

September 2004 Water Sampling

Validation Data Package
for
Interim Action Configuration 1
Moab, Utah

December 2004

MOAB, UTAH

September 1 and 2, 2004

DATA PACKAGE CONTENTS

This data package includes the following information:

<u>Item No.</u>	<u>Description of Contents</u>
1.	Site Hydrologist Summary
2.	Data Assessment Summary , which describes problems identified in the data validation process and summarizes the validator's findings
3.	Sampling Location Map
4.	Field Verification Checklist , which verifies that field activities were done according to the work plan
5.	Database Printouts a. Water Quality Data b. Water Level Data
6.	Sampling Trip Report

Site Hydrologist Summary

Site: Moab, Utah

Sampling Period: September 1 and 2, 2004

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. This is the fifth performance sampling round conducted in 2004 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 extraction wells, observation wells, and monitor wells in Configuration 1. Surface water samples were collected from the evaporation pond and from the river immediately down gradient of the well field. Sample locations are shown in the attached figure.

Analysis and interpretation of the validated data presented in this package will be reported as part of a performance evaluation report scheduled in 2005.



Ken Karp
Site Lead

12-3-04
Date

DATA ASSESSMENT SUMMARY

MOAB, UTAH
SEPTEMBER 1 and 2, 2004 SAMPLING EVENT
DATA ASSESSMENT SUMMARY

Paragon Analytics analyzed samples and reported results for this sampling event under requisition number 04080101 and work order number 0409046. Samples were analyzed for metals and inorganics (see 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, SO4	MIS-A-044	SW-846 9056	SW-846 9056
Ammonia as N, NH3-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

The uranium result for sample 0409046-17 is qualified as “U” because the associated calibration blank result is greater than the method detection limit and the sample result is less than five times the blank result.

Table 2. Data Qualifiers

Sample Number	Location	Analyte	Flag	Reason
0409046-17	2454	Uranium	U	Blank > MDL

Sample Shipping/Receiving

Paragon Analytics in Fort Collins, Colorado received 28 samples on September 4, 2004, 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 and that signatures and dates were present indicating sample relinquishment and receipt. The sample submittal documents including the COC form, the sample submittal form, and the samples tickets had no errors or omissions.

Holding Times and Preservation

The sample shipment was received cool and intact with temperatures within the coolers of 1.6° C and 0.6° C, which is in compliance with requirements. All samples had been preserved correctly for the requested analyses with the following exception. The bottle submitted for uranium analysis from location 560 was received with a pH of 7. The laboratory adjusted the pH of this aliquot to 1.9 with nitric acid on September 4, 2004. Sufficient time elapsed between the pH adjustment and the sample analysis to allow equilibrium. 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.

Calibrations for method SW-846 6020 were performed on September 4, 2004. The initial calibration was performed using four calibration standards resulting in a correlation coefficient (r^2) value greater than 0.995. The absolute value of the intercept was less than three 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 11 CCVs. All calibration checks 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 and was within the acceptance criteria range. The mass calibration and resolution was checked at the beginning of each analytical run and was in accordance with the procedure. Internal standard recoveries were stable and within acceptable ranges.

Calibrations for method SW-846 9056 were performed for chloride and sulfate using five calibration standards on September 7, 2004. The r^2 values were greater than 0.995 and intercepts were less than three 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 14 CCVs that met the acceptance criteria.

The initial calibration for ammonia as N was performed using six calibration standards on September 16, 2004, resulting in an r^2 value greater than 0.995. Initial and continuing calibration checks were made at the required frequency resulting in five CCVs. All initial and continuing calibration verifications were within the acceptance criteria.

Method and Calibration Blanks

The method blanks and initial and continuing calibration blanks for method SW-846 6020 were below the practical quantitation limits. Sample 2454 had a uranium result that is less than five times the concentration of the associated continuing calibration blank as is qualified as "U".

The method blanks for all inorganic analytes were below the method detection limits. All initial and continuing calibration blanks were below the method detection limits.

Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Analysis

ICP interference check samples ICSA and ICSAB were analyzed at the required frequency and all results met the acceptance criteria.

Matrix Spike Analysis

Two matrix spike and matrix spike duplicate (MS/MSD) pairs for method SW-846 6020 were analyzed for uranium with acceptable results.

Inorganics

Matrix spike and matrix spike duplicate (MS/MSD) pairs were analyzed for chloride, sulfate, and ammonia as N with acceptable results.

Laboratory Replicate Analysis

The Relative Percent Difference (RPD) value for the matrix spike duplicate sample results for uranium was less than 20 percent. The RPD values for the MSD and laboratory duplicate sample results for chloride, sulfate, ammonia as N, and TDS were less than 20 percent.

Laboratory Control Sample

Laboratory control samples were analyzed at the correct frequency with acceptable results for all analysis categories.

Metals Serial Dilution

Serial dilutions were performed during the uranium analysis with acceptable results.

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.

Chromatography Peak Integration

The integration of analyte peaks was reviewed for all ion chromatography data. The manual integrations that were performed were acceptable and all peak integrations were satisfactory.

Electronic Data Deliverable (EDD) File

An EDD file arrived on September 27, 2004. The EDD validation application identified no problems with the file.

Field Activities

All monitoring 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 Project environmental samples. Concentrations measured in the equipment blank were below their respective contract required detection limit; therefore, equipment blank results are considered acceptable. Duplicate samples were collected from wells 470 and 559. There are no established regulatory criteria for the evaluation of field duplicate samples; therefore, EPA guidance for *laboratory* duplicates (which is conservative for field duplicates) was used to assess the precision of the field duplicates. Duplicate results met the laboratory duplicate criteria of +/-20 relative percent difference and are considered acceptable.

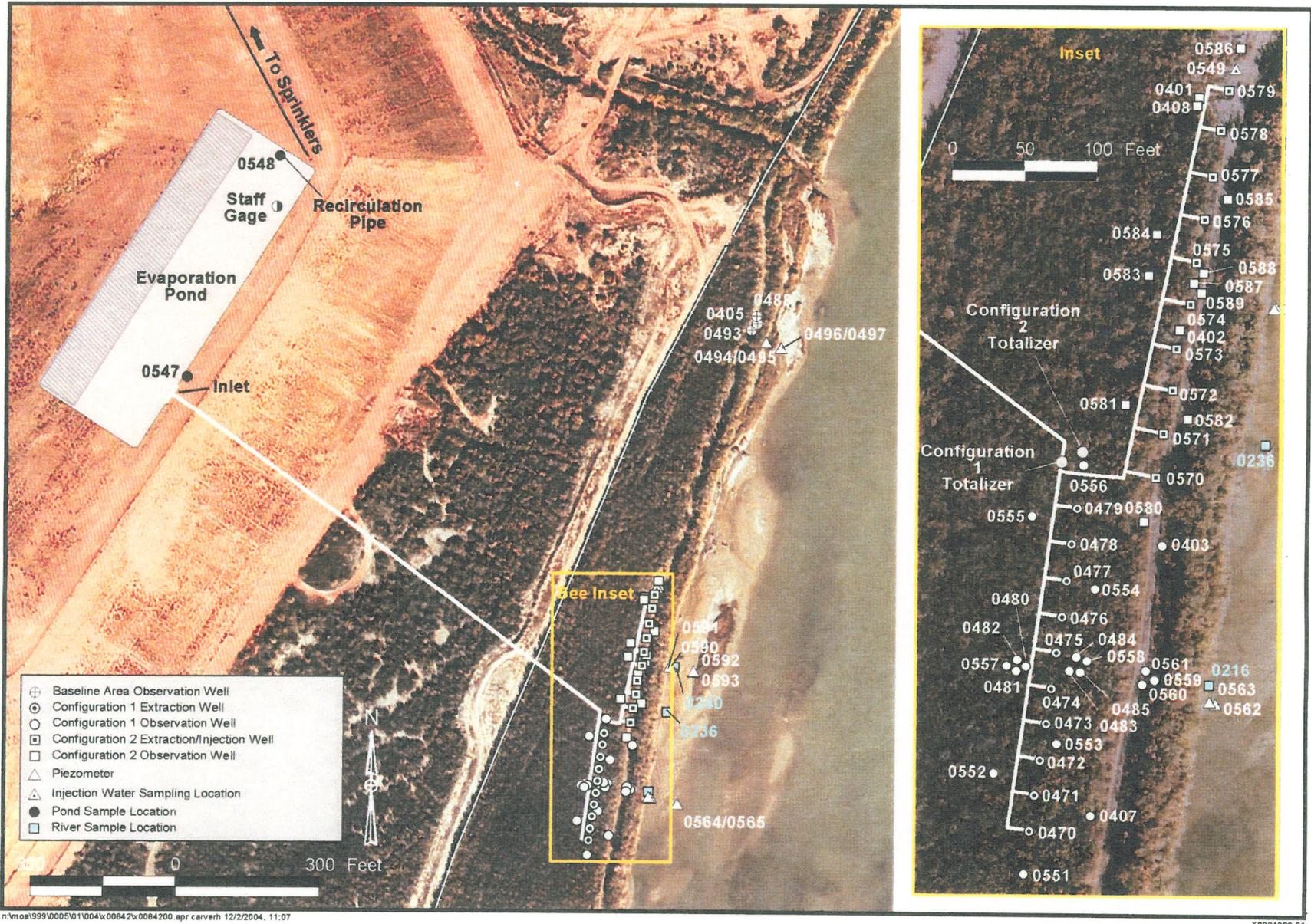
Summary

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 USEPA 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 12-3-04
Steve Donivan Date

Field Activities Validation Lead: Jeff Price 12/3/04
Jeff Price Date

**SAMPLING LOCATION
MAP**



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

**FIELD VERIFICATION
CHECKLIST**

Water Sampling Field Activities Verification Checklist

Project	Moab, Utah	Date(s) of Water Sampling	September 1-2, 2004
Date(s) of Verification	10/12/04	Name of Verifier	Jeff Price

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures? List other documents, SOP's, instructions.	Yes	
	NA	
2. Were the sampling locations specified in the planning documents sampled?	Yes	
3. Was a pre-trip calibration conducted as specified in the above named documents?	Yes	
4. Was an operational check of the field equipment conducted twice daily? Did the operational checks meet criteria?	Yes	
	Yes	
5. Were the number and types (alkalinity, temperature, Ec, pH, turbidity, DO, ORP) of field measurements taken as specified?	Yes	
6. Was the Category of the well documented?	Yes	
7. Were the following conditions met when purging a Category I well: Was one pump/tubing volume purged prior to sampling?	Yes	
Did the water level stabilize prior to sampling?	Yes	
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	Yes	
Was the flow rate less than 500 mL/min?	Yes	
If a portable pump was used, was there a 4 hour delay between pump installation and sampling?	NA	

Water Sampling Field Activities Verification Checklist (continued)

- | | | |
|---|-----|-------|
| 8. Were the following conditions met when purging a Category II well: | | |
| Was the flow rate less than 500 mL/min? | NA | _____ |
| Was one pump/tubing volume removed prior to sampling? | NA | _____ |
| 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 | _____ |

WATER QUALITY DATA

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Disposal Site
 REPORT DATE: 11/22/2004 3:03 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID			LAB	DATA	QA		
Alkalinity, Total (As CaCO3)	mg/L	0403	WL	09/01/2004	0001	17.00 - 17.00	839	F	#	-	-	
	mg/L	0407	WL	09/01/2004	0001	17.00 - 17.00	210	F	#	-	-	
	mg/L	0470	WL, EXT	09/02/2004	0001	10.30 - 19.70	733		#	-	-	
	mg/L	0471	WL, EXT	09/02/2004	0001	10.30 - 19.70	710		#	-	-	
	mg/L	0472	WL, EXT	09/02/2004	0001	10.30 - 19.70	723		#	-	-	
	mg/L	0473	WL, EXT	09/02/2004	0001	10.30 - 19.70	750		#	-	-	
	mg/L	0474	WL, EXT	09/02/2004	0001	10.30 - 19.70	823		#	-	-	
	mg/L	0475	WL, EXT	09/02/2004	0001	10.30 - 19.70	828		#	-	-	
	mg/L	0476	WL, EXT	09/02/2004	0001	10.30 - 19.70	848		#	-	-	
	mg/L	0477	WL, EXT	09/02/2004	0001	10.30 - 19.70	904		#	-	-	
	mg/L	0478	WL, EXT	09/02/2004	0001	9.60 - 23.90	853		#	-	-	
	mg/L	0479	WL, EXT	09/02/2004	0001	9.30 - 23.60	854		#	-	-	
	mg/L	0480	WL	09/01/2004	0001	18.00 - 18.00	784	F	#	-	-	
	mg/L	0481	WL	09/01/2004	0001	28.00 - 28.00	790	F	#	-	-	
	mg/L	0482	WL	09/01/2004	0001	58.00 - 58.00	255	F	#	-	-	
	mg/L	0483	WL	09/01/2004	0001	18.00 - 18.00	746	F	#	-	-	
	mg/L	0484	WL	09/01/2004	0001	28.00 - 28.00	761	F	#	-	-	
	mg/L	0485	WL	09/01/2004	0001	58.00 - 58.00	244	F	#	-	-	
	mg/L	0547	TS, INFL	09/01/2004	0001	0.00 - 0.00	789		#	-	-	
	mg/L	0548	TS, EPND	09/01/2004	0001	0.00 - 0.00	258		#	-	-	
	mg/L	0557	WL	09/01/2004	0001	40.00 - 40.00	797	F	#	-	-	
	mg/L	0558	WL	09/01/2004	0001	30.00 - 30.00	517	F	#	-	-	
	mg/L	0559	WL	09/02/2004	0001	19.00 - 19.00	748	F	#	-	-	
	mg/L	0560	WL	09/02/2004	0001	35.00 - 35.00	410	F	#	-	-	
	mg/L	0561	WL	09/02/2004	0001	50.00 - 50.00	266	F	#	-	-	
	Ammonia Total as N	mg/L	0403	WL	09/01/2004	0001	17.00 - 17.00	680	F	#	50	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Disposal Site
 REPORT DATE: 11/22/2004 3:03 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			UN-CERTAINTY
				DATE	ID			LAB	DATA	QA	
Ammonia Total as N	mg/L	0407	WL	09/01/2004	0001	17.00 - 17.00	93	F	#	5	-
	mg/L	0470	WL, EXT	09/02/2004	0001	10.30 - 19.70	840		#	50	-
	mg/L	0470	WL, EXT	09/02/2004	0002	10.30 - 19.70	820		#	50	-
	mg/L	0471	WL, EXT	09/02/2004	0001	10.30 - 19.70	910		#	50	-
	mg/L	0472	WL, EXT	09/02/2004	0001	10.30 - 19.70	880		#	50	-
	mg/L	0473	WL, EXT	09/02/2004	0001	10.30 - 19.70	900		#	50	-
	mg/L	0474	WL, EXT	09/02/2004	0001	10.30 - 19.70	930		#	50	-
	mg/L	0475	WL, EXT	09/02/2004	0001	10.30 - 19.70	890		#	50	-
	mg/L	0476	WL, EXT	09/02/2004	0001	10.30 - 19.70	850		#	50	-
	mg/L	0477	WL, EXT	09/02/2004	0001	10.30 - 19.70	710		#	50	-
	mg/L	0478	WL, EXT	09/02/2004	0001	9.60 - 23.90	840		#	50	-
	mg/L	0479	WL, EXT	09/02/2004	0001	9.30 - 23.60	840		#	50	-
	mg/L	0480	WL	09/01/2004	0001	18.00 - 18.00	1000	F	#	50	-
	mg/L	0481	WL	09/01/2004	0001	28.00 - 28.00	1000	F	#	50	-
	mg/L	0482	WL	09/01/2004	0001	58.00 - 58.00	530	F	#	50	-
	mg/L	0483	WL	09/01/2004	0001	18.00 - 18.00	1500	F	#	50	-
	mg/L	0484	WL	09/01/2004	0001	28.00 - 28.00	1300	F	#	50	-
	mg/L	0485	WL	09/01/2004	0001	58.00 - 58.00	470	F	#	50	-
	mg/L	0547	TS, INFL	09/01/2004	0001	0.00 - 0.00	820		#	50	-
	mg/L	0548	TS, EPND	09/01/2004	0001	0.00 - 0.00	1400		#	50	-
	mg/L	0557	WL	09/01/2004	0001	40.00 - 40.00	1300	F	#	50	-
	mg/L	0558	WL	09/01/2004	0001	30.00 - 30.00	2000	F	#	50	-
	mg/L	0559	WL	09/02/2004	0001	19.00 - 19.00	800	F	#	50	-
	mg/L	0559	WL	09/02/2004	0002	19.00 - 19.00	800	F	#	50	-
	mg/L	0560	WL	09/02/2004	0001	35.00 - 35.00	1900	F	#	50	-
	mg/L	0561	WL	09/02/2004	0001	50.00 - 50.00	960	F	#	50	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Disposal Site
 REPORT DATE: 11/22/2004 3:03 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			UN-CERTAINTY
				DATE	ID			LAB	DATA	QA	
Chloride	mg/L	0403	WL	09/01/2004	0001	17.00 - 17.00	3700	F	#	100	-
	mg/L	0407	WL	09/01/2004	0001	17.00 - 17.00	440	F	#	10	-
	mg/L	0470	WL, EXT	09/02/2004	0001	10.30 - 19.70	6300		#	200	-
	mg/L	0470	WL, EXT	09/02/2004	0002	10.30 - 19.70	6600		#	200	-
	mg/L	0471	WL, EXT	09/02/2004	0001	10.30 - 19.70	8300		#	400	-
	mg/L	0472	WL, EXT	09/02/2004	0001	10.30 - 19.70	6900		#	200	-
	mg/L	0473	WL, EXT	09/02/2004	0001	10.30 - 19.70	6300		#	200	-
	mg/L	0474	WL, EXT	09/02/2004	0001	10.30 - 19.70	5500		#	200	-
	mg/L	0475	WL, EXT	09/02/2004	0001	10.30 - 19.70	5400		#	200	-
	mg/L	0476	WL, EXT	09/02/2004	0001	10.30 - 19.70	4900		#	200	-
	mg/L	0477	WL, EXT	09/02/2004	0001	10.30 - 19.70	3600		#	200	-
	mg/L	0478	WL, EXT	09/02/2004	0001	9.60 - 23.90	5100		#	200	-
	mg/L	0479	WL, EXT	09/02/2004	0001	9.30 - 23.60	4500		#	200	-
	mg/L	0480	WL	09/01/2004	0001	18.00 - 18.00	9000	F	#	100	-
	mg/L	0481	WL	09/01/2004	0001	28.00 - 28.00	9100	F	#	100	-
	mg/L	0482	WL	09/01/2004	0001	58.00 - 58.00	48000	F	#	1000	-
	mg/L	0483	WL	09/01/2004	0001	18.00 - 18.00	13000	F	#	200	-
	mg/L	0484	WL	09/01/2004	0001	28.00 - 28.00	13000	F	#	200	-
	mg/L	0485	WL	09/01/2004	0001	58.00 - 58.00	46000	F	#	1000	-
	mg/L	0547	TS, INFL	09/01/2004	0001	0.00 - 0.00	5900		#	100	-
	mg/L	0548	TS, EPND	09/01/2004	0001	0.00 - 0.00	12000		#	200	-
	mg/L	0557	WL	09/01/2004	0001	40.00 - 40.00	11000	F	#	200	-
	mg/L	0558	WL	09/01/2004	0001	30.00 - 30.00	34000	F	#	400	-
	mg/L	0559	WL	09/02/2004	0001	19.00 - 19.00	6000	F	#	100	-
	mg/L	0559	WL	09/02/2004	0002	19.00 - 19.00	6300	F	#	100	-
	mg/L	0560	WL	09/02/2004	0001	35.00 - 35.00	39000	F	#	400	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Disposal Site
 REPORT DATE: 11/22/2004 3:03 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			UN-CERTAINTY
				DATE	ID			LAB	DATA	QA	
Chloride	mg/L	0561	WL	09/02/2004	0001	50.00 - 50.00	46000	F	#	1000	-
Oxidation Reduction Potent	mV	0403	WL	09/01/2004	N001	17.00 - 17.00	98.0	F	#	-	-
	mV	0407	WL	09/01/2004	N001	17.00 - 17.00	-69.4	F	#	-	-
	mV	0470	WL, EXT	09/02/2004	N001	10.30 - 19.70	95.5		#	-	-
	mV	0471	WL, EXT	09/02/2004	N001	10.30 - 19.70	118.4		#	-	-
	mV	0472	WL, EXT	09/02/2004	N001	10.30 - 19.70	119.5		#	-	-
	mV	0473	WL, EXT	09/02/2004	N001	10.30 - 19.70	122.1		#	-	-
	mV	0474	WL, EXT	09/02/2004	N001	10.30 - 19.70	70.7		#	-	-
	mV	0475	WL, EXT	09/02/2004	N001	10.30 - 19.70	130.0		#	-	-
	mV	0476	WL, EXT	09/02/2004	N001	10.30 - 19.70	125.1		#	-	-
	mV	0477	WL, EXT	09/02/2004	N001	10.30 - 19.70	171.2		#	-	-
	mV	0478	WL, EXT	09/02/2004	N001	9.60 - 23.90	127.6		#	-	-
	mV	0479	WL, EXT	09/02/2004	N001	9.30 - 23.60	146.3		#	-	-
	mV	0480	WL	09/01/2004	N001	18.00 - 18.00	152.2	F	#	-	-
	mV	0481	WL	09/01/2004	N001	28.00 - 28.00	160.3	F	#	-	-
	mV	0482	WL	09/01/2004	N001	58.00 - 58.00	167.6	F	#	-	-
	mV	0483	WL	09/01/2004	N001	18.00 - 18.00	83.3	F	#	-	-
	mV	0484	WL	09/01/2004	N001	28.00 - 28.00	103.0	F	#	-	-
	mV	0485	WL	09/01/2004	N001	58.00 - 58.00	47.7	F	#	-	-
	mV	0547	TS, INFL	09/01/2004	N001	0.00 - 0.00	142.4		#	-	-
	mV	0548	TS, EPND	09/01/2004	N001	0.00 - 0.00	134.2		#	-	-
	mV	0557	WL	09/01/2004	N001	40.00 - 40.00	115.0	F	#	-	-
	mV	0558	WL	09/01/2004	N001	30.00 - 30.00	91.0	F	#	-	-
	mV	0559	WL	09/02/2004	N001	19.00 - 19.00	182.3	F	#	-	-
	mV	0560	WL	09/02/2004	N001	35.00 - 35.00	166.7	F	#	-	-
	mV	0561	WL	09/02/2004	N001	50.00 - 50.00	-39.0	F	#	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Disposal Site
 REPORT DATE: 11/22/2004 3:03 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
								LAB	DATA	QA		
pH	s.u.	0403	WL	09/01/2004	N001	17.00 - 17.00	6.75		F	#	-	-
	s.u.	0407	WL	09/01/2004	N001	17.00 - 17.00	7.86		F	#	-	-
	s.u.	0470	WL, EXT	09/02/2004	N001	10.30 - 19.70	6.83			#	-	-
	s.u.	0471	WL, EXT	09/02/2004	N001	10.30 - 19.70	6.76			#	-	-
	s.u.	0472	WL, EXT	09/02/2004	N001	10.30 - 19.70	6.75			#	-	-
	s.u.	0473	WL, EXT	09/02/2004	N001	10.30 - 19.70	6.73			#	-	-
	s.u.	0474	WL, EXT	09/02/2004	N001	10.30 - 19.70	6.81			#	-	-
	s.u.	0475	WL, EXT	09/02/2004	N001	10.30 - 19.70	6.69			#	-	-
	s.u.	0476	WL, EXT	09/02/2004	N001	10.30 - 19.70	6.72			#	-	-
	s.u.	0477	WL, EXT	09/02/2004	N001	10.30 - 19.70	6.69			#	-	-
	s.u.	0478	WL, EXT	09/02/2004	N001	9.60 - 23.90	6.50			#	-	-
	s.u.	0479	WL, EXT	09/02/2004	N001	9.30 - 23.60	6.70			#	-	-
	s.u.	0480	WL	09/01/2004	N001	18.00 - 18.00	6.71		F	#	-	-
	s.u.	0481	WL	09/01/2004	N001	28.00 - 28.00	6.75		F	#	-	-
	s.u.	0482	WL	09/01/2004	N001	58.00 - 58.00	6.72		F	#	-	-
	s.u.	0483	WL	09/01/2004	N001	18.00 - 18.00	6.70		F	#	-	-
	s.u.	0484	WL	09/01/2004	N001	28.00 - 28.00	6.75		F	#	-	-
	s.u.	0485	WL	09/01/2004	N001	58.00 - 58.00	6.72		F	#	-	-
	s.u.	0547	TS, INFL	09/01/2004	N001	0.00 - 0.00	6.85			#	-	-
	s.u.	0548	TS, EPND	09/01/2004	N001	0.00 - 0.00	7.37			#	-	-
	s.u.	0557	WL	09/01/2004	N001	40.00 - 40.00	6.77		F	#	-	-
s.u.	0558	WL	09/01/2004	N001	30.00 - 30.00	6.75		F	#	-	-	
s.u.	0559	WL	09/02/2004	N001	19.00 - 19.00	6.72		F	#	-	-	
s.u.	0560	WL	09/02/2004	N001	35.00 - 35.00	6.58		F	#	-	-	
s.u.	0561	WL	09/02/2004	N001	50.00 - 50.00	6.77		F	#	-	-	
Specific Conductance	umhos/cm	0403	WL	09/01/2004	N001	17.00 - 17.00	21750		F	#	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Disposal Site
 REPORT DATE: 11/22/2004 3:03 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	0407	WL	09/01/2004	N001	17.00 - 17.00	2710	F	#	-	-	
	umhos/cm	0470	WL, EXT	09/02/2004	N001	10.30 - 19.70	27873		#	-	-	
	umhos/cm	0471	WL, EXT	09/02/2004	N001	10.30 - 19.70	32558		#	-	-	
	umhos/cm	0472	WL, EXT	09/02/2004	N001	10.30 - 19.70	28320		#	-	-	
	umhos/cm	0473	WL, EXT	09/02/2004	N001	10.30 - 19.70	27744		#	-	-	
	umhos/cm	0474	WL, EXT	09/02/2004	N001	10.30 - 19.70	27797		#	-	-	
	umhos/cm	0475	WL, EXT	09/02/2004	N001	10.30 - 19.70	25942		#	-	-	
	umhos/cm	0476	WL, EXT	09/02/2004	N001	10.30 - 19.70	24558		#	-	-	
	umhos/cm	0477	WL, EXT	09/02/2004	N001	10.30 - 19.70	20878		#	-	-	
	umhos/cm	0478	WL, EXT	09/02/2004	N001	9.60 - 23.90	26378		#	-	-	
	umhos/cm	0479	WL, EXT	09/02/2004	N001	9.30 - 23.60	25420		#	-	-	
	umhos/cm	0480	WL	09/01/2004	N001	18.00 - 18.00	38518	F	#	-	-	
	umhos/cm	0481	WL	09/01/2004	N001	28.00 - 28.00	37992	F	#	-	-	
	umhos/cm	0482	WL	09/01/2004	N001	58.00 - 58.00	103178	F	#	-	-	
	umhos/cm	0483	WL	09/01/2004	N001	18.00 - 18.00	44021	F	#	-	-	
	umhos/cm	0484	WL	09/01/2004	N001	28.00 - 28.00	40022	F	#	-	-	
	umhos/cm	0485	WL	09/01/2004	N001	58.00 - 58.00	91401	F	#	-	-	
	umhos/cm	0547	TS, INFL	09/01/2004	N001	0.00 - 0.00	27416		#	-	-	
	umhos/cm	0548	TS, EPND	09/01/2004	N001	0.00 - 0.00	47869		#	-	-	
	umhos/cm	0557	WL	09/01/2004	N001	40.00 - 40.00	39510	F	#	-	-	
	umhos/cm	0558	WL	09/01/2004	N001	30.00 - 30.00	78513	F	#	-	-	
	umhos/cm	0559	WL	09/02/2004	N001	19.00 - 19.00	28008	F	#	-	-	
	umhos/cm	0560	WL	09/02/2004	N001	35.00 - 35.00	83523	F	#	-	-	
	umhos/cm	0561	WL	09/02/2004	N001	50.00 - 50.00	90625	F	#	-	-	
	Sulfate	mg/L	0403	WL	09/01/2004	0001	17.00 - 17.00	8200	F	#	250	-
		mg/L	0407	WL	09/01/2004	0001	17.00 - 17.00	490	F	#	25	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Disposal Site
 REPORT DATE: 11/22/2004 3:03 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	0470	WL, EXT	09/02/2004	0001	10.30 - 19.70	7800				# 500	-
	mg/L	0470	WL, EXT	09/02/2004	0002	10.30 - 19.70	8000				# 500	-
	mg/L	0471	WL, EXT	09/02/2004	0001	10.30 - 19.70	8100				# 1000	-
	mg/L	0472	WL, EXT	09/02/2004	0001	10.30 - 19.70	8100				# 500	-
	mg/L	0473	WL, EXT	09/02/2004	0001	10.30 - 19.70	8600				# 500	-
	mg/L	0474	WL, EXT	09/02/2004	0001	10.30 - 19.70	9300				# 500	-
	mg/L	0475	WL, EXT	09/02/2004	0001	10.30 - 19.70	9200				# 500	-
	mg/L	0476	WL, EXT	09/02/2004	0001	10.30 - 19.70	8800				# 500	-
	mg/L	0477	WL, EXT	09/02/2004	0001	10.30 - 19.70	8200				# 500	-
	mg/L	0478	WL, EXT	09/02/2004	0001	9.60 - 23.90	7600				# 500	-
	mg/L	0479	WL, EXT	09/02/2004	0001	9.30 - 23.60	6800				# 500	-
	mg/L	0480	WL	09/01/2004	0001	18.00 - 18.00	9700		F		# 250	-
	mg/L	0481	WL	09/01/2004	0001	28.00 - 28.00	9800		F		# 250	-
	mg/L	0482	WL	09/01/2004	0001	58.00 - 58.00	5800		F		# 500	-
	mg/L	0483	WL	09/01/2004	0001	18.00 - 18.00	11000		F		# 250	-
	mg/L	0484	WL	09/01/2004	0001	28.00 - 28.00	10000		F		# 250	-
	mg/L	0485	WL	09/01/2004	0001	58.00 - 58.00	6000		F		# 500	-
	mg/L	0547	TS, INFL	09/01/2004	0001	0.00 - 0.00	8000				# 250	-
	mg/L	0548	TS, EPND	09/01/2004	0001	0.00 - 0.00	18000				# 250	-
	mg/L	0557	WL	09/01/2004	0001	40.00 - 40.00	11000		F		# 500	-
	mg/L	0558	WL	09/01/2004	0001	30.00 - 30.00	9600		F		# 1000	-
	mg/L	0559	WL	09/02/2004	0001	19.00 - 19.00	7900		F		# 250	-
	mg/L	0559	WL	09/02/2004	0002	19.00 - 19.00	8100		F		# 250	-
mg/L	0560	WL	09/02/2004	0001	35.00 - 35.00	8300		F		# 1000	-	
mg/L	0561	WL	09/02/2004	0001	50.00 - 50.00	6400		F		# 1000	-	
Temperature	C	0403	WL	09/01/2004	N001	17.00 - 17.00	18.68		F		# -	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Disposal Site
 REPORT DATE: 11/22/2004 3:03 pm

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	0407	WL	09/01/2004	N001	17.00 - 17.00	18.22	F	#	-	-
	C	0470	WL, EXT	09/02/2004	N001	10.30 - 19.70	16.76		#	-	-
	C	0471	WL, EXT	09/02/2004	N001	10.30 - 19.70	16.48		#	-	-
	C	0472	WL, EXT	09/02/2004	N001	10.30 - 19.70	17.32		#	-	-
	C	0473	WL, EXT	09/02/2004	N001	10.30 - 19.70	18.38		#	-	-
	C	0474	WL, EXT	09/02/2004	N001	10.30 - 19.70	19.51		#	-	-
	C	0475	WL, EXT	09/02/2004	N001	10.30 - 19.70	17.60		#	-	-
	C	0476	WL, EXT	09/02/2004	N001	10.30 - 19.70	18.29		#	-	-
	C	0477	WL, EXT	09/02/2004	N001	10.30 - 19.70	18.26		#	-	-
	C	0478	WL, EXT	09/02/2004	N001	9.60 - 23.90	18.41		#	-	-
	C	0479	WL, EXT	09/02/2004	N001	9.30 - 23.60	18.95		#	-	-
	C	0480	WL	09/01/2004	N001	18.00 - 18.00	20.21	F	#	-	-
	C	0481	WL	09/01/2004	N001	28.00 - 28.00	19.73	F	#	-	-
	C	0482	WL	09/01/2004	N001	58.00 - 58.00	19.47	F	#	-	-
	C	0483	WL	09/01/2004	N001	18.00 - 18.00	19.61	F	#	-	-
	C	0484	WL	09/01/2004	N001	28.00 - 28.00	18.95	F	#	-	-
	C	0485	WL	09/01/2004	N001	58.00 - 58.00	19.78	F	#	-	-
	C	0547	TS, INFL	09/01/2004	N001	0.00 - 0.00	22.64		#	-	-
	C	0548	TS, EPND	09/01/2004	N001	0.00 - 0.00	26.04		#	-	-
	C	0557	WL	09/01/2004	N001	40.00 - 40.00	19.16	F	#	-	-
C	0558	WL	09/01/2004	N001	30.00 - 30.00	21.52	F	#	-	-	
C	0559	WL	09/02/2004	N001	19.00 - 19.00	18.48	F	#	-	-	
C	0560	WL	09/02/2004	N001	35.00 - 35.00	19.32	F	#	-	-	
C	0561	WL	09/02/2004	N001	50.00 - 50.00	18.22	F	#	-	-	
Total Dissolved Solids	mg/L	0403	WL	09/01/2004	0001	17.00 - 17.00	18000	F	#	400	-
	mg/L	0407	WL	09/01/2004	0001	17.00 - 17.00	1300	F	#	400	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Disposal Site
 REPORT DATE: 11/22/2004 3:03 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	0470	WL, EXT	09/02/2004	0001	10.30 - 19.70	22000			#	1000	-	
	mg/L	0470	WL, EXT	09/02/2004	0002	10.30 - 19.70	22000			#	1000	-	
	mg/L	0471	WL, EXT	09/02/2004	0001	10.30 - 19.70	26000			#	2000	-	
	mg/L	0472	WL, EXT	09/02/2004	0001	10.30 - 19.70	23000			#	1000	-	
	mg/L	0473	WL, EXT	09/02/2004	0001	10.30 - 19.70	22000			#	1000	-	
	mg/L	0474	WL, EXT	09/02/2004	0001	10.30 - 19.70	22000			#	1000	-	
	mg/L	0475	WL, EXT	09/02/2004	0001	10.30 - 19.70	21000			#	1000	-	
	mg/L	0476	WL, EXT	09/02/2004	0001	10.30 - 19.70	20000			#	1000	-	
	mg/L	0477	WL, EXT	09/02/2004	0001	10.30 - 19.70	17000			#	1000	-	
	mg/L	0478	WL, EXT	09/02/2004	0001	9.60 - 23.90	21000			#	1000	-	
	mg/L	0479	WL, EXT	09/02/2004	0001	9.30 - 23.60	20000			#	1000	-	
	mg/L	0480	WL	09/01/2004	0001	18.00 - 18.00	28000	F		#	1000	-	
	mg/L	0481	WL	09/01/2004	0001	28.00 - 28.00	27000	F		#	1000	-	
	mg/L	0482	WL	09/01/2004	0001	58.00 - 58.00	87000	F		#	2000	-	
	mg/L	0483	WL	09/01/2004	0001	18.00 - 18.00	34000	F		#	1000	-	
	mg/L	0484	WL	09/01/2004	0001	28.00 - 28.00	33000	F		#	1000	-	
	mg/L	0485	WL	09/01/2004	0001	58.00 - 58.00	86000	F		#	2000	-	
	mg/L	0547	TS, INFL	09/01/2004	0001	0.00 - 0.00	21000			#	400	-	
	mg/L	0548	TS, EPND	09/01/2004	0001	0.00 - 0.00	44000			#	1000	-	
	mg/L	0557	WL	09/01/2004	0001	40.00 - 40.00	31000	F		#	1000	-	
	mg/L	0558	WL	09/01/2004	0001	30.00 - 30.00	66000	F		#	2000	-	
	mg/L	0559	WL	09/02/2004	0001	19.00 - 19.00	22000	F		#	400	-	
	mg/L	0559	WL	09/02/2004	0002	19.00 - 19.00	22000	F		#	400	-	
	mg/L	0560	WL	09/02/2004	0001	35.00 - 35.00	72000	F		#	2000	-	
	mg/L	0561	WL	09/02/2004	0001	50.00 - 50.00	81000	F		#	2000	-	
	Turbidity	NTU	0403	WL	09/01/2004	N001	17.00 - 17.00	5.38	F		#	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Disposal Site
 REPORT DATE: 11/22/2004 3:03 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	0407	WL	09/01/2004	N001	17.00 - 17.00	8.59	F	#	-	-	
	NTU	0470	WL, EXT	09/02/2004	N001	10.30 - 19.70	3.93		#	-	-	
	NTU	0471	WL, EXT	09/02/2004	N001	10.30 - 19.70	3.61		#	-	-	
	NTU	0472	WL, EXT	09/02/2004	N001	10.30 - 19.70	15.1		#	-	-	
	NTU	0473	WL, EXT	09/02/2004	N001	10.30 - 19.70	1.47		#	-	-	
	NTU	0474	WL, EXT	09/02/2004	N001	10.30 - 19.70	0.97		#	-	-	
	NTU	0475	WL, EXT	09/02/2004	N001	10.30 - 19.70	18.9		#	-	-	
	NTU	0476	WL, EXT	09/02/2004	N001	10.30 - 19.70	1.46		#	-	-	
	NTU	0477	WL, EXT	09/02/2004	N001	10.30 - 19.70	1.88		#	-	-	
	NTU	0478	WL, EXT	09/02/2004	N001	9.60 - 23.90	6.37		#	-	-	
	NTU	0479	WL, EXT	09/02/2004	N001	9.30 - 23.60	2.73		#	-	-	
	NTU	0480	WL	09/01/2004	N001	18.00 - 18.00	1.10	F	#	-	-	
	NTU	0481	WL	09/01/2004	N001	28.00 - 28.00	2.91	F	#	-	-	
	NTU	0482	WL	09/01/2004	N001	58.00 - 58.00	7.42	F	#	-	-	
	NTU	0483	WL	09/01/2004	N001	18.00 - 18.00	2.83	F	#	-	-	
	NTU	0484	WL	09/01/2004	N001	28.00 - 28.00	5.27	F	#	-	-	
	NTU	0485	WL	09/01/2004	N001	58.00 - 58.00	3.78	F	#	-	-	
	NTU	0547	TS, INFL	09/01/2004	N001	0.00 - 0.00	2.12		#	-	-	
	NTU	0548	TS, EPND	09/01/2004	N001	0.00 - 0.00	10.6		#	-	-	
	NTU	0557	WL	09/01/2004	N001	40.00 - 40.00	2.95	F	#	-	-	
	NTU	0558	WL	09/01/2004	N001	30.00 - 30.00	2.88	F	#	-	-	
	NTU	0559	WL	09/02/2004	N001	19.00 - 19.00	2.14	F	#	-	-	
	NTU	0560	WL	09/02/2004	N001	35.00 - 35.00	4.49	F	#	-	-	
	NTU	0561	WL	09/02/2004	N001	50.00 - 50.00	2.82	F	#	-	-	
	Uranium	mg/L	0403	WL	09/01/2004	0001	17.00 - 17.00	2.700	F	#	0.0012	-
		mg/L	0407	WL	09/01/2004	0001	17.00 - 17.00	0.200	F	#	0.00012	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Disposal Site
 REPORT DATE: 11/22/2004 3:03 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE:		DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS:			UN-CERTAINTY
				DATE	ID			LAB	DATA	QA	
Uranium	mg/L	0470	WL, EXT	09/02/2004	0001	10.30 - 19.70	2.700		#	0.0012	-
	mg/L	0470	WL, EXT	09/02/2004	0002	10.30 - 19.70	2.700		#	0.0012	-
	mg/L	0471	WL, EXT	09/02/2004	0001	10.30 - 19.70	2.500		#	0.0012	-
	mg/L	0472	WL, EXT	09/02/2004	0001	10.30 - 19.70	2.800		#	0.0012	-
	mg/L	0473	WL, EXT	09/02/2004	0001	10.30 - 19.70	3.100		#	0.0012	-
	mg/L	0474	WL, EXT	09/02/2004	0001	10.30 - 19.70	3.500		#	0.0012	-
	mg/L	0475	WL, EXT	09/02/2004	0001	10.30 - 19.70	3.200		#	0.0012	-
	mg/L	0476	WL, EXT	09/02/2004	0001	10.30 - 19.70	3.100		#	0.0012	-
	mg/L	0477	WL, EXT	09/02/2004	0001	10.30 - 19.70	2.900		#	0.0012	-
	mg/L	0478	WL, EXT	09/02/2004	0001	9.60 - 23.90	2.800		#	0.0012	-
	mg/L	0479	WL, EXT	09/02/2004	0001	9.30 - 23.60	2.700		#	0.0012	-
	mg/L	0480	WL	09/01/2004	0001	18.00 - 18.00	3.100	F	#	0.0012	-
	mg/L	0481	WL	09/01/2004	0001	28.00 - 28.00	3.100	F	#	0.0012	-
	mg/L	0482	WL	09/01/2004	0001	58.00 - 58.00	0.890	F	#	0.00012	-
	mg/L	0483	WL	09/01/2004	0001	18.00 - 18.00	2.900	F	#	0.0012	-
	mg/L	0484	WL	09/01/2004	0001	28.00 - 28.00	3.000	F	#	0.0012	-
	mg/L	0485	WL	09/01/2004	0001	58.00 - 58.00	0.530	F	#	0.0012	-
	mg/L	0547	TS, INFL	09/01/2004	0001	0.00 - 0.00	2.800		#	0.0012	-
	mg/L	0548	TS, EPND	09/01/2004	0001	0.00 - 0.00	6.200		#	0.0012	-
	mg/L	0557	WL	09/01/2004	0001	40.00 - 40.00	3.000	F	#	0.0012	-
	mg/L	0558	WL	09/01/2004	0001	30.00 - 30.00	1.800	F	#	0.0012	-
	mg/L	0559	WL	09/02/2004	0001	19.00 - 19.00	2.400	F	#	0.0012	-
	mg/L	0559	WL	09/02/2004	0002	19.00 - 19.00	2.400	F	#	0.0012	-
	mg/L	0560	WL	09/02/2004	0001	35.00 - 35.00	1.400	F	#	0.0012	-
	mg/L	0561	WL	09/02/2004	0001	50.00 - 50.00	0.500	F	#	0.00012	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Disposal Site
 REPORT DATE: 11/22/2004 3:03 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 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 #9/1/2004# and #9/2/2004#

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

LOCATION TYPES: TS TREATMENT SYSTEM WL WELL

LOCATION SUBTYPES: EPND Evaporation Pond EXT Extraction Well INFL Treatment System Influent

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.
- 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.

BLANKS REPORT

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

LAB REQUISITION(S): 04080101

REPORT DATE: 10/12/04 10:41:56: AM

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	09/02/2004	0001	mg/L	0.1	U	0.1		E
Chloride	MOA01	0999	09/02/2004	0001	mg/L	0.25		0.2		E
Sulfate	MOA01	0999	09/02/2004	0001	mg/L	0.5	U	0.5		E
Total Dissolved Solids	MOA01	0999	09/02/2004	0001	mg/L	20	U	20		E
Uranium	MOA01	0999	09/02/2004	0001	mg/L	0.000065	B U	0.000012		E

BLANKS REPORT

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

LAB REQUISITION(S): 04080101

REPORT DATE: 10/12/04 10:41:56: AM

PARAMETER	SITE CODE	LOCATION ID	SAMPLE DATE	SAMPLE 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.
- 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

WATER LEVELS

STATIC WATER LEVELS (USEE700) FOR SITE MOA01, Moab Disposal Site
 REPORT DATE: 10/12/2004 10:45 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			
0403	O	3968.95	09/01/2004	17:58	17.36	3951.59	
0407	O	3969.09	09/01/2004	18:27	17.98	3951.11	
0470		3968.49	09/02/2004	11:05	20.12	3948.37	
0471		3968.83	09/02/2004	11:24	20.86	3947.97	
0472		3968.81	09/02/2004	11:37	20.20	3948.61	
0473		3969.05	09/02/2004	11:59	20.35	3948.70	
0474		3969.22	09/02/2004	14:32	18.80	3950.42	
0475		3969.46	09/02/2004	12:15	20.91	3948.55	
0476		3969.48	09/02/2004	12:34	20.42	3949.06	
0477		3969.40	09/02/2004	14:26	19.39	3950.01	
0478		3969.49	09/02/2004	14:28	19.40	3950.09	
0479		3969.27	09/02/2004	14:29	20.29	3948.98	
0480		3968.65	09/01/2004	11:23	17.46	3951.19	
0481		3968.83	09/01/2004	11:47	16.75	3952.08	
0482		3968.70	09/01/2004	12:06	17.40	3951.30	
0483		3968.90	09/01/2004	16:25	17.81	3951.09	
0484		3969.19	09/01/2004	16:44	17.37	3951.82	
0485		3968.81	09/01/2004	17:02	16.95	3951.86	
0557		3968.85	09/01/2004	16:00	16.41	3952.44	
0558		3968.79	09/01/2004	17:19	17.20	3951.59	
0559		3969.92	09/02/2004	09:12	18.51	3951.41	
0560		3968.77	09/02/2004	10:42	17.22	3951.55	
0561		3968.56	09/02/2004	10:12	17.20	3951.36	

RECORDS: SELECTED FROM USEE700 WHERE site_code='MOA01' AND LOG_DATE between #9/1/2004# and #9/2/2004#

FLOW CODES: O ON-SITE

WATER LEVEL FLAGS:

SAMPLING TRIP REPORT

Stoller

established 1959

DATE: October 5, 2004

TO: Ken Karp

FROM: Ken Pill

SUBJECT: Trip Report

Site: Moab Interim Action Extraction Well Field Monthly Sampling – September 2004

Date of Sampling Event: September 1 and 2, 2004

Team Members: Ken Pill and Dan Sellers

Number of Locations Sampled: Ten extraction wells (0470 through 0479), 13 observation wells (0480 through 0485, 0557 through 0561, 0403, and 0407), and 2 surface water locations (0547 and 0548, which are the evaporation pond inlet and the evaporation pond recirculation pump discharge, respectively). Including two duplicates and one equipment blank, a total of 28 samples were collected.

Locations Not Sampled/Reason: Location 0216 (Colorado River) was not sampled because this specific location was dry.

Field Variance: Only a 125 ml sample was collected for uranium analysis as opposed to the standard 500 ml sample volume. A 500 ml sample was collected from location 0560 (Ticket No. NDX-415) for laboratory quality control purposes.

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
2234	0559	Duplicate	Ground water	NDX-414
2454	NA	Equipment Blank	Water	NDX-417
2435	0470	Duplicate	Ground water	NDX-419

RIN Number Assigned: All samples were assigned to RIN 04080101.

Sample Shipment: All samples were shipped (in two coolers) overnight FedEx to Paragon Analytics, Inc. from Moab, Utah, on September 3, 2004 (Airbill Nos. 809324804090 and 809324804080).

Ken Karp
 October 5, 2004

Location Specific Information: Each extraction well was sampled using dedicated submersible pumps. Well 0478 was not in operation for seven days prior to this sampling event. A new pump was installed on September 2, 2004, and a sample was collected after the new pump was in operation for 1-hour. Well 0474 was not operational for 24 hours prior to this sampling event. After the pump was restarted, it also ran for 1-hour prior to sampling.

Observation wells 0480 through 0485, 0403, and 0407 were sampled using micro-purge techniques with a peristaltic pump and dedicated tubing. Temporary down-hole tubing was used for locations 0557 through 0561. This sampling event represents the first time observation wells 0557, 0558, 0559, 0560, and 0561 (installed in July 2004) were sampled. Sample depths for each observation well are listed below. Note these depths are below ground surface (bgs).

Well No.	Sample Depth (bgs)
0403	17
0407	17
0480	18
0481	28
0482	58
0483	18
0484	28
0485	58
0557	40
0558	30
0559	19
0560	35
0561	50

Extraction Well Pumping Data: Extraction well pumping rates (gpm) for each extraction well when sampling occurred are provided in the table below.

Well No.	Date	Time	Pumping Rate (gpm)
0470	9/2/04	11:12	4.20
0471	9/2/04	11:30	3.58
0472	9/2/04	11:42	3.23
0473	9/2/04	11:59	1.53
0474	9/2/04	14:32	1.02
0475	9/2/04	12:15	2.41
0476	9/2/04	12:34	1.16
0477	9/2/04	14:26	1.53
0478	9/2/04	14:28	1.85
0479	9/2/04	14:29	1.97
Badger Meter	9/2/04	14:30	24.3

Ken Karp
October 5, 2004

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

Well No.	Well Type	Date	Depth to Water (ft btoc)
0403	Observation	9/1/04	17.36
0407	Observation	9/1/04	17.98
0470	Extraction	9/2/04	20.12
0471	Extraction	9/2/04	20.86
0472	Extraction	9/2/04	20.20
0473	Extraction	9/2/04	20.35
0474	Extraction	9/2/04	18.80
0475	Extraction	9/2/04	20.91
0476	Extraction	9/2/04	20.42
0477	Extraction	9/2/04	19.39
0478	Extraction	9/2/04	19.40
0479	Extraction	9/2/04	20.29
0480	Observation	9/1/04	17.46
0481	Observation	9/1/04	16.75
0482	Observation	9/1/04	17.40
0483	Observation	9/1/04	17.81
0484	Observation	9/1/04	17.37
0485	Observation	9/1/04	16.95
0557	Observation	9/1/04	16.41
0558	Observation	9/1/04	17.20
0559	Observation	9/2/04	18.51
0560	Observation	9/2/04	17.22
0561	Observation	9/2/04	17.20
NA	Staff Gage	9/1/04	3.8 (Evap Pond depth)

Well Inspection Summary: Well inspections were conducted at all sampled wells; all wells were in good condition.

Equipment: All equipment functioned properly.

Regulatory: None.

Site Issues: The extraction wells had been running at a flow rates from 1 to 4 gpm since June 2004.

According to the USGS Cisco Gauging Station (Station No. 09180500), the mean daily Colorado River Flow on September 1, 2004, was 2,240 cfs. The flow decreased to 2,160 cfs on September 2, 2004.

Corrective Action Required/Taken: None.

Ken Karp
October 5, 2004

(KGP/lcg)

cc: J. D. Berwick, DOE-EM (e)
D. R. Metzler, DOE-EM
C. I. Bahrke, Stoller (e)
K. E. Miller, Stoller
L. M. Wright, Stoller (e)
Working File: MOA

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