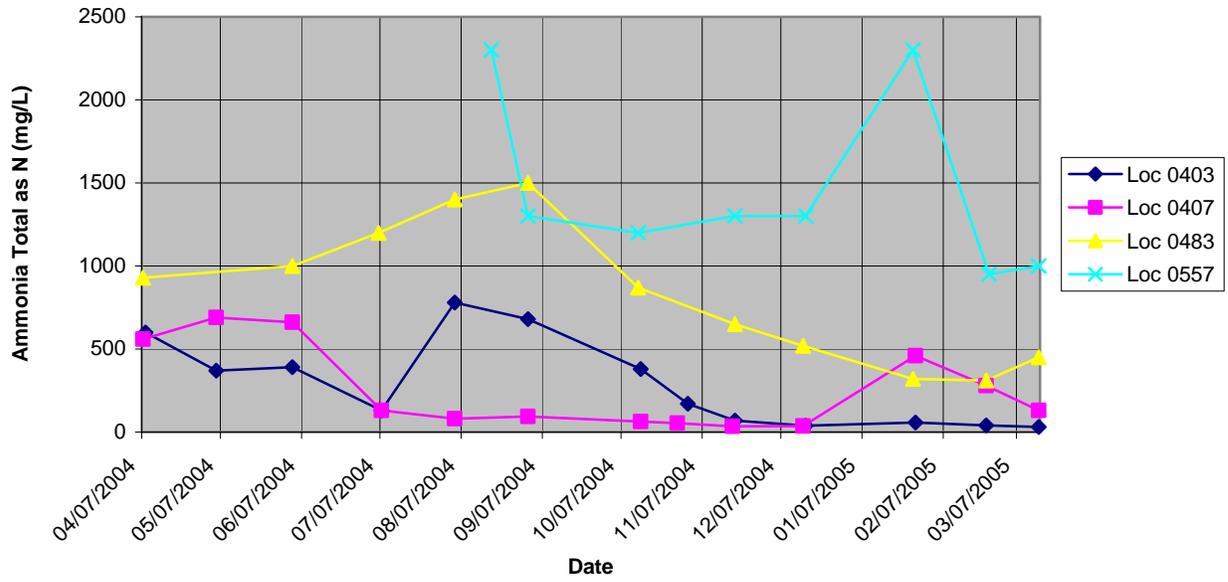
FLOW CODES: O ON-SITE

WATER LEVEL FLAGS:

Time Versus Concentration Graphs

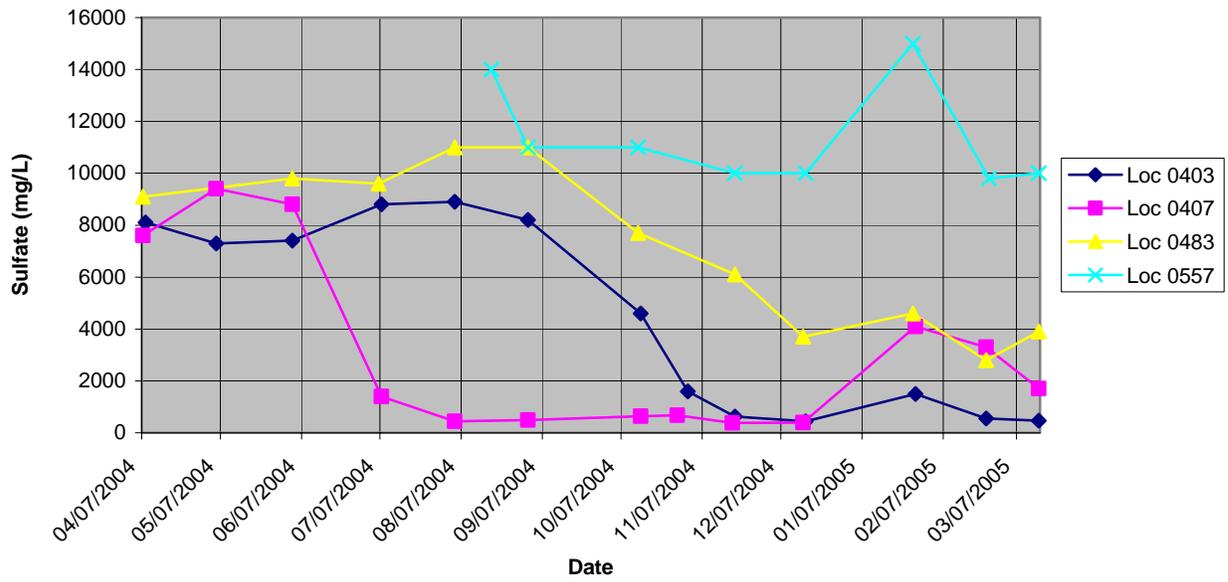
Moab Site (MOA01)

Ammonia Total as N Concentration



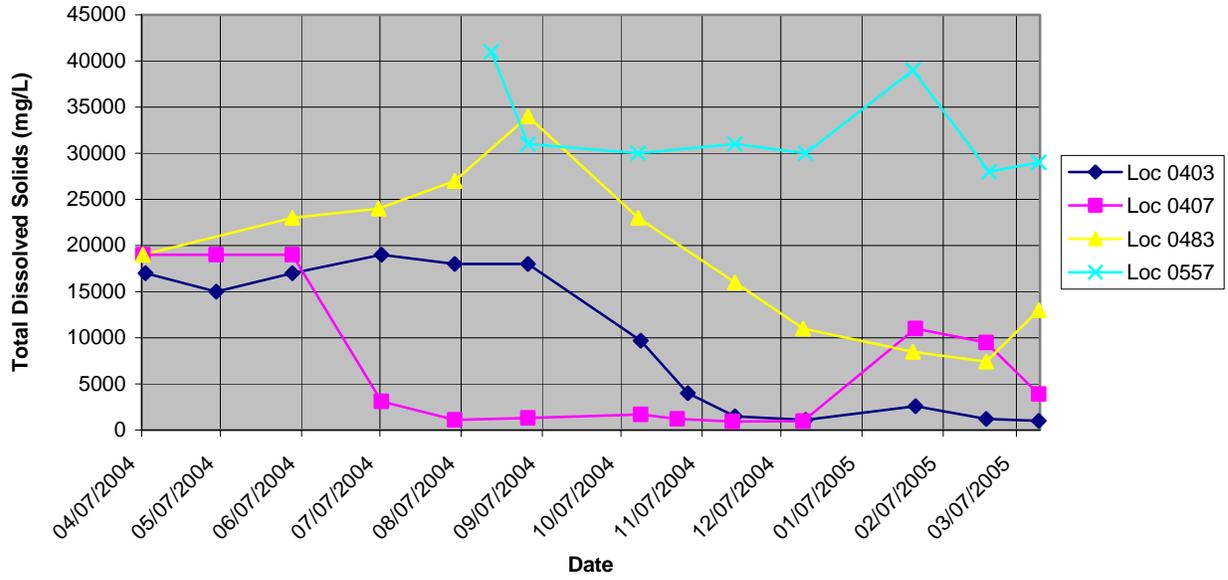
Moab Site (MOA01)

Sulfate Concentration



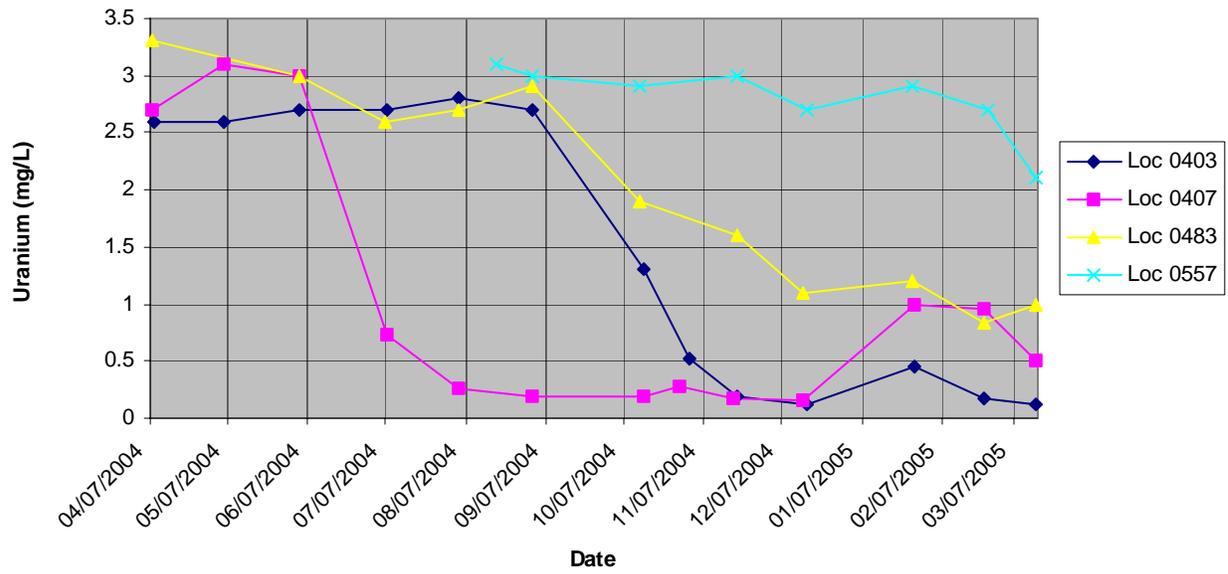
Moab Site (MOA01)

Total Dissolved Solids Concentration



Moab Site (MOA01)

Uranium Concentration



Attachment 2
Trip Report

DATE: March 31, 2005

TO: Ken Karp

FROM: K. G. Pill

SUBJECT: Trip Report

Site: Moab – Interim Action Configuration I Extraction Well Field Monthly Sampling – March 2005

Date of Sampling Event: March 14, 15, and 16, 2005.

Team Members: Ken Pill and Steve Hall.

Number of Locations Sampled: 10 extraction wells (0470 through 0479), 6 observation wells (0403, 0407, 0483, 0557, 0559, and 0560), 4 piezometers (0562 through 0565) and 3 surface water locations (0216, 0245, and 0547). Including one duplicate and one equipment blank, a total of **25** samples were collected.

Locations Not Sampled/Reason: Locations 0244 and 0548 were not sampled. Surface water location 0244 is located within 10 ft of surface water location 0216, and the results obtained from 0216 can be applied to 0244. The evaporation pond recirculation pump has not been in operation yet this year, and as a result sample 0548 was not collected.

Field Variance: Only a 125 ml sample was collected for uranium analysis as opposed to the standard 500 ml sample volume. Based upon information obtained from the laboratory, a minimum volume of 60 mls was required for TDS, chloride, and sulfate analysis; a minimum volume of 60 mls is required for uranium analysis; and a minimum volume of 25 mls is required for ammonia analysis.

Limited sample volumes were collected from piezometers 0562, 0563, 0564, and 0565 (~150 mls each). Samples collected from these locations were filtered in the field using dedicated syringes equipped with low volume 0.45 μ filters. This variance was discussed with Steve Donivan prior to submitting the samples.

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
2782	0407	Duplicate	Ground water	NDY-398
2783	NA	Equipment Blank	Water	NDY-400

RIN Number Assigned: All samples were assigned to RIN **050320174**.

Sample Shipment: All samples with the exception of those collected from the piezometers were shipped in 2 coolers overnight FEDEX to Paragon Analytics, Inc. from Moab, Utah, on March 15, 2005 (Airbill Nos. 8473 2967 6498 and 8473 2967 6502). The piezometer samples were shipped from Moab with the Configuration 2 samples on March 16, 2005 (Airbill No. 8473 2967 6616).

Location Specific Information – Extraction Wells: Extraction wells were sampled using dedicated submersible pumps. Water levels and pumping rates (gpm) for each extraction well prior to sampling are provided in the table below:

Well No.	Date	Time	Water Level (ft btoc)	Pumping Rate (gpm)
0470	3/15/05	08:05	18.20	3.75
0471	3/15/05	08:22	18.34	2.94
0472	3/15/05	08:37	18.58	2.76
0473	3/15/05	08:54	20.34	1.44
0474	3/15/05	09:11	17.89	~1.0 ^a
0475	3/15/05	09:21	19.34	2.79
0476	3/15/05	09:38	18.38	3.10
0477	3/15/05	09:54	18.82	2.30
0478	3/15/05	10:06	18.96	1.91
0479	3/15/05	10:26	18.72	2.23

^a = Pumping rate was estimated. Well was running, but flow meter not operating properly at the time of sampling.

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. **Note the sample depths are below ground surface.**

Well No.	Date	Time	Depth to Water (ft btoc)	Sample Depth (ft bgs)
0403	3/15/05	10:57	16.34	18
0407	3/15/05	11:40	17.22	17
0483	3/15/05	12:06	17.12	18
0557	3/15/05	12:22	15.41	40
0559	3/14/05	17:24	17.67	19
0560	3/14/05	17:49	16.21	31

Location Specific Information – Piezometers: Water levels were measured in piezometers 0562, 0563, 0564, and 0565. It was dry at the base of each location (photographs of each location are attached to this report). The data are provided in the table:

PZ No.	Date	Time	Depth to Water (ft btoc)
0562	3/14/05	13:32	3.84
0563	3/14/05	13:40	2.86
0564	3/14/05	14:25	3.71
0565	3/14/05	14:30	1.75

Limited sample volumes were collected from piezometers 0562 through 0564 (~150 mls each). In order to collect the minimum sample volume for laboratory analysis, it was necessary to revisit some of these locations a number of times. All four piezometers were purged on March 14; the first half of the sample was collected on March 15; and the remaining sample volume was collected on March 16, 2005. In order to maximize the volume of water available for analysis, these samples were filtered in the field using dedicated syringes and low volume filters.

Location Specific Information – Surface Water Sampling: Location 0216 was sampled adjacent to piezometers 0562 and 0563. This location was connected to the main channel in both the upstream and downstream directions.

The sample from 0245 was collected approximately 5 ft east of the base of piezometers 0564/0565. The water body at this location was connected to the main channel in both the upstream and downstream directions. Photos of these locations are attached to this report. Sample depths associated with each surface water sample are provided below:

Location No.	Date	Time	Sample Depth (ft bws)
0216	3/14/05	13:58	0.17
0245	3/14/05	14:10	0.25

Notes: ft bws = feet below water surface

Well Inspection Summary: A well inspection was not conducted.

Equipment: All equipment functioned properly.

Site Issues: The extraction wells had been running at their maximum sustainable flow rates since February 28, 2005.

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

Date	Daily Mean Flow (cfs)
03/13/2005	3,740
03/14/2005	3,880
03/15/2005	4,000
03/16/2005	3,790

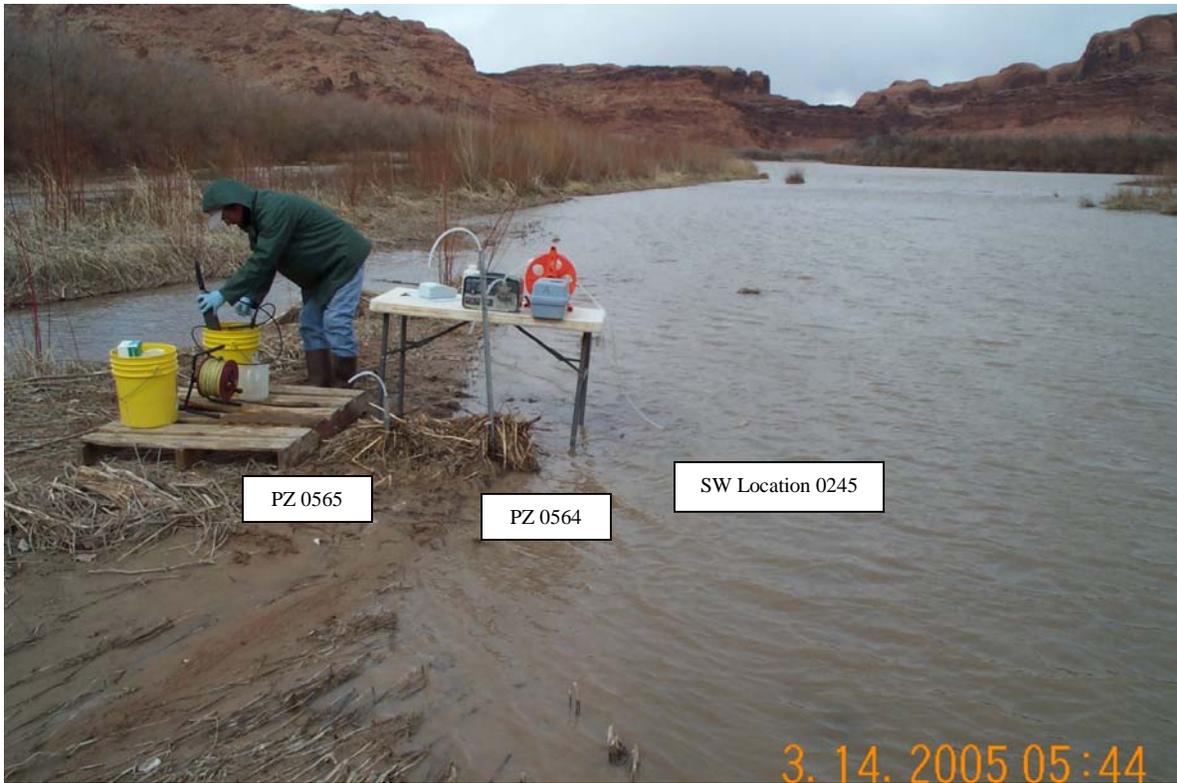
Corrective Action Required/Taken: None.

(KGP/lcg)

cc: J. D. Berwick, DOE-EM (e)
D. R. Metzler, DOE-EM
C. I. Bahrke, Stoller (e)
L. E. Cummins, Stoller (e)
S. E. Donovan, Stoller (e)
L. M. Edwards, Stoller (e)
S. D. Lyon, Stoller (e)
K. E. Miller, Stoller
K. G. Pill, Stoller (e)
J. E. Price, Stoller (e)
Working File, MOA



Piezometers 0562 and 0563



Piezometers 0564 and 0565, Surface Location 0245



Piezometers 0562 and 0563, Surface Location 0216