



**DATA VALIDATION
FOR THE MONUMENT VALLEY, AZ
UMTRA SITE**

**January 1997
Water Sampling**

Prepared by the
U.S. Department of Energy
Grand Junction Projects Office



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MONUMENT VALLEY
Sampled January 1997

DATA PACKAGE CONTENTS

This data package includes the following information:

<u>Item No.</u>	<u>Description of Contents</u>
1.	Site Sampling Lead Summary <ol style="list-style-type: none">a. Table of UMTRA standards exceedences in ground water.
2.	Data Package Assessment, which includes the following: <ol style="list-style-type: none">a. Field procedures verification checklistb. Confirmation that chain-of-custody was maintained.c. Confirmation that holding time requirements were met.d. Evaluation of the adequacy of the QC sample results.
3.	Data Assessment Summary, which describes problems identified in the data validation process and summarizes the validators findings.
4.	Anomalous Data Review Checksheets which list the subset of data from the sampling event that merits explanation or follow-up action. The "Disposition" column of this report describes the evaluators judgments on the listed anomalies.
5.	UMTRA Database Printouts of analytical data organized as follows: <ol style="list-style-type: none">a. Ground Water Quality Data (included on disk)b. Surface Water data (included on disk)c. Field QC sample data
6.	Static Groundwater Level Measurement Printout
7.	Sampling and Analysis Work Order and Trip Report

Site Sampling Lead Summary

Site: Monument Valley

Sampling Period: January 1997

SUMMARY CRITERIA

1. **Was there any domestic well sampled that exhibited an exceedence to a primary drinking water standard or health advisory?**

Sample concentrations from domestic wells did not exceed any primary drinking water standards or health advisories.

2. **Were there any exceedences recorded in any point-of-compliance wells?**

There are no point-of-compliance wells established at the Monument Valley Site.

3. **As a result of this sampling round, is there any indication of contaminated groundwater movement?**

There is no indication of significant contaminated ground water movement from this sampling event; however, a field investigation at Monument Valley will be conducted in the near future to provide better definition of the contaminant plume.

SUMMARY CRITERIA (continued)

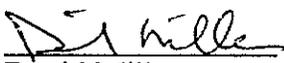
4. Is there statistical evidence that UMTRA Project related contaminants were detected in a surface water body in greater concentrations than upstream ambient water quality?

There is no upstream ambient water quality data for Cane Valley Wash to provide comparison to downstream locations; location 632 was not sampled during this sampling event (dry), and there is no historical data for this location. However, surface water concentrations of UMTRA related contaminants were compared to data from upgradient alluvial well 617. The mean plus 3 standard deviations for each upgradient analyte was used as the benchmark for the comparison.

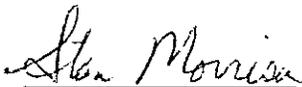
Table 1. Surface Water Locations that Exceed Upgradient Alluvial Water Quality Benchmarks in January 1997.

Location ID	Location	Analyte	Ratio of Concentration/Benchmark
621	Frog Pond	Gross α , uranium	1.3, 6.4
622	Frog Pond	Gross α , uranium	2.2, 7.2
624	Cane Valley Wash	Gross α , uranium	1.2, 6.1
620	Spring	Uranium	2.8
631	Cane Valley Wash	Uranium	3.0

Wells with sample concentrations that exceeded UMTRA ground water standards are listed in Table 2.


David Miller
Site Sampling Lead

5/7/97
Date


Stan Morrison
Site Geochemist

5/8/97
Date


Jim Crain
Site Hydrologist

5/7/97
Date

Table 2. Monument Valley Wells with Samples that Exceeded UMTRA Standards in January 1997.

Analyte	Standard (mg/L) ¹	Wells Exceeding Standards	Concentration in mg/L ¹
Nitrate	44.27	606 653 656 662	1,210.0 130.0 253.0 50.4
Radium-226 + Radium-228	5	659	7.32
Selenium	0.01	614	0.0114
Uranium	0.044	619 657	0.0487 0.0604

¹ Units are in mg/L for inorganic analytes and pCi/L for radiological analytes.

DATA ASSESSMENT

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UGW Water Sampling Field Activities Verification Checklist

Project Monument Valley

Date(s) of Ground Water Sampling 1-12-97 to 1-15-97

Date(s) of Verification 4-17-97

Name of Verifier Sam Campbell

	Response (Yes, No, N/A)	Comments
1. Is the Addendum the primary document directing field procedures? List other documents, SOPs, Instructions.	<u>Yes</u> <u>Yes</u>	<u>FY 1997 Sampling Frequencies and Analysis Requirements for Locations at Individual UMTRA Sites</u>
2. Were the sampling locations specified in the planning documents sampled?	<u>No</u>	<u>Well 640 - broken dedicated pump. Surface location 632 - dry Surface locations: 626 and 627 - frozen.</u>
3. Was field equipment calibrated as specified in the above named documents? Were the number and types (alkalinity, temperature, conductivity pH, turbidity, DO, Eh) of field measurements taken as specified? Were the standard solutions used for the calibration and operational checks of the field instruments brought to within 5°C of the temperature of the water to be sampled? Was the calibration information recorded on the field data sheets?	<u>Yes</u> <u>No</u> <u>NO</u> <u>Yes</u>	<u>No measurements at location 616 - cistern. No alkalinity recorded @ 615. No turbidity or Eh @ 669 - equipment problems Well 601 - 5.6°, well 602 - 6.8°, well 619 - 5.9°, well 612 - 5.9°</u>
4. Was a duplicate alkalinity measurement conducted on a frequency of one duplicate per 20 samples?	<u>No</u>	<u>one duplicate for 25 locations, due to an oversight by the field team.</u>
5. Was depth to water measured before purging? Was this information used to calculate the purge volume?	<u>Yes</u> <u>Yes</u>	<u>Except for flowing wells</u>
6. Were the wells purged until parameters stabilized and 3 casing volumes were removed or until the well was purged dry?	<u>No</u>	<u>Turbidity stabilization not achieved at wells 601 and 662. Eh stability not achieved at wells 605. Flowing wells 615 and 613 were purged until stable</u>
7. Were duplicates taken at a frequency of one per 20 samples?	<u>Yes</u>	

8. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment? Yes
9. Were trip blanks prepared and included with each shipment of VOC samples? NA
10. Were QC samples assigned a fictitious site identification number? Yes
 Was the true identity of the samples recorded in the field notes? Yes
11. Were samples collected in the containers specified? No Metals fraction at locations 621 and 622 was collected in a 1L bottle instead of 500 ml bottle.
 Were certified pre-cleaned containers used for the sampling? Yes
12. Were samples filtered and preserved as specified? Yes
13. Were the number and types of samples collected as specified? Yes
14. Were chain of custody records completed and was sample custody maintained? Yes
15. Were sample ticket book numbers recorded in the field notebook, on field data forms, and on the chain of custody? Yes
16. Are field notebooks and field data sheets signed and dated by the field team leader? Yes ~~No~~ Den 4/28/97
~~No signatures in the field notebook; field data sheets ok~~
17. Was all other pertinent information documented on the field data sheets/forms? Yes
18. Was the presence or absence of ice in the cooler documented in the field notebook for every sample location? No
19. Were water levels measured at the locations specified in the planning documents? Yes Wells 406, 412, 652, 661, and 663 ^{were} ~~could~~ not located
 104-17-97

DATA PACKAGE ASSESSMENT

REQUISITION NUMBERS: 15251 SITE: Mon. Valley LABORATORY: GJO ANALYSIS DATES: 1-97 to 2-97

REVIEWER: SARAH MORRIS Sarah Morris 4/21/97
NAME (print) SIGNATURE DATE

	ICP-MS	ICP-AES	GFAA	FAA	NaBH ₄	AS	LSc	PC	IC	Gravimetric	Colorimetric	Other B-gamma coincidence counting
CHAIN OF CUSTODY	<u>OK</u>	<u>OK</u>	<u>NA</u>	<u>NA</u>	<u>OK</u>	<u>OK</u>	<u>OK</u>	<u>OK</u>	<u>OK</u>	<u>OK</u>	<u>OK</u>	<u>OK</u>
HOLDING TIME										↓		↓
CALIB. VERIFICATION (For AS, internal tracer)		↓				↓	↓	↓		NA		NA
PREP. BLANKS (Only if digestion)		C				↓	↓	↓		NA		OK
INT. CAL. BLANKS		C				NA	NA	NA	↓	NA	↓	NA
CONT. CAL. BLANKS		OK	↓	↓	↓	NA	NA	NA	C	NA	C	NA
ICS (ICP ONLY)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LCS					OK	OK	OK	OK	OK	OK	OK	J-flag Ra-228
DUPLICATES	↓	↓			↓	↓	↓	↓	↓	↓	↓	OK
POSTDIGEST. SPKS. (Only if MS fails)	NA	NA			NA	NA	NA	NA	NA	NA	NA	NA
MATRIX SPKS.	OK	OK			OK	NA	NA	NA	OK	NA	NA	NA
OVERALL ASSESS.	↓	↓	↓	↓	↓	OK	OK	OK	↓	OK	OK	OK

REVIEWER COMMENTS: C = Blank contamination, no samples above CDRL are affected

ITEMS REQUIRING ATTENTION: Based on this assessment, several rad values will require "U" (non-detected) flags be added to the database, and Ra-228 results will require a "J" flag.

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**MONUMENT VALLEY, AZ
JANUARY 1997 SAMPLING
DATA ASSESSMENT SUMMARY**

The DOE-GJO Analytical Laboratory analyzed samples and reported results for this sampling event under requisition number 15251.

RADIOCHEMICAL ANALYSIS

The determination of gross alpha was done by gas proportional counting (PC). Radium-226 was analyzed by alpha spectrometry and radium-228 by beta/gamma coincidence counting. Although not requested, gross beta results are included in this report because gross beta activity is determined concurrently with gross alpha activity. Except as noted, all quality control requirements were met during the course of these analyses.

The detection limits for gross alpha are higher than those specified in the planning documents due to high TDS in the samples.

The results of LCSWR2, which was analyzed twice with the radium-228 analysis done on February 16, 1997, were not within the acceptance limits. The analyst notes that there was insufficient sample for reanalysis.

Lead-210 was determined by liquid scintillation counting. The analyst notes that an extra one liter for duplicate and matrix spike analysis was not submitted. The aliquots needed for matrix spike and duplicate analysis were taken from the gross alpha/gross beta samples.

The following reported values are less than the MDA and/or the 3-sigma counting statistic range and were qualified with a non-detect flag (U) in the data base, as shown on the Ground Water Quality Data by Parameter printout:

Gross Alpha results for samples 241802 through 241812 (623, 601, 602, 615, 605, 605 duplicate, equipment blank, 654, 656, 616, 613), 241814 through 241816 (606, 631, 612), 241818 (662), 241821 (669), 241825 through 241828 (660, 664, 653, equipment blank).

Gross Beta results for samples 241802 (623), 241803 (601), 241805 through 241812 (615, 605, 605 duplicate, equipment blank, 654, 656, 616, 613), 241815 through 241819 (631, 612, 657, 662, 620), 241821 (669), 241823 (659 duplicate), 241825 (660), 241827 (653), 241828 (equipment blank).

Lead-210 results for samples 241800 through 241803 (621, 622, 623, 601), 241805 (615), 241807 (605 duplicate), 241808 (equipment blank), 241810 (656), 241811 (616), 241813 (624), 241815 (631), and 241828 (equipment blank).

The Ra-226 result for samples 241802 (623), 241808 (equipment blank), 241811 (616), 241812 (613), and 241816 through 241819 (612, 657, 662, 620) 241828(equipment blank), and 241829 (619).

The Ra-228 results for samples 241800 through 241821 (621, 622, 623, 601, 602, 615, 605, 605 duplicate, equipment blank, 654, 656, 616, 613, 624, 606, 631, 612, 657, 662, 620, 620 duplicate, 669), and 241824 through 241829 (614, 660, 664, 653, equipment blank, 619).

METALS/MAJOR CATIONS ANALYSIS

The determination of calcium, magnesium, potassium, sodium, strontium, and vanadium was performed by inductively coupled plasma-atomic emission spectrometer (ICP-AES). Cadmium and uranium were analyzed by inductively coupled plasma-mass spectrometry (ICP-MS). Selenium was determined by hydride generation atomic absorption spectroscopy (NaBH_4). Except as noted, all quality control requirements were met during the course of these analyses.

There was blank contamination, but no results above CDRL were affected.

INORGANIC ANALYSIS

Chloride and nitrate were determined by ion chromatography (IC). TDS was determined gravimetrically and ammonium was determined by spectrophotometry (Colorimetric). All quality control requirements were met during the course of these analyses

FIELD ANALYSIS/ACTIVITIES

Low flow purging was not performed on any of the wells at this site, and there were no wells where grout contamination was indicated (pH ϕ 9).

One well was purged dry prior to three casing volumes being removed. Because this well was purged dry, it is assumed that all of the stagnant water in the well casing was removed, and the samples collected were representative of the formation water. Therefore, results from this well will not be given the "L" qualifier in the database.

The purging stabilization criteria for turbidity (5 NTUs) was not met at two locations.

Two equipment blanks were collected for the 25 locations where samples were collected using non-dedicated equipment. The equipment blanks were analyzed for the same constituents as the Monument Valley environmental samples. All inorganic constituents were below their respective CRDLs. For radiological constituents, all analytes were below detection, with the exception of Pb-210, which was detected in one equipment blank at a concentration of 1.07 pCi/L.

Three field duplicates were collected for the 25 sampled locations. Duplicate samples were collected from Wells 605 and 659, and surface location 620. There is no established regulatory criteria for the evaluation of field duplicate samples. However, using the EPA guidance for *laboratory* duplicates (which is conservative for field duplicates), duplicate sample results met the laboratory duplicate criteria and are considered acceptable.

SAR

A problem in the SEEUMTRA database precludes the generation of a Suspected Anomalies Report for the Monument Valley site. *Instead, results from this sampling event were compared to historical data as part of the evaluation of suspected anomalous data.* Ninety values from this sampling event were all-time high or all-time low concentrations; however 42 of these values were compared to a historical data set that contained a maximum of only 4 values; therefore, these values are not considered anomalous. Results were not considered all-time lows if the detection limit was also an all-time low or if the value was less than a historical value that was less than detection. The remaining 48 values are identified as potential anomalies and are listed on the Anomalous Data Review Checksheet. These values will be compared to the results from the next sampling event.

A statistical analysis of the 48 suspected anomalous values was not performed, however, a qualitative assessment of the values suggests the number of anomalous results may be reduced to the following:

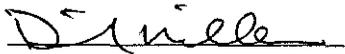
Sample Number	Sample Location	Description
622	Frog Pond, surface water	High uranium, over an order of magnitude greater than the previous maximum.
606	Down gradient shallow alluvial well	High gross beta, an order of magnitude greater than the previous maximum.
616	Up gradient alluvial well	Low nitrate, an order of magnitude less than the previous minimum.
657	Up gradient DeChelly well	TDS four times higher than the previous maximum.* No analysis for sulfate performed.

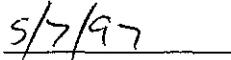
* Sulfate should be added to the list of analytes at the Monument Valley site.

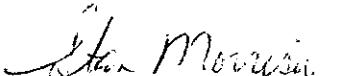
SUMMARY

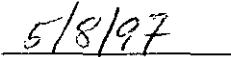
All analytical quality control criteria were met except as qualified on the Ground Water Quality Data by Parameter printout. The meaning of data qualifiers is as defined on the UMTRA database printout or as defined in the USEPA Contract Laboratory Program *Statement of Work for Inorganic Analysis, Multi-Media Multi-Concentration*, Document Number ILMO2.0, 1991. All data in this package meet the validation criteria and may be treated as final results.

A disk copy of the Ground Water Quality Data by Parameter database printout is included in this package.

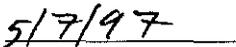

DAVID MILLER
Tech. Lead, Sampling


Date


Stan Morrison
Site Geochemist


Date


Jim Crain
Site Hydrologist


Date

DATA REVIEW CHECKSHEET

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ANOMALOUS DATA REVIEW CHECKSHEET

SITE: Monument Valley SAMPLING DATA: Ground Water / Surface Water

REVIEWER(s): Sam Campbell Sam Campbell 4-25-97
NAME (print) SIGNATURE DATE

SITE HYDROLOGIST: JIM CRAIG James Craig 5/7/97
NAME (print) SIGNATURE DATE

SITE GEOCHEMIST: STAN MORRISON Stan Morrison 5/8/97
NAME (print) SIGNATURE DATE

DATE OF REVIEW: 4-25-97

WELL NO.	ANALYTE	TYPE OF ANOMALY	DISPOSITION
621	Mg	All-time high	Compare to next sampling round
↓	K	↓	↓
↓	Na	↓	↓
↓	TDS	↓	↓
↓	U	↓	↓
622	α	↓	↓
↓	β	↓	↓
↓	K	↓	↓
↓	Sr	↓	↓
↓	U	↓	↓
623	Sr	All-time low	↓
↓	TDS	↓	↓
602	Mg	All-time high	↓
↓	Pb-210	All-time low	↓
606	β	All-time high	↓
613	Na	All-time high	↓
614	α	All-time low	↓
↓	Pb-210	All-time high	↓
↓	Se	↓	↓
615	Mg	All-time low	↓
↓	K	↓	↓

ANOMALOUS DATA REVIEW CHECKSHEET

SITE: Monument Valley SAMPLING DATA: Ground Water/Surface Water

REVIEWER(s): Sam Campbell Sam Campbell 4-25-97
NAME (print) SIGNATURE DATE

SITE HYDROLOGIST: JIM CRAIN James Crain 5/7/97
NAME (print) SIGNATURE DATE

SITE GEOCHEMIST: Stan Morrison Stan Morrison 5/8/97
NAME (print) SIGNATURE DATE

DATE OF REVIEW: 4-25-97

WELL NO.	ANALYTE	TYPE OF ANOMALY ^{ppc}	DISPOSITION
615	Ra-228	All-time low	Compare to next sampling round
616	NO ₃	↓	
619	Ca	↓	
↓	TDS	↓	
653	NO ₃	All-time-high	
↓	Na	↓	
656	Ca	All-time low	
↓	Cl	↓	
↓	Mg	↓	
↓	NO ₃	↓	
↓	K	↓	
↓	Na	↓	
↓	Sc	↓	
↓	TDS	↓	
↓	U	↓	
657	Ca-	↓	
↓	d	↓	
↓	Mg	↓	
↓	Na	↓	
↓	Sc	↓	
↓	TDS	All-time high	↓

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**ANALYTICAL
LABORATORY
RESULTS**

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GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:53 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Alkalinity as CaCO3	mg/L	0601	01/12/97	N001	SR	U	229		-	-
	mg/L	0602	01/12/97	N001	AL	N	224		-	-
	mg/L	0605	01/12/97	N001	AL	D	288		-	-
	mg/L	0612	01/12/97	N001	DC	N	150		-	-
	mg/L	0613	01/13/97	N001	DC	N	181		-	-
	mg/L	0614	01/13/97	N001	SR	D	198		-	-
	mg/L	0619	01/15/97	N001	DC	O	162		-	-
	mg/L	0653	01/14/97	N001	AL	D	194		-	-
	mg/L	0654	01/13/97	N001	AL	C	176		-	-
	mg/L	0656	01/13/97	N001	AL	D	247		-	-
	mg/L	0657	01/12/97	N001	DC	O	190		-	-
	mg/L	0659	01/13/97	N001	SR	D	196		-	-
	mg/L	0660	01/13/97	N001	SR	D	284		-	-
	mg/L	0662	01/12/97	N001	AL	D	260		-	-
	mg/L	0664	01/14/97	N001	DC	D	273		-	-
	mg/L	0669	01/13/97	N001	AL	D	240		-	-
Ammonia as NH4	mg/L	0601	01/12/97	0001	SR	U	0.0053	B	-	-
	mg/L	0602	01/12/97	0001	AL	N	0.0053	B	-	-
	mg/L	0605	01/12/97	0001	AL	D	0.326		-	-
	mg/L	0605	01/12/97	0002	AL	D	0.297		-	-
	mg/L	0606	01/13/97	0001	AL	D	243.000		-	-
	mg/L	0612	01/12/97	0001	DC	N	0.0150	B	-	-
	mg/L	0613	01/13/97	N001	DC	N	0.0040	U	0.004	-
	mg/L	0614	01/13/97	0001	SR	D	0.0053	B	-	-
	mg/L	0615	01/12/97	0001	SR	C	0.0053	B	-	-
	mg/L	0616	01/13/97	N001	AL	N	0.482		-	-
	mg/L	0619	01/15/97	0001	DC	O	0.0053	B	-	-

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:54 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Ammonia as NH4	mg/L	0653	01/14/97	0001	AL	D	0.0102	B	-	-
	mg/L	0654	01/13/97	0001	AL	C	0.0758	B	-	-
	mg/L	0656	01/13/97	0001	AL	D	93.100		-	-
	mg/L	0657	01/12/97	0001	DC	O	0.0040	U	0.004	-
	mg/L	0659	01/13/97	0001	SR	D	0.508		-	-
	mg/L	0659	01/13/97	0002	SR	D	0.394		-	-
	mg/L	0660	01/13/97	0001	SR	D	0.0247	B	-	-
	mg/L	0662	01/12/97	0001	AL	D	0.0077	B	-	-
	mg/L	0664	01/14/97	0001	DC	D	0.0053	B	-	-
	mg/L	0669	01/13/97	0001	AL	D	0.620		-	-
Cadmium	mg/L	0601	01/12/97	0001	SR	U	0.0010	U	0.001	-
	mg/L	0602	01/12/97	0001	AL	N	0.0010	U	0.001	-
	mg/L	0605	01/12/97	0001	AL	D	0.0010	U	0.001	-
	mg/L	0605	01/12/97	0002	AL	D	0.0010	U	0.001	-
	mg/L	0606	01/13/97	0001	AL	D	0.0010	U	0.001	-
	mg/L	0612	01/12/97	0001	DC	N	0.0010	U	0.001	-
	mg/L	0613	01/13/97	N001	DC	N	0.0011	U	0.0011	-
	mg/L	0614	01/13/97	0001	SR	D	0.0010	U	0.001	-
	mg/L	0615	01/12/97	0001	SR	C	0.0010	U	0.001	-
	mg/L	0616	01/13/97	N001	AL	N	0.0011	U	0.0011	-
	mg/L	0619	01/15/97	0001	DC	O	0.0010	U	0.001	-
	mg/L	0653	01/14/97	0001	AL	D	0.0010	U	0.001	-
	mg/L	0654	01/13/97	0001	AL	C	0.0010	U	0.001	-
	mg/L	0656	01/13/97	0001	AL	D	0.0010	U	0.001	-
	mg/L	0657	01/12/97	0001	DC	O	0.0010	U	0.001	-
	mg/L	0659	01/13/97	0001	SR	D	0.0010	U	0.001	-
	mg/L	0659	01/13/97	0002	SR	D	0.0010	U	0.001	-

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:54 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Cadmium	mg/L	0660	01/13/97	0001	SR	D	0.0010	U	0.001	-
	mg/L	0662	01/12/97	0001	AL	D	0.0010	U	0.001	-
	mg/L	0664	01/14/97	0001	DC	D	0.0010	U	0.001	-
	mg/L	0669	01/13/97	0001	AL	D	0.0010	U	0.001	-
Calcium	mg/L	0601	01/12/97	0001	SR	U	28.300		-	-
	mg/L	0602	01/12/97	0001	AL	N	28.600		-	-
	mg/L	0605	01/12/97	0001	AL	D	132.000		-	-
	mg/L	0605	01/12/97	0002	AL	D	131.000		-	-
	mg/L	0606	01/13/97	0001	AL	D	259.000		-	-
	mg/L	0612	01/12/97	0001	DC	N	28.000		-	-
	mg/L	0613	01/13/97	N001	DC	N	17.100		-	-
	mg/L	0614	01/13/97	0001	SR	D	90.000		-	-
	mg/L	0615	01/12/97	0001	SR	C	16.700		-	-
	mg/L	0616	01/13/97	N001	AL	N	33.900		-	-
	mg/L	0619	01/15/97	0001	DC	O	34.100		-	-
	mg/L	0653	01/14/97	0001	AL	D	278.000		-	-
	mg/L	0654	01/13/97	0001	AL	C	39.400		-	-
	mg/L	0656	01/13/97	0001	AL	D	51.700		-	-
	mg/L	0657	01/12/97	0001	DC	O	56.400		-	-
	mg/L	0659	01/13/97	0001	SR	D	25.900		-	-
	mg/L	0659	01/13/97	0002	SR	D	25.800		-	-
	mg/L	0660	01/13/97	0001	SR	D	2.810		-	-
	mg/L	0662	01/12/97	0001	AL	D	203.000		-	-
	mg/L	0664	01/14/97	0001	DC	D	14.600		-	-
mg/L	0669	01/13/97	0001	AL	D	68.500		-	-	
Chloride	mg/L	0601	01/12/97	0001	SR	U	14.600		-	-
	mg/L	0602	01/12/97	0001	AL	N	15.900		-	-

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:55 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Chloride	mg/L	0605	01/12/97	0001	AL	D	213.000		-	-
	mg/L	0605	01/12/97	0002	AL	D	213.000		-	-
	mg/L	0606	01/13/97	0001	AL	D	17.000		-	-
	mg/L	0612	01/12/97	0001	DC	N	4.030		-	-
	mg/L	0613	01/13/97	N001	DC	N	8.170		-	-
	mg/L	0614	01/13/97	0001	SR	D	37.700		-	-
	mg/L	0615	01/12/97	0001	SR	C	9.990		-	-
	mg/L	0616	01/13/97	N001	AL	N	11.000		-	-
	mg/L	0619	01/15/97	0001	DC	O	5.210		-	-
	mg/L	0653	01/14/97	0001	AL	D	33.900		-	-
	mg/L	0654	01/13/97	0001	AL	C	5.300		-	-
	mg/L	0656	01/13/97	0001	AL	D	15.700		-	-
	mg/L	0657	01/12/97	0001	DC	O	6.380		-	-
	mg/L	0659	01/13/97	0001	SR	D	9.750		-	-
	mg/L	0659	01/13/97	0002	SR	D	9.840		-	-
	mg/L	0660	01/13/97	0001	SR	D	7.920		-	-
	mg/L	0662	01/12/97	0001	AL	D	11.100		-	-
	mg/L	0664	01/14/97	0001	DC	D	8.370		-	-
	mg/L	0669	01/13/97	0001	AL	D	13.300		-	-
Gross Alpha	pCi/L	0601	01/12/97	0001	SR	U	5.07	U	5.07	± 3.17
	pCi/L	0602	01/12/97	0001	AL	N	5.29	U	5.29	± 2.23
	pCi/L	0605	01/12/97	0001	AL	D	36.94	U	36.94	± 17.3
	pCi/L	0605	01/12/97	0002	AL	D	37.97	U	37.97	± 20.2
	pCi/L	0606	01/13/97	0001	AL	D	23.37	U	23.37	± 12.4
	pCi/L	0612	01/12/97	0001	DC	N	2.80	U	2.74	± 1.98
	pCi/L	0613	01/13/97	N001	DC	N	3.69	U	3.69	± 2.31
	pCi/L	0614	01/13/97	0001	SR	D	12.85		12.29	± 8.34

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:55 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Gross Alpha	pCi/L	0615	01/12/97	0001	SR	C	4.19	U	4.19	± 2.62
	pCi/L	0616	01/13/97	N001	AL	N	4.69	U	4.69	± 2.50
	pCi/L	0619	01/15/97	0001	DC	O	17.78		5.05	± 4.80
	pCi/L	0653	01/14/97	0001	AL	D	53.32	U	53.32	± 25.6
	pCi/L	0654	01/13/97	0001	AL	C	3.25	U	3.25	± 1.98
	pCi/L	0656	01/13/97	0001	AL	D	9.47	U	9.47	± 6.39
	pCi/L	0657	01/12/97	0001	DC	O	37.92		15.1	± 14.7
	pCi/L	0659	01/13/97	0001	SR	D	8.31		8.2	± 5.54
	pCi/L	0659	01/13/97	0002	SR	D	8.51		8.09	± 5.51
	pCi/L	0660	01/13/97	0001	SR	D	5.99	U	5.99	± 3.21
	pCi/L	0662	01/12/97	0001	AL	D	15.33	U	15.01	± 10.8
	pCi/L	0664	01/14/97	0001	DC	D	6.11	U	6.11	± 4.01
	pCi/L	0669	01/13/97	0001	AL	D	10.54	U	10.54	± 7.11
Gross Beta	pCi/L	0601	01/12/97	0001	SR	U	5.90	U	5.9	± 3.60
	pCi/L	0602	01/12/97	0001	AL	N	6.86		6.17	± 3.89
	pCi/L	0605	01/12/97	0001	AL	D	48.61	U	48.61	± 27.5
	pCi/L	0605	01/12/97	0002	AL	D	48.75	U	48.75	± 28.1
	pCi/L	0606	01/13/97	0001	AL	D	263.91		30.75	± 29.5
	pCi/L	0612	01/12/97	0001	DC	N	2.97	U	2.97	± 1.82
	pCi/L	0613	01/13/97	N001	DC	N	4.22	U	4.22	± 2.46
	pCi/L	0614	01/13/97	0001	SR	D	18.38		11.99	± 7.98
	pCi/L	0615	01/12/97	0001	SR	C	4.72	U	4.72	± 2.78
	pCi/L	0616	01/13/97	N001	AL	N	5.35	U	5.35	± 3.18
	pCi/L	0619	01/15/97	0001	DC	O	13.03		4.21	± 3.17
	pCi/L	0653	01/14/97	0001	AL	D	55.95	U	55.95	± 33.6
	pCi/L	0654	01/13/97	0001	AL	C	3.39	U	3.39	± 2.06
	pCi/L	0656	01/13/97	0001	AL	D	13.02	U	13.02	± 8.03

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:56 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Gross Beta	pCi/L	0657	01/12/97	0001	DC	O	26.70	U	26.7	± 16.0
	pCi/L	0659	01/13/97	0001	SR	D	10.85		7.83	± 5.14
	pCi/L	0659	01/13/97	0002	SR	D	7.83	U	7.83	± 4.92
	pCi/L	0660	01/13/97	0001	SR	D	5.64	U	5.64	± 3.34
	pCi/L	0662	01/12/97	0001	AL	D	19.61	U	19.61	± 11.2
	pCi/L	0664	01/14/97	0001	DC	D	7.22		5.51	± 3.59
	pCi/L	0669	01/13/97	0001	AL	D	10.60	U	10.6	± 6.37
Lead-210	pCi/L	0601	01/12/97	0001	SR	U	0.96	U	0.96	± 0.58
	pCi/L	0602	01/12/97	0001	AL	N	1.18		0.99	± 0.60
	pCi/L	0605	01/12/97	0001	AL	D	1.20		0.95	± 0.58
	pCi/L	0605	01/12/97	0002	AL	D	0.91	U	0.91	± 0.54
	pCi/L	0606	01/13/97	0001	AL	D	1.35		0.97	± 0.59
	pCi/L	0612	01/12/97	0001	DC	N	1.07		0.99	± 0.60
	pCi/L	0613	01/13/97	N001	DC	N	1.35		0.99	± 0.60
	pCi/L	0614	01/13/97	0001	SR	D	2.79		0.81	± 0.51
	pCi/L	0615	01/12/97	0001	SR	C	0.95	U	0.95	± 0.57
	pCi/L	0616	01/13/97	N001	AL	N	0.98	U	0.98	± 0.59
	pCi/L	0619	01/15/97	0001	DC	O	1.18		0.83	± 0.50
	pCi/L	0653	01/14/97	0001	AL	D	1.18		0.85	± 0.51
	pCi/L	0654	01/13/97	0001	AL	C	1.09		1.01	± 0.61
	pCi/L	0656	01/13/97	0001	AL	D	0.97	U	0.97	± 0.58
	pCi/L	0657	01/12/97	0001	DC	O	1.09		0.99	± 0.60
	pCi/L	0659	01/13/97	0001	SR	D	1.69		0.85	± 0.52
	pCi/L	0659	01/13/97	0002	SR	D	1.62		0.84	± 0.51
	pCi/L	0660	01/13/97	0001	SR	D	1.69		0.83	± 0.51
	pCi/L	0662	01/12/97	0001	AL	D	1.14		0.96	± 0.58
	pCi/L	0664	01/14/97	0001	DC	D	1.31		0.83	± 0.50

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:56 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Lead-210	pCi/L	0669	01/13/97	0001	AL	D	1.29		0.82	± 0.50
Magnesium	mg/L	0601	01/12/97	0001	SR	U	18.300		-	-
	mg/L	0602	01/12/97	0001	AL	N	20.200		-	-
	mg/L	0605	01/12/97	0001	AL	D	159.000		-	-
	mg/L	0605	01/12/97	0002	AL	D	158.000		-	-
	mg/L	0606	01/13/97	0001	AL	D	128.000		-	-
	mg/L	0612	01/12/97	0001	DC	N	20.700		-	-
	mg/L	0613	01/13/97	N001	DC	N	29.900		-	-
	mg/L	0614	01/13/97	0001	SR	D	57.200		-	-
	mg/L	0615	01/12/97	0001	SR	C	15.000		-	-
	mg/L	0616	01/13/97	N001	AL	N	29.400		-	-
	mg/L	0619	01/15/97	0001	DC	O	23.900		-	-
	mg/L	0653	01/14/97	0001	AL	D	223.000		-	-
	mg/L	0654	01/13/97	0001	AL	C	17.100		-	-
	mg/L	0656	01/13/97	0001	AL	D	43.300		-	-
	mg/L	0657	01/12/97	0001	DC	O	36.600		-	-
	mg/L	0659	01/13/97	0001	SR	D	29.700		-	-
	mg/L	0659	01/13/97	0002	SR	D	29.700		-	-
	mg/L	0660	01/13/97	0001	SR	D	1.570		-	-
	mg/L	0662	01/12/97	0001	AL	D	113.000		-	-
	mg/L	0664	01/14/97	0001	DC	D	17.600		-	-
	mg/L	0669	01/13/97	0001	AL	D	49.900		-	-
Nitrate	mg/L	0601	01/12/97	0001	SR	U	4.200		-	-
	mg/L	0602	01/12/97	0001	AL	N	3.450		-	-
	mg/L	0605	01/12/97	0001	AL	D	0.0531	B	-	-
	mg/L	0605	01/12/97	0002	AL	D	0.0465	B	-	-
	mg/L	0606	01/13/97	0001	AL	D	1210.000		-	-

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:56 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Nitrate	mg/L	0612	01/12/97	0001	DC	N	3.680		-	-
	mg/L	0613	01/13/97	N001	DC	N	2.590		-	-
	mg/L	0614	01/13/97	0001	SR	D	21.400		-	-
	mg/L	0615	01/12/97	0001	SR	C	0.660	B	-	-
	mg/L	0616	01/13/97	N001	AL	N	0.226	B	-	-
	mg/L	0619	01/15/97	0001	DC	O	7.300		-	-
	mg/L	0653	01/14/97	0001	AL	D	130.000		-	-
	mg/L	0654	01/13/97	0001	AL	C	0.0516	B	-	-
	mg/L	0656	01/13/97	0001	AL	D	253.000		-	-
	mg/L	0657	01/12/97	0001	DC	O	18.000		-	-
	mg/L	0659	01/13/97	0001	SR	D	3.740		-	-
	mg/L	0659	01/13/97	0002	SR	D	3.800		-	-
	mg/L	0660	01/13/97	0001	SR	D	0.235	B	-	-
	mg/L	0662	01/12/97	0001	AL	D	50.400		-	-
	mg/L	0664	01/14/97	0001	DC	D	0.419	B	-	-
	mg/L	0669	01/13/97	0001	AL	D	32.100		-	-
pH	s.u.	0601	01/12/97	N001	SR	U	7.75		-	-
	s.u.	0602	01/12/97	N001	AL	N	7.80		-	-
	s.u.	0605	01/12/97	N001	AL	D	7.60		-	-
	s.u.	0606	01/13/97	N001	AL	D	7.06		-	-
	s.u.	0612	01/12/97	N001	DC	N	7.75		-	-
	s.u.	0613	01/13/97	N001	DC	N	8.05		-	-
	s.u.	0614	01/13/97	N001	SR	D	7.51		-	-
	s.u.	0615	01/12/97	N001	SR	C	7.94		-	-
	s.u.	0619	01/15/97	N001	DC	O	7.66		-	-
	s.u.	0653	01/14/97	N001	AL	D	7.50		-	-
	s.u.	0654	01/13/97	N001	AL	C	7.66		-	-

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:57 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
pH	s.u.	0656	01/13/97	N001	AL	D	7.56		-	-
	s.u.	0657	01/12/97	N001	DC	O	7.56		-	-
	s.u.	0659	01/13/97	N001	SR	D	7.28		-	-
	s.u.	0660	01/13/97	N001	SR	D	8.67		-	-
	s.u.	0662	01/12/97	N001	AL	D	7.29		-	-
	s.u.	0664	01/14/97	N001	DC	D	8.06		-	-
	s.u.	0669	01/13/97	N001	AL	D	7.57		-	-
Potassium	mg/L	0601	01/12/97	0001	SR	U	1.880		-	-
	mg/L	0602	01/12/97	0001	AL	N	2.010		-	-
	mg/L	0605	01/12/97	0001	AL	D	3.110		-	-
	mg/L	0605	01/12/97	0002	AL	D	3.100		-	-
	mg/L	0606	01/13/97	0001	AL	D	10.800		-	-
	mg/L	0612	01/12/97	0001	DC	N	1.880		-	-
	mg/L	0613	01/13/97	N001	DC	N	2.770		-	-
	mg/L	0614	01/13/97	0001	SR	D	1.840		-	-
	mg/L	0615	01/12/97	0001	SR	C	2.610		-	-
	mg/L	0616	01/13/97	N001	AL	N	1.540		-	-
	mg/L	0619	01/15/97	0001	DC	O	2.010		-	-
	mg/L	0653	01/14/97	0001	AL	D	4.650		-	-
	mg/L	0654	01/13/97	0001	AL	C	2.520		-	-
	mg/L	0656	01/13/97	0001	AL	D	12.300		-	-
	mg/L	0657	01/12/97	0001	DC	O	1.940		-	-
	mg/L	0659	01/13/97	0001	SR	D	3.570		-	-
	mg/L	0659	01/13/97	0002	SR	D	3.540		-	-
	mg/L	0660	01/13/97	0001	SR	D	0.777		-	-
	mg/L	0662	01/12/97	0001	AL	D	2.910		-	-
	mg/L	0664	01/14/97	0001	DC	D	3.420		-	-

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:57 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Potassium	mg/L	0669	01/13/97	0001	AL	D	2.910		-	-
Radium-226	pCi/L	0601	01/12/97	0001	SR	U	0.47		0.02	± 0.10
	pCi/L	0602	01/12/97	0001	AL	N	0.58		0.01	± 0.12
	pCi/L	0605	01/12/97	0001	AL	D	0.08		0.01	± 0.04
	pCi/L	0605	01/12/97	0002	AL	D	0.06		0.01	± 0.04
	pCi/L	0606	01/13/97	0001	AL	D	0.61		0.11	± 0.34
	pCi/L	0612	01/12/97	0001	DC	N	0.34	U	0.11	± 0.26
	pCi/L	0613	01/13/97	N001	DC	N	0.28	U	0.17	± 0.27
	pCi/L	0614	01/13/97	0001	SR	D	0.63		0.03	± 0.16
	pCi/L	0615	01/12/97	0001	SR	C	0.07		0.02	± 0.04
	pCi/L	0616	01/13/97	N001	AL	N	0.39	U	0.15	± 0.30
	pCi/L	0619	01/15/97	0001	DC	O	0.05	U	0.02	± 0.04
	pCi/L	0653	01/14/97	0001	AL	D	0.09		0.01	± 0.05
	pCi/L	0654	01/13/97	0001	AL	C	0.64		0.1	± 0.33
	pCi/L	0656	01/13/97	0001	AL	D	0.32		0.1	± 0.19
	pCi/L	0657	01/12/97	0001	DC	O	0.33	U	0.08	± 0.22
	pCi/L	0659	01/13/97	0001	SR	D	5.92		0.01	± 0.61
	pCi/L	0659	01/13/97	0002	SR	D	5.77		0.02	± 0.77
	pCi/L	0660	01/13/97	0001	SR	D	0.75		0.02	± 0.16
	pCi/L	0662	01/12/97	0001	AL	D	0.41	U	0.14	± 0.30
	pCi/L	0664	01/14/97	0001	DC	D	0.15		0.02	± 0.07
	pCi/L	0669	01/13/97	0001	AL	D	0.23		0.01	± 0.08
Radium-228	pCi/L	0601	01/12/97	0001	SR	U	1.0	U	1	± 0.60
	pCi/L	0602	01/12/97	0001	AL	N	1.0	U	1	± 0.50
	pCi/L	0605	01/12/97	0001	AL	D	0.8	U	0.8	± 0.50
	pCi/L	0605	01/12/97	0002	AL	D	0.9	U	0.9	± 0.40
	pCi/L	0606	01/13/97	0001	AL	D	0.4	U	0.4	± 0.20

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:57 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Radium-228	pCi/L	0612	01/12/97	0001	DC	N	0.7	U		0.7 ± 0.40
	pCi/L	0613	01/13/97	N001	DC	N	0.3	U		0.3 ± 0.20
	pCi/L	0614	01/13/97	0001	SR	D	0.7	U J		0.7 ± 0.50
	pCi/L	0615	01/12/97	0001	SR	C	0.8	U		0.8 ± 0.40
	pCi/L	0616	01/13/97	N001	AL	N	0.3	U		0.3 ± 0.20
	pCi/L	0619	01/15/97	0001	DC	O	0.7	U J		0.7 ± 0.40
	pCi/L	0653	01/14/97	0001	AL	D	0.4	U J		0.4 ± 0.20
	pCi/L	0654	01/13/97	0001	AL	C	0.7	U		0.7 ± 0.40
	pCi/L	0656	01/13/97	0001	AL	D	0.6	U		0.6 ± 0.40
	pCi/L	0657	01/12/97	0001	DC	O	0.3	U		0.3 ± 0.20
	pCi/L	0659	01/13/97	0001	SR	D	1.4		J	0.7 ± 0.50
	pCi/L	0659	01/13/97	0002	SR	D	1.3			1.3 ± 0.80
	pCi/L	0660	01/13/97	0001	SR	D	0.4	U J		0.4 ± 0.30
	pCi/L	0662	01/12/97	0001	AL	D	1.0	U		1 ± 0.60
	pCi/L	0664	01/14/97	0001	DC	D	0.7	U J		0.7 ± 0.50
	pCi/L	0669	01/13/97	0001	AL	D	0.4	U J		0.4 ± 0.20
Redox Potential	mV	0601	01/12/97	N001	SR	U	145			- -
	mV	0602	01/12/97	N001	AL	N	132			- -
	mV	0605	01/12/97	N001	AL	D	1			- -
	mV	0606	01/13/97	N001	AL	D	197			- -
	mV	0612	01/12/97	N001	DC	N	127			- -
	mV	0613	01/13/97	N001	DC	N	140			- -
	mV	0614	01/13/97	N001	SR	D	153			- -
	mV	0615	01/12/97	N001	SR	C	130			- -
	mV	0619	01/15/97	N001	DC	O	112			- -
	mV	0653	01/14/97	N001	AL	D	35			- -
	mV	0654	01/13/97	N001	AL	C	-85			- -

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:57 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Redox Potential	mV	0656	01/13/97	N001	AL	D	154		-	-
	mV	0657	01/12/97	N001	DC	O	124		-	-
	mV	0659	01/13/97	N001	SR	D	-65		-	-
	mV	0660	01/13/97	N001	SR	D	-252		-	-
	mV	0662	01/12/97	N001	AL	D	124		-	-
	mV	0664	01/14/97	N001	DC	D	-212		-	-
Selenium	mg/L	0601	01/12/97	0001	SR	U	0.0026	B	-	-
	mg/L	0602	01/12/97	0001	AL	N	0.0026	B	-	-
	mg/L	0605	01/12/97	0001	AL	D	0.00020	U	0.0002	-
	mg/L	0605	01/12/97	0002	AL	D	0.00020	B	-	-
	mg/L	0606	01/13/97	0001	AL	D	0.00088	B	-	-
	mg/L	0612	01/12/97	0001	DC	N	0.0016	B	-	-
	mg/L	0613	01/13/97	N001	DC	N	0.0016	B	-	-
	mg/L	0614	01/13/97	0001	SR	D	0.0114		-	-
	mg/L	0615	01/12/97	0001	SR	C	0.00033	B	-	-
	mg/L	0616	01/13/97	N001	AL	N	0.00094	B	-	-
	mg/L	0619	01/15/97	0001	DC	O	0.0024	B	-	-
	mg/L	0653	01/14/97	0001	AL	D	0.0014	B	-	-
	mg/L	0654	01/13/97	0001	AL	C	0.00020	U	0.0002	-
	mg/L	0656	01/13/97	0001	AL	D	0.0014	B	-	-
	mg/L	0657	01/12/97	0001	DC	O	0.0038	B	-	-
	mg/L	0659	01/13/97	0001	SR	D	0.00020	U	0.0002	-
	mg/L	0659	01/13/97	0002	SR	D	0.00020	U	0.0002	-
	mg/L	0660	01/13/97	0001	SR	D	0.00020	U	0.0002	-
	mg/L	0662	01/12/97	0001	AL	D	0.0074		-	-
	mg/L	0664	01/14/97	0001	DC	D	0.00020	U	0.0002	-
mg/L	0669	01/13/97	0001	AL	D	0.0057		-	-	

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:58 P

PARAMETER	UNITS	LOCATION ID	SAMPLE:		ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS:		DETECTION LIMIT	UN-CERTAINTY
			DATE	ID				LAB	DATA QA		
Sodium	mg/L	0601	01/12/97	0001	SR	U	100.000			-	-
	mg/L	0602	01/12/97	0001	AL	N	108.000			-	-
	mg/L	0605	01/12/97	0001	AL	D	707.000			-	-
	mg/L	0605	01/12/97	0002	AL	D	697.000			-	-
	mg/L	0606	01/13/97	0001	AL	D	96.000			-	-
	mg/L	0612	01/12/97	0001	DC	N	7.490			-	-
	mg/L	0613	01/13/97	N001	DC	N	54.100			-	-
	mg/L	0614	01/13/97	0001	SR	D	38.500			-	-
	mg/L	0615	01/12/97	0001	SR	C	89.900			-	-
	mg/L	0616	01/13/97	N001	AL	N	65.100			-	-
	mg/L	0619	01/15/97	0001	DC	O	20.600			-	-
	mg/L	0653	01/14/97	0001	AL	D	274.000			-	-
	mg/L	0654	01/13/97	0001	AL	C	27.000			-	-
	mg/L	0656	01/13/97	0001	AL	D	108.000			-	-
	mg/L	0657	01/12/97	0001	DC	O	13.300			-	-
	mg/L	0659	01/13/97	0001	SR	D	84.100			-	-
	mg/L	0659	01/13/97	0002	SR	D	83.700			-	-
	mg/L	0660	01/13/97	0001	SR	D	114.000			-	-
	mg/L	0662	01/12/97	0001	AL	D	32.500			-	-
	mg/L	0664	01/14/97	0001	DC	D	74.600			-	-
mg/L	0669	01/13/97	0001	AL	D	42.900			-	-	
Strontium	mg/L	0601	01/12/97	0001	SR	U	0.279			-	-
	mg/L	0602	01/12/97	0001	AL	N	0.294			-	-
	mg/L	0605	01/12/97	0001	AL	D	2.210			-	-
	mg/L	0605	01/12/97	0002	AL	D	2.190			-	-
	mg/L	0606	01/13/97	0001	AL	D	1.860			-	-
	mg/L	0612	01/12/97	0001	DC	N	0.255			-	-

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:58 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Strontium	mg/L	0613	01/13/97	N001	DC	N	0.376		-	-
	mg/L	0614	01/13/97	0001	SR	D	0.641		-	-
	mg/L	0615	01/12/97	0001	SR	C	0.622		-	-
	mg/L	0616	01/13/97	N001	AL	N	0.438		-	-
	mg/L	0619	01/15/97	0001	DC	O	0.331		-	-
	mg/L	0653	01/14/97	0001	AL	D	2.160		-	-
	mg/L	0654	01/13/97	0001	AL	C	0.367		-	-
	mg/L	0656	01/13/97	0001	AL	D	0.519		-	-
	mg/L	0657	01/12/97	0001	DC	O	0.459		-	-
	mg/L	0659	01/13/97	0001	SR	D	0.266		-	-
	mg/L	0659	01/13/97	0002	SR	D	0.265		-	-
	mg/L	0660	01/13/97	0001	SR	D	0.0407		-	-
	mg/L	0662	01/12/97	0001	AL	D	1.210		-	-
	mg/L	0664	01/14/97	0001	DC	D	0.570		-	-
	mg/L	0669	01/13/97	0001	AL	D	0.518		-	-
Temperature	C	0601	01/12/97	N001	SR	U	13.2		-	-
	C	0602	01/12/97	N001	AL	N	15.4		-	-
	C	0605	01/12/97	N001	AL	D	14.9		-	-
	C	0606	01/13/97	N001	AL	D	14.9		-	-
	C	0612	01/12/97	N001	DC	N	18.6		-	-
	C	0613	01/13/97	N001	DC	N	15.3		-	-
	C	0614	01/13/97	N001	SR	D	15.6		-	-
	C	0615	01/12/97	N001	SR	C	10.9		-	-
	C	0619	01/15/97	N001	DC	O	16.9		-	-
	C	0653	01/14/97	N001	AL	D	16.3		-	-
	C	0654	01/13/97	N001	AL	C	14.8		-	-
	C	0656	01/13/97	N001	AL	D	15.8		-	-

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:58 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Temperature	C	0657	01/12/97	N001	DC	O	16.4		-	-
	C	0659	01/13/97	N001	SR	D	16.1		-	-
	C	0660	01/13/97	N001	SR	D	16.6		-	-
	C	0662	01/12/97	N001	AL	D	14.8		-	-
	C	0664	01/14/97	N001	DC	D	17.4		-	-
	C	0669	01/13/97	N001	AL	D	15.5		-	-
Total Dissolved Solids	mg/L	0601	01/12/97	0001	SR	U	398		-	-
	mg/L	0602	01/12/97	0001	AL	N	425		-	-
	mg/L	0605	01/12/97	0001	AL	D	3310		-	-
	mg/L	0605	01/12/97	0002	AL	D	3350		-	-
	mg/L	0606	01/13/97	0001	AL	D	2140		-	-
	mg/L	0612	01/12/97	0001	DC	N	155		-	-
	mg/L	0613	01/13/97	N001	DC	N	287		-	-
	mg/L	0614	01/13/97	0001	SR	D	635		-	-
	mg/L	0615	01/12/97	0001	SR	C	313		-	-
	mg/L	0616	01/13/97	N001	AL	N	362		-	-
	mg/L	0619	01/15/97	0001	DC	O	213		-	-
	mg/L	0653	01/14/97	0001	AL	D	2930		-	-
	mg/L	0654	01/13/97	0001	AL	C	227		-	-
	mg/L	0656	01/13/97	0001	AL	D	853		-	-
	mg/L	0657	01/12/97	0001	DC	O	1800		-	-
	mg/L	0659	01/13/97	0001	SR	D	420		-	-
	mg/L	0659	01/13/97	0002	SR	D	413		-	-
	mg/L	0660	01/13/97	0001	SR	D	308		-	-
	mg/L	0662	01/12/97	0001	AL	D	1320		-	-
	mg/L	0664	01/14/97	0001	DC	D	287		-	-
mg/L	0669	01/13/97	0001	AL	D	567		-	-	

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:58 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Uranium	mg/L	0601	01/12/97	0001	SR	U	0.0037		-	-
	mg/L	0602	01/12/97	0001	AL	N	0.0040		-	-
	mg/L	0605	01/12/97	0001	AL	D	0.0109		-	-
	mg/L	0605	01/12/97	0002	AL	D	0.0107		-	-
	mg/L	0606	01/13/97	0001	AL	D	0.0106		-	-
	mg/L	0612	01/12/97	0001	DC	N	0.0070		-	-
	mg/L	0613	01/13/97	N001	DC	N	0.0040		-	-
	mg/L	0614	01/13/97	0001	SR	D	0.0340		-	-
	mg/L	0615	01/12/97	0001	SR	C	0.0010	U	0.001	-
	mg/L	0616	01/13/97	N001	AL	N	0.0045		-	-
	mg/L	0619	01/15/97	0001	DC	O	0.0487		-	-
	mg/L	0653	01/14/97	0001	AL	D	0.0116		-	-
	mg/L	0654	01/13/97	0001	AL	C	0.0010	U	0.001	-
	mg/L	0656	01/13/97	0001	AL	D	0.0067		-	-
	mg/L	0657	01/12/97	0001	DC	O	0.0604		-	-
	mg/L	0659	01/13/97	0001	SR	D	0.0015		-	-
	mg/L	0659	01/13/97	0002	SR	D	0.0015		-	-
	mg/L	0660	01/13/97	0001	SR	D	0.0010	U	0.001	-
	mg/L	0662	01/12/97	0001	AL	D	0.0222		-	-
	mg/L	0664	01/14/97	0001	DC	D	0.0108		-	-
mg/L	0669	01/13/97	0001	AL	D	0.0104		-	-	
Vanadium	mg/L	0601	01/12/97	0001	SR	U	0.0040	U	0.004	-
	mg/L	0602	01/12/97	0001	AL	N	0.0040	U	0.004	-
	mg/L	0605	01/12/97	0001	AL	D	0.0040	U	0.004	-
	mg/L	0605	01/12/97	0002	AL	D	0.0040	U	0.004	-
	mg/L	0606	01/13/97	0001	AL	D	0.0040	U	0.004	-
	mg/L	0612	01/12/97	0001	DC	N	0.310		-	-

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:59 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Vanadium	mg/L	0613	01/13/97	N001	DC	N	0.0044	U	0.0044	-
	mg/L	0614	01/13/97	0001	SR	D	0.0040	U	0.004	-
	mg/L	0615	01/12/97	0001	SR	C	0.0040	U	0.004	-
	mg/L	0616	01/13/97	N001	AL	N	0.0056	B	-	-
	mg/L	0619	01/15/97	0001	DC	O	0.0215		-	-
	mg/L	0653	01/14/97	0001	AL	D	0.0058	B	-	-
	mg/L	0654	01/13/97	0001	AL	C	0.0040	U	0.004	-
	mg/L	0656	01/13/97	0001	AL	D	0.0040	U	0.004	-
	mg/L	0657	01/12/97	0001	DC	O	0.0562		-	-
	mg/L	0659	01/13/97	0001	SR	D	0.0040	U	0.004	-
	mg/L	0659	01/13/97	0002	SR	D	0.0040	U	0.004	-
	mg/L	0660	01/13/97	0001	SR	D	0.0040	U	0.004	-
	mg/L	0662	01/12/97	0001	AL	D	0.0203		-	-
	mg/L	0664	01/14/97	0001	DC	D	0.0040	U	0.004	-
	mg/L	0669	01/13/97	0001	AL	D	0.0517		-	-

GROUND WATER QUALITY DATA BY PARAMETER (USEE200) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:35:59 P

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
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RECORDS: SELECTED FROM USEE200 WHERE site_code='MON01' AND (NOT (data_validation_qualifiers LIKE "R" OR data_validation_qualifiers LIKE "X") OR IsNull(data_validation_qualifiers)) AND DATE_SAMPLED between #1/1/97# and #2/1/97#

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.

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.
- G Possible grout contamination, pH > 9.
- X Location is undefined.

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

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:36:19 PM

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN- CERTAINTY
Alkalinity as CaCO3	mg/L	0620	01/12/97	N001	262		-	-
	mg/L	0623	01/11/97	N001	197		-	-
Ammonia as NH4	mg/L	0620	01/12/97	N001	0.0660	B	-	-
	mg/L	0620	01/12/97	N002	0.0782	B	-	-
	mg/L	0621	01/11/97	N001	0.0369	B	-	-
	mg/L	0622	01/11/97	N001	0.0466	B	-	-
	mg/L	0623	01/11/97	0001	0.0126	B	-	-
	mg/L	0624	01/13/97	0001	0.0369	B	-	-
	mg/L	0631	01/14/97	0001	1.280		-	-
Cadmium	mg/L	0620	01/12/97	N001	0.0011	U	0.0011	-
	mg/L	0620	01/12/97	N002	0.0011	U	0.0011	-
	mg/L	0621	01/11/97	N001	0.0011	U	0.0011	-
	mg/L	0622	01/11/97	N001	0.0011	U	0.0011	-
	mg/L	0623	01/11/97	0001	0.0010	U	0.001	-
	mg/L	0624	01/13/97	0001	0.0010	U	0.001	-
	mg/L	0631	01/14/97	0001	0.0010	U	0.001	-
Calcium	mg/L	0620	01/12/97	N001	44.100		-	-
	mg/L	0620	01/12/97	N002	43.600		-	-
	mg/L	0621	01/11/97	N001	36.900		-	-
	mg/L	0622	01/11/97	N001	33.400		-	-
	mg/L	0623	01/11/97	0001	32.000		-	-
	mg/L	0624	01/13/97	0001	42.900		-	-
	mg/L	0631	01/14/97	0001	12.800		-	-
Chloride	mg/L	0620	01/12/97	N001	9.090		-	-
	mg/L	0620	01/12/97	N002	8.910		-	-
	mg/L	0621	01/11/97	N001	30.800		-	-
	mg/L	0622	01/11/97	N001	37.400		-	-
	mg/L	0623	01/11/97	0001	9.540		-	-
	mg/L	0624	01/13/97	0001	33.500		-	-
	mg/L	0631	01/14/97	0001	195.000		-	-
Gross Alpha	pCi/L	0620	01/12/97	N001	9.32		4.07	± 3.84
	pCi/L	0620	01/12/97	N002	14.43		6.14	± 5.15
	pCi/L	0621	01/11/97	N001	21.34		8.75	± 8.46
	pCi/L	0622	01/11/97	N001	35.51		8.87	± 10.5
	pCi/L	0623	01/11/97	0001	3.54	U	3.54	± 2.09
	pCi/L	0624	01/13/97	0001	20.28		10.59	± 9.36

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:36:19 PM

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Gross Alpha	pCi/L	0631	01/14/97	0001	29.64	U	29.64	± 15.1
Gross Beta	pCi/L	0620	01/12/97	N001	4.29	U	4.29	± 2.66
	pCi/L	0620	01/12/97	N002	9.12		5.26	± 3.56
	pCi/L	0621	01/11/97	N001	21.99		9.98	± 6.84
	pCi/L	0622	01/11/97	N001	30.27		9.36	± 6.86
	pCi/L	0623	01/11/97	0001	3.60	U	3.6	± 2.20
	pCi/L	0624	01/13/97	0001	23.65		12.41	± 8.32
	pCi/L	0631	01/14/97	0001	32.73	U	32.73	± 20.3
Lead-210	pCi/L	0620	01/12/97	N001	1.07		0.98	± 0.59
	pCi/L	0620	01/12/97	N002	0.97		0.84	± 0.51
	pCi/L	0621	01/11/97	N001	0.94	U	0.94	± 0.56
	pCi/L	0622	01/11/97	N001	0.98	U	0.98	± 0.59
	pCi/L	0623	01/11/97	0001	0.92	U	0.92	± 0.55
	pCi/L	0624	01/13/97	0001	1.00	U	1	± 0.59
	pCi/L	0631	01/14/97	0001	1.13	U	1.13	± 0.68
Magnesium	mg/L	0620	01/12/97	N001	29.900		-	-
	mg/L	0620	01/12/97	N002	29.000		-	-
	mg/L	0621	01/11/97	N001	60.100		-	-
	mg/L	0622	01/11/97	N001	58.900		-	-
	mg/L	0623	01/11/97	0001	22.500		-	-
	mg/L	0624	01/13/97	0001	68.200		-	-
	mg/L	0631	01/14/97	0001	50.700		-	-
Nitrate	mg/L	0620	01/12/97	N001	0.655	B	-	-
	mg/L	0620	01/12/97	N002	0.667	B	-	-
	mg/L	0621	01/11/97	N001	0.0735	B	-	-
	mg/L	0622	01/11/97	N001	0.0745	B	-	-
	mg/L	0623	01/11/97	0001	0.0744	B	-	-
	mg/L	0624	01/13/97	0001	0.0624	B	-	-
	mg/L	0631	01/14/97	0001	0.352	B	-	-
pH	s.u.	0620	01/12/97	N001	8.18		-	-
	s.u.	0621	01/11/97	N001	9.05		-	-
	s.u.	0622	01/11/97	N001	9.36		-	-
	s.u.	0623	01/11/97	N001	8.19		-	-
	s.u.	0624	01/13/97	N001	8.77		-	-
	s.u.	0631	01/14/97	N001	9.32		-	-
Potassium	mg/L	0620	01/12/97	N001	1.350		-	-

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:36:20 PM

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Potassium	mg/L	0620	01/12/97	N002	1.330		-	-
	mg/L	0621	01/11/97	N001	20.300		-	-
	mg/L	0622	01/11/97	N001	26.300		-	-
	mg/L	0623	01/11/97	0001	3.750		-	-
	mg/L	0624	01/13/97	0001	24.100		-	-
	mg/L	0631	01/14/97	0001	27.700		-	-
Radium-226	pCi/L	0620	01/12/97	N001	0.37	U	0.13	± 0.28
	pCi/L	0620	01/12/97	N002	0.36		0.02	± 0.10
	pCi/L	0621	01/11/97	N001	0.25		0.02	± 0.09
	pCi/L	0622	01/11/97	N001	0.20		0.02	± 0.08
	pCi/L	0623	01/11/97	0001	0.07	U	0.02	± 0.05
	pCi/L	0624	01/13/97	0001	1.39		0.29	± 0.74
	pCi/L	0631	01/14/97	0001	1.55		0.17	± 0.72
Radium-228	pCi/L	0620	01/12/97	N001	0.4	U	0.4	± 0.20
	pCi/L	0620	01/12/97	N002	0.4	U	0.4	± 0.20
	pCi/L	0621	01/11/97	N001	0.8	U	0.8	± 0.50
	pCi/L	0622	01/11/97	N001	0.9	U	0.9	± 0.50
	pCi/L	0623	01/11/97	0001	0.7	U	0.7	± 0.40
	pCi/L	0624	01/13/97	0001	0.4	U	0.4	± 0.20
	pCi/L	0631	01/14/97	0001	0.7	U	0.7	± 0.40
Redox Potential	mV	0620	01/12/97	N001	227		-	-
	mV	0624	01/13/97	N001	216		-	-
	mV	0631	01/14/97	N001	198		-	-
Selenium	mg/L	0620	01/12/97	N001	0.0016	B	-	-
	mg/L	0620	01/12/97	N002	0.0016	B	-	-
	mg/L	0621	01/11/97	N001	0.0002	U	0.00022	-
	mg/L	0622	01/11/97	N001	0.0002	B	-	-
	mg/L	0623	01/11/97	0001	0.0002	U	0.0002	-
	mg/L	0624	01/13/97	0001	0.0002	U	0.0002	-
	mg/L	0631	01/14/97	0001	0.0002	B	-	-
Sodium	mg/L	0620	01/12/97	N001	29.600		-	-
	mg/L	0620	01/12/97	N002	29.300		-	-
	mg/L	0621	01/11/97	N001	132.000		-	-
	mg/L	0622	01/11/97	N001	185.000		-	-
	mg/L	0623	01/11/97	0001	39.200		-	-
	mg/L	0624	01/13/97	0001	143.000		-	-

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:36:20 PM

PARAMETER	UNITS	LOCATION ID	SAMPLE:		RESULT	QUALIFIERS:		DETECTION LIMIT	UN- CERTAINTY
			DATE	ID		LAB	DATA QA		
Sodium	mg/L	0631	01/14/97	0001	917.000			-	-
Strontium	mg/L	0620	01/12/97	N001	0.575			-	-
	mg/L	0620	01/12/97	N002	0.573			-	-
	mg/L	0621	01/11/97	N001	0.696			-	-
	mg/L	0622	01/11/97	N001	1.030			-	-
	mg/L	0623	01/11/97	0001	0.407			-	-
	mg/L	0624	01/13/97	0001	0.851			-	-
	mg/L	0631	01/14/97	0001	0.380			-	-
Temperature	C	0620	01/12/97	N001	3.6			-	-
	C	0621	01/11/97	N001	5.4			-	-
	C	0622	01/11/97	N001	6.7			-	-
	C	0623	01/11/97	N001	5.8			-	-
	C	0624	01/13/97	N001	4.2			-	-
	C	0631	01/14/97	N001	4.6			-	-
Total Dissolved Solids	mg/L	0620	01/12/97	N001	290			-	-
	mg/L	0620	01/12/97	N002	275			-	-
	mg/L	0621	01/11/97	N001	673			-	-
	mg/L	0622	01/11/97	N001	613			-	-
	mg/L	0623	01/11/97	0001	255			-	-
	mg/L	0624	01/13/97	0001	830			-	-
	mg/L	0631	01/14/97	0001	2230			-	-
Uranium	mg/L	0620	01/12/97	N001	0.0252			-	-
	mg/L	0620	01/12/97	N002	0.0238			-	-
	mg/L	0621	01/11/97	N001	0.0572			-	-
	mg/L	0622	01/11/97	N001	0.0647			-	-
	mg/L	0623	01/11/97	0001	0.0063			-	-
	mg/L	0624	01/13/97	0001	0.0546			-	-
	mg/L	0631	01/14/97	0001	0.0274			-	-
Vanadium	mg/L	0620	01/12/97	N001	0.0052 B			-	-
	mg/L	0620	01/12/97	N002	0.0044 U			0.0044	-
	mg/L	0621	01/11/97	N001	0.0044 U			0.0044	-
	mg/L	0622	01/11/97	N001	0.0102 B			-	-
	mg/L	0623	01/11/97	0001	0.0040 U			0.004	-
	mg/L	0624	01/13/97	0001	0.0042 B			-	-
	mg/L	0631	01/14/97	0001	0.0175			-	-

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE MON01, MONUMENT VALLEY
 REPORT DATE: 5/5/97 3:36:20 PM

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
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RECORDS: SELECTED FROM USEE800 WHERE site_code='MON01' AND (NOT (data_validation_qualifiers LIKE '*R*' OR data_validation_qualifiers LIKE '*X*') OR IsNull(data_validation_qualifiers)) AND DATE_SAMPLED between #1/1/97# and #2/1/97#

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.

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. | | |

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

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Monument Valley QC Sample Analyses

ANALYTE	LOCATION CODE	DATE SAMPLED	SAMPLE ID	UNIT OF MEASURE	RESULT	LAB QUALIFIERS	DETECTION LIMIT	UNCERTAINTY
Ammonia as NH4	0999	15-Jan-97	0001	mg/L	0.0102	B		
Ammonia as NH4	0999	12-Jan-97	0002	mg/L	0.0102	B		
Cadmium	0999	15-Jan-97	0001	mg/L	0.001	U	0.001	
Cadmium	0999	12-Jan-97	0002	mg/L	0.001	U	0.001	
Calcium	0999	15-Jan-97	0001	mg/L	0.0782	B		
Calcium	0999	12-Jan-97	0002	mg/L	0.0454	B		
Chloride	0999	15-Jan-97	0001	mg/L	0.0188	B		
Chloride	0999	12-Jan-97	0002	mg/L	0.0182	B		
Gross Alpha	0999	15-Jan-97	0001	pCi/L	2.46	U	2.46	1.17
Gross Alpha	0999	12-Jan-97	0002	pCi/L	1.48	U	1.48	0.73
Gross Beta	0999	15-Jan-97	0001	pCi/L	3.61	U	3.61	2.08
Gross Beta	0999	12-Jan-97	0002	pCi/L	2.87	U	2.87	1.6
Lead-210	0999	15-Jan-97	0001	pCi/L	0.82	U	0.82	0.49
Lead-210	0999	12-Jan-97	0002	pCi/L	1.07	U	0.95	0.57
Magnesium	0999	15-Jan-97	0001	mg/L	0.069	U	0.069	
Magnesium	0999	12-Jan-97	0002	mg/L	0.069	U	0.069	
Nitrate	0999	15-Jan-97	0001	mg/L	0.116	B		
Nitrate	0999	12-Jan-97	0002	mg/L	0.107	B		
Potassium	0999	15-Jan-97	0001	mg/L	0.02	B		
Potassium	0999	12-Jan-97	0002	mg/L	0.019	U	0.019	
Radium-226	0999	15-Jan-97	0001	pCi/L	0.01		0.01	0.02
Radium-226	0999	12-Jan-97	0002	pCi/L	0.27	U	0.14	0.25
Radium-228	0999	15-Jan-97	0001	pCi/L	0.6	U	0.6	0.3
Radium-228	0999	12-Jan-97	0002	pCi/L	0.8	U	0.8	0.5
Selenium	0999	15-Jan-97	0001	mg/L	0.0002	U	0.0002	
Selenium	0999	12-Jan-97	0002	mg/L	0.0002	U	0.0002	
Sodium	0999	15-Jan-97	0001	mg/L	0.0516	B		
Sodium	0999	12-Jan-97	0002	mg/L	0.242	B		
Strontium	0999	15-Jan-97	0001	mg/L	0.001	U	0.001	
Strontium	0999	12-Jan-97	0002	mg/L	0.001	U	0.001	
Total Dissolved Solids	0999	15-Jan-97	0001	mg/L	1	U	1	
Total Dissolved Solids	0999	12-Jan-97	0002	mg/L	1	U	1	
Uranium	0999	15-Jan-97	0001	mg/L	0.001	U	0.001	
Uranium	0999	12-Jan-97	0002	mg/L	0.001	U	0.001	
Vanadium	0999	15-Jan-97	0001	mg/L	0.004	U	0.004	
Vanadium	0999	12-Jan-97	0002	mg/L	0.004	U	0.004	

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WATER LEVELS

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STATIC GROUND WATER LEVELS (USEE700) FOR SITE MON01, MONUMENT VALLE
 REPORT DATE: 5/2/97 2:02:21 PM

LOCATION CODE	FLOW CODE	TOP OF CASING ELEVATION (FT NGVD)	MEASUREMENT		DEPTH FROM TOP OF CASING (FT)	GROUND WATER ELEVATION (FT NGVD)
			DATE	TIME		
0400	N	4869.98	01/14/97		1.93	4868.05
0401	N	4869.98	01/14/97		1.91	4868.07
0402	N	4840.19	01/14/97		4.14	4836.05
0403	N	4836.23	01/14/97		1.30	4834.93
0404	N	4837.77	01/14/97		2.84	4834.93
0405	N	4836.25	01/14/97		0.49	4835.76
0407	N	4820.14	01/14/97		5.86	4814.28
0408	N	4823.56	01/14/97		0.00	4823.56
0409	N	4821.65	01/14/97		0.00	4821.65
0410	N	4823.56	01/14/97		3.24	4820.32
0411	N	4821.46	01/14/97		0.88	4820.58
0413	N	4785.08	01/14/97		3.70	4781.38
0414	N	4782.33	01/14/97		2.23	4780.10
0415	N	4784.07	01/14/97		2.60	4781.47
0416	N	4785.46	01/14/97		3.86	4781.60
0417	N	4782.26	01/14/97		0.58	4781.68
0601	U	4884.58	01/12/97		13.84	4870.74
0602	N	4864.32	01/12/97		8.76	4855.56
0603	C	4849.47	01/14/97		10.45	4839.02
0604	C	4840.42	01/14/97		8.17	4832.25
0605	D	4835.14	01/12/97		9.56	4825.58
0606	D	4864.79	01/14/97		35.33	4829.46
0607	D	4871.30	01/14/97			-
0609	O	4880.33	01/14/97			-
0610	N	4863.03	01/14/97			-
0611	N	4850.22	01/14/97		10.79	4839.43
0612	N	5007.79	01/12/97		161.96	4845.83
0613	N	4864.03	01/13/97		0.00	4864.03
0614	D	4857.07	01/13/97		49.95	4807.12

STATIC GROUND WATER LEVELS (USEE700) FOR SITE MON01, MONUMENT VALLE
 REPORT DATE: 5/2/97 2:02:22 PM

LOCATION CODE	FLOW CODE	TOP OF CASING ELEVATION (FT NGVD)	MEASUREMENT		DEPTH FROM TOP OF CASING (FT)	GROUND WATER ELEVATION (FT NGVD)
			DATE	TIME		
0615	C	4849.34	01/14/97		0.00	4849.34
0618	O	4924.81	01/14/97		93.84	4830.97
0619	O	4888.82	01/14/97		58.59	4830.23
0625	C	4841.62	01/14/97		0.00	4841.62
0650	D	4794.56	01/14/97		19.30	4775.26
0651	D	4788.14	01/14/97		7.95	4780.19
0653	D	4837.28	01/14/97		35.08	4802.20
0654	C	4824.46	01/13/97		1.19	4823.27
0655	D	4861.96	01/14/97		39.39	4822.57
0656	D	4856.30	01/14/97		35.80	4820.50
0657	O	4880.18	01/12/97		51.80	4828.38
0658	N	4879.59	01/14/97		9.32	4870.27
0659	D	4865.41	01/13/97		35.56	4829.85
0660	D	4836.60	01/13/97		31.28	4805.32
0662	D	4881.10	01/12/97		52.76	4828.34
0664	D	4837.54	01/14/97		29.98	4807.56
0668	D	4867.89	01/14/97		42.02	4825.87
0669	D	4867.39	01/13/97		49.73	4817.66

RECORDS: SELECTED FROM USEE700 WHERE site_code='MON01' AND LOG_DATE between #1/1/97# and #2/28/97#

FLOW CODES:

C CROSS GRADIENT D DOWN GRADIENT N UNKNOWN
 O ON-SITE U UPGRADIENT

TRIP REPORT/WORK ORDER

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CONTRACT NO.: DE-AC13-96GJ87335
TASK ORDER NO.: 96-05.05.10
CONTROL NO.: NA

MEMO TO: Sam Marutzky
FROM: David Miller
DATE: January 20, 1997
SUBJECT: UMTRA Ground Water Trip Report

Site: Monument Valley, Az.

Dates of Sampling Event: January 12, 1997 to January 15 1997.

Team Members: David Miller, Bruce Calder, Robert Ziock, and Gary Stoores

Number of Locations Sampled: 19 wells (including 2 private wells) and 6 surface water locations. Samples were not filtered at private wells 613 and 616 and surface locations 620, 621, and 622. Samples from all other locations were filtered.

Locations Not Sampled/Reason: Well 640/ private well with broken pump that did not allow access to the well. Surface location 632/ dry. Surface locations 626 and 627/ frozen.

Location Specific Information: Well 606 was purged dry prior to sampling.

The first 5 gallons of purge water from Well 605 was very black and had a strong smell.

Well 619 is not a monitor well and has a 12 steel casing. The well riser is 0.26 feet below the top of the surface casing. The purge water contained small bits of rust. Because of the large amount of water purged from the well purging was not completed on the same day it started.

The surface casing a well 662 is over 6 feet high and needs to be cut down.

Field Variance: Turbidity stabilization of 5 NTUs was not achieved at Wells 662 and 601. At Well 601 the water contained grasses and roots during the entire purging process. At well 662 the water turbidity showed no sign of decreasing.

At surface locations 621 and 622 the Metals and Cations samples were collected in a 1 liter bottle because the crew was out of 500 ml bottles.

Wells 613 and 615 are flowing wells and were only purged until parameters stabilized.

The pump at private well 616 was broken, and the sample was bailed from the well vault/cistern. Because the well vault/cistern is used as a water supply by the owner, we did not want to introduce any instruments or probes that may have contaminants, acids, etc. on them into the water. As a result, parameters were not measured at this location.

The alkalinity measurement was not recorded at well 615.

Quality Control Sample Cross Reference: A duplicate field alkalinity measurement was collected at Well 613. The Following are the false identifications assigned to the quality control samples submitted to the GJO analytical laboratory:

False ID	True ID	Sample Type	Associated Matrix	Ticket Number
500	605	Duplicate	Ground water	NDC-208
901	Equipment Blank	Equipment Blank	Surface Water	NDC-413
501	Equipment Blank	Equipment Blank	Ground water	NDC-209
900	620	Duplicate	Surface water	NDC-405

Requisition Number Assigned: 15251

Water Level Measurements: Water levels were completed on all wells at this site with the following exceptions: Wells 652, 412, 661, 633, and 406. Water levels were not collected at these locations because the wells could not be located. The roads and landmarks on the maps were not correct and there was approximately one foot of snow on the ground, which prevented the crew from being able to see where the roads were actually located.

Water levels were also collected to the top of the fence posts in the pond on the east side of the site.

Well 617 has a hand pump and the water level could not be measured.

Well Inspection Summary: Well inspections were completed for all of the wells where water levels were collected. The majority of wells do not have guard posts and many do not have concrete surface pads.

Several of the wells are flush-mount wells in the bottom of the stream bed. These wells are only marked on the PVC cap, and not on the outside of the surface casing. Two of these wells, 408 and 409 are not flowing wells, but the well and surface casing were filled with water.

Sam Marutzky
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December 30, 1996

Wells 651 and 663 have dedicated bladder pumps.

Well 669 did not have a riser cap.

The riser cap is present, but broken on well 402.

Well 625 is a flowing well without a riser cap or lock.

Wells 607, 609, and 610 are dry. Well 609 does not have a lock, and has a total depth of 15.42 feet. Because we had to replace several locks that were not working, we ran out of locks and did not put one on well 609 at this time.

Equipment: The turbidity meter and Eh meter were not working at well 669 (dead batteries) and turbidity and Eh measurements were not collected at this well.

Regulatory: Navajo Nation representative Raymond Charlie was present on site during the majority of the trip.

Site Issues: Surface locations 621, 622, and 623 were marked incorrectly on the maps. These location were staked and marked where they have traditionally been sampled by Jacobs. The majority of roads and landmarks on the maps are incorrect.

cc:
K. Miller
L. Goodknight
D. Metzler
R. Bowen
K. Karp

December 19, 1996

Technical Manager
U.S. Department of Energy
Grand Junction Office
2597 B $\frac{3}{4}$ Road
Grand Junction, CO 81503
ATTN: Don Metzler

Subject: January 1997 UMTRA Ground Water Sampling at the Monument Valley, AZ,
UMTRA site

Dear Mr. Metzler:

Attached is a map and tables specifying the sampling locations and analytes for the Monument Valley, AZ, UMTRA site. Water quality data will be collected from monitoring wells at this site as part of the routine UMTRA Ground Water Sampling. Sampling is scheduled to begin January 13, 1997. Also attached is the *Addendum to the Sampling and Analysis Plan for the UMTRA Ground Water Project* which describes the procedures for sampling and managing waste.

The following lists show the well locations and surface locations that will be sampled during the sampling event. In addition, the zone of completion is also listed for each well.

Monitoring Wells (filtered)*

601 Sr/Al	614 Sr	654 Al	660 Sr
602 Al	615 Sr	656 Al	662 Al
605 Al	619 Dc	657 Dc	664 Dc
606 Al	653 Al	659 Sr	669 Al
612 Dc			

Private Wells (unfiltered) *

613 Dc	616 Al	640 Nr
--------	--------	--------

* Note: Al = alluvium, Dc = De Chelly member of the Cutler Formation, Sr = Shinarump member of the Chinle Formation, Nr = No recovery of data for classifying

Technical Manager
Page 2
December 19, 1996

Surface Water Locations (unfiltered)

620 621 622

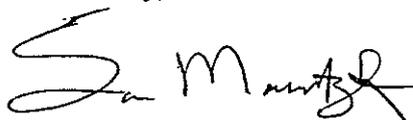
Surface Water Locations (filtered)

623 626 631 632
624 627

One QA/QC sample will be collected for every 20 water samples. Access agreements for the Monument Valley site are currently in review. It is anticipated that all access agreements will be in place prior to the start of fieldwork. Water level information will be collected from all wells at the Monument Valley site and monitor well inspections will be conducted and documented to confirm the status of all existing wells.

If you have any question, please call me at extension 6059 or Dave Miller at extension 6652.

Sincerely,



Sam Marutzky
Project Manager

cc w/o att.: D. Traub
D. Miller

File w/att.: GWMON 1.2

**Sampling Frequencies for Locations at
Monument Valley, Arizona**

Wells	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
<i>Ground Water Project Monitor Wells</i>						
601			X			
602			X			
603				X		
604				X		
605		X				
606		X				
608				X		
610				X		
611				X		
612			X			
614		X				
615			X			
618				X		
619		X				
650				X		
651				X		
652				X		
653		X				
654			X			
656		X				
657		X				
658				X		
659			X			
660			X			
661				X		
662			X			
663				X		
664			X			
668				X		
669		X				
<i>Private Wells</i>						
613			X			
616				X		
640			X			
<i>Surface Water/Sediment Locations</i>						
620				X		SPRING DOWNGRADIENT
621			X			
622			X			
623			X			
624				X		
626				X		
627				X		
631				X		
632				X		

Site	Monument Valley	
	Ground Water	Surface Water
Analyte		
Approx. No. Samples/yr.	34	6
<i>Field Measurements</i>		
Alkalinity	X	X
Dissolved Oxygen		
Redox Potential	X	X
pH	X	X
Specific Conductance	X	X
Turbidity	X	X
Temperature	X	X
<i>Laboratory Measurements</i>		
Aluminum		
Ammonium	X	X
Antimony		
Arsenic		
Barium		
Beryllium		
Bromide		
Cadmium	X	X
Calcium	X	X
Chloride	X	X
Chromium		
Cobalt		
Copper		
Cyanide		
Fluoride		
Gross Beta		
Iron		
Lead		
Lead-210	X	X
Magnesium	X	X
Manganese		
Molybdenum		
Net Gross Alpha	X	X

Site	Monument Valley	
	Ground Water	Surface Water
<i>Laboratory Measurements (Continued)</i>		
Nickel		
Nitrate	X	X
PCBs		
Phosphate		
Polonium-210		
Potassium	X	X
Radium-226	X	X
Radium-228	X	X
Selenium	X	X
Semi VOC		
Silica		
Silver		
Sodium	X	X
Strontium	X	X
Sulfate		
Sulfide		
Thallium		
Thorium-230		
Tin		
Total Dissolved Solids	X	X
Total Organic Carbon		
TPH		
Uranium	X	X
Vanadium	X	X
Zinc		
Total Analytes	17	17

Note: All analyte samples are considered filtered unless stated otherwise.

All private well samples are to be unfiltered. The identity of the private wells are available in the "Sampling Frequencies for Locations" worksheet.

The total number of analytes does not include the field parameters.

All single numbers in the "Approximate No. Samples/yr" category are considered Ground Water Project samples.

* The left number represents Ground Water Project samples and the right number represents Surface or LTSM Project samples.

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