

Data Validation Package

**June 2012
Groundwater Sampling at the
Monument Valley, Arizona,
Processing Site**

November 2012

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Sampling Event Summary

Site: Monument Valley, Arizona, Processing Site

Sampling Period: June 4–6, 2012

Forty-six groundwater samples and one surface water sample were collected at the Monument Valley, Arizona, Processing Site to monitor groundwater contaminants for evaluating the effectiveness of the proposed compliance strategy as specified in the 1999 *Final Site Observational Work Plan for the UMTRA Project Site at Monument Valley, Arizona*. Sampling and analysis were conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PLN/S04351, continually updated). Samples were collected for metals, anions, nitrate + nitrite as N, and ammonia as N at all locations. Samples were also collected for enriched tritium, stable isotopes of hydrogen and oxygen, and uranium isotopes at a select set of wells.

Wells with analyte concentrations that exceeded U.S. Environmental Protection Agency groundwater standards are listed in Table 1.

Table 1. Monument Valley Locations That Exceed Standards

Analyte	Standard ^a (mg/L)	Site Code	Location	Concentration (mg/L)
Nitrate + Nitrite as Nitrogen	10	MON01	0606	260
			0648	87
			0653	51
			0655	190
			0656	15
			0662	20
			0669	14
			0740	14
			0741	100
			0742	110
			0743	15
			0744	140
			0761	31
			0762	100
			0764	42
Uranium	0.044	MON01	0618	0.046
			0657	0.39
			0662	0.1
			0735	0.18
			0743	0.052

^a Standards are listed in 40 CFR 192.02 Table 1 to Subpart A.
mg/L = milligrams per liter.

The Navajo Nation’s proposed cleanup standard for sulfate is 250 milligrams per liter (mg/L). The ratios of sulfate-to-chloride concentrations vary depending on whether the source of the sulfate is related to past millsite activities or if it is from natural sources. Tailings fluids were enriched in nitrate and sulfate but had relatively low chloride concentrations. A sulfate-to-chloride ratio greater than 10 usually is an indication of groundwater contamination resulting from milling activities. The proposed sulfate treatment goal for Monument Valley will incorporate both criteria. The treatment goal will be achieved when the sulfate concentration is less than 250 mg/L *or* the sulfate-to-chloride ratio is less than 10. Table 2 lists sulfate concentrations and sulfate-to-chloride ratios.

Table 2. Sulfate Results

Location	Sulfate Concentration (mg/L)	Sulfate/Chloride Ratio	Treatment Goal Achieved?
0402	18	1	Yes
0602	110	8	Yes
0603	110	8	Yes
0604	110	9	Yes
0605	110	6	Yes
0606	400	14	No
0618	110	22	Yes
0619	29	5	Yes
0623	43	5	Yes
0648	990	34	No
0650	330	18	No
0651	120	9	Yes
0652	65	4	Yes
0653	870	38	No
0655	720	45	No
0656	140	10	Yes
0657	490	53	No
0662	360	21	No
0669	110	13	Yes
0711	120	8	Yes
0715	70	7	Yes
0719	120	8	Yes
0727	84	8	Yes
0733	81	13	Yes
0734	55	10	Yes
0735	180	95	Yes
0738	180	12	Yes
0739	180	11	Yes
0740	1200	30	No
0741	530	31	No
0742	520	31	No
0743	710	44	No
0744	410	27	No
0760	85	9	Yes
0761	430	33	No
0762	1400	23	No
0764	260	26	No
0765	45	3	Yes
0766	420	28	No

Table 2 (continued). Sulfate Results

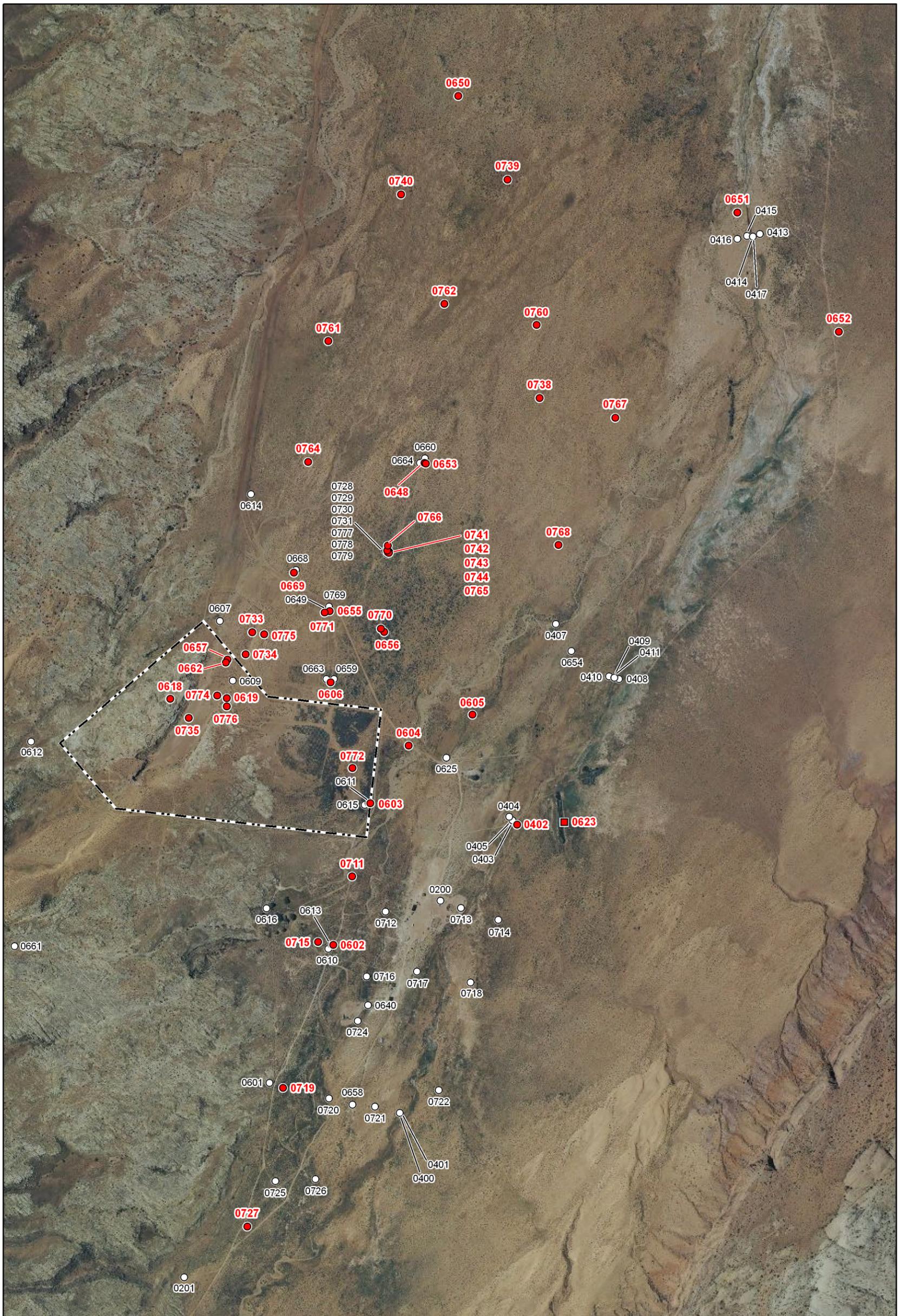
Location	Sulfate Concentration (mg/L)	Sulfate/Chloride Ratio	Treatment Goal Achieved?
0767	32	6	Yes
0768	64	5	Yes
0770	180	13	Yes
0771	1300	68	No
0772	110	8	Yes
0774	36	7	Yes
0775	24	4	Yes
0776	28	5	Yes

Time-concentration plots for ammonia as nitrogen, chloride, nitrate + nitrite as nitrogen, sulfate, uranium, and vanadium are included with the results data. Although the data from this event are generally consistent with the data obtained during the December 2011 sampling event, uranium has been increasing significantly at locations 0618, 0657, and 0743 since 2010 and 2011.

Signature for D. Miller
 David Miller
 Site Lead, S.M. Stoller Corporation

10/31/12
 Date

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LEGEND ● WELL TO BE SAMPLED ■ SURFACE LOCATION TO BE SAMPLED ○ EXISTING WELL - - - SITE BOUNDARY		U.S. DEPARTMENT OF ENERGY <small>GRAND JUNCTION, COLORADO</small>	<small>Work Performed by</small> S.M. Stoller Corporation <small>Under DOE Contract No. DE-AM01-07LM00060</small>
		Planned Sampling Map Monument Valley, AZ, Processing Site June 2012	
		<small>DATE PREPARED:</small> May 2, 2012	<small>FILENAME:</small> S0894900

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Monument Valley, Arizona, Processing Site Sample Locations

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Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	<u>Monument Valley, Arizona</u>	Date(s) of Water Sampling	<u>June 4–6, 2012</u>
Date(s) of Verification	<u>August 30, 2012</u>	Name of Verifier	<u>Gretchen Baer</u>

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures? List other documents, SOPs, instructions.	<u>Yes</u>	<u>Work Order letter dated May 9, 2012.</u>
2. Were the sampling locations specified in the planning documents sampled?	<u>Yes</u>	
3. Was a pre-trip calibration conducted as specified in the above-named documents?	<u>Yes</u>	
4. Was an operational check of the field equipment conducted daily? Did the operational checks meet criteria?	<u>Yes</u> <u>No</u>	<u>A post-trip check for ORP failed slightly low; all associated ORP values have been flagged "J" (estimated).</u>
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	<u>Yes</u>	<u>With one exception; ORP was not recorded at location 0650.</u>
6. Was the category of the well documented?	<u>Yes</u>	
7. Were the following conditions met when purging a Category I well: Was one pump/tubing volume purged prior to sampling?	<u>Yes</u>	
Did the water level stabilize prior to sampling?	<u>Yes</u>	
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	<u>Yes</u>	
Was the flow rate less than 500 mL/min?	<u>Yes</u>	
If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	<u>NA</u>	

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well:		
Was the flow rate less than 500 mL/min?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	Duplicate samples were collected at locations 0619, 0767, 0772.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	NA	Dedicated equipment was used for all samples collected.
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	False IDs 2079, 2251, 2349, 2350, and 2711 were used for the duplicate samples.
Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDCCS) report?	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 (hardcopies) or are dates present for the "Date Signed" fields (FDCCS)?	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 levels were not measured at 0618 (sampled from tap) and 0774 (WL was below top of the pump).

Laboratory Performance Assessment

General Information

Report Number (RIN): 12054584
 Sample Event: June 4–6, 2012
 Site(s): Monument Valley, Arizona
 Laboratory: ALS Laboratory Group, Fort Collins, Colorado
 Work Order No.: 1206133
 Analysis: Metals, Radiochemistry, and Wet Chemistry
 Validator: Gretchen Baer
 Review Date: August 30, 2012

This validation was performed according to the *Environmental Procedures Catalog*, (LMS/PRO/S04325, continually updated) “Standard Practice for Validation of Laboratory Data.” The procedure was applied at Level 3, Data Validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 3.

Table 3. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Ammonia as Nitrogen	WCH-A-005	EPA 350.1	EPA 350.1
Arsenic, Molybdenum, Uranium, Vanadium	LMM-02	SW-846 3005A	SW-846 6010B
Calcium, Iron, Magnesium, Manganese, Potassium, Sodium	LMM-01	SW-846 3005A	SW-846 6020A
Chloride, Sulfate	MIS-A-045	SW-856 9056	SW-856 9056
Nitrite + Nitrate as Nitrogen	WCH-A-022	EPA 353.2	EPA 353.2
Uranium Isotopes	LMR-02	SOP 776, 778	SOP 714

Data Qualifier Summary

Analytical results were qualified as listed in Table 4. Refer to the sections below for an explanation of the data qualifiers applied.

Table 4. Data Qualifier Summary

Sample Number	Location	Analyte	Flag	Reason
1206133-2	0602	Uranium-235	U	Less than the Decision Level Concentration
1206133-3	0603	Uranium-235	U	Less than the Decision Level Concentration
1206133-3	0603	Iron	J	Negative calibration blank
1206133-16	0656	Uranium-235	J	Less than the Determination Limit
1206133-24	0733	Uranium-235	J	Less than the Determination Limit
1206133-34	0760	Uranium-234	J	Less than the Determination Limit
1206133-34	0760	Uranium-238	U	Less than the Decision Level Concentration
1206133-41	0768	Ammonia	J	Matrix spike failure
1206133-44	0772	Iron	J	Negative calibration blank
All	All	Sodium	J	Serial dilution has positive bias

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received 50 water samples on June 8, 2012, accompanied by a Chain of Custody form. Copies of the air bills were included in the receiving documentation. The Chain of Custody was checked to confirm that all of the samples were listed with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The Chain of Custody was complete with no errors or omissions, with one exception. An incorrect bottle set was listed for location 2079, which is a field duplicate. The correct bottle set was collected; the error was limited to the Chain of Custody. The laboratory noted the error and all analyses proceeded as requested.

Preservation and Holding Times

The sample shipment was received intact with the temperatures inside the iced coolers at 3.0 and 3.4 °C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

Detection and Quantitation Limits

The method detection limit (MDL) was reported for all metal and wet chemical analytes as required. The MDL, as defined in 40 CFR 136, is the minimum concentration of an analyte that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. The practical quantitation limit (PQL) for these analytes is the lowest concentration that can be reliably measured, and is defined as 5 times the MDL.

For radiochemical analytes (those measured by radiometric counting) the MDL and PQL are not applicable, and these results are evaluated using the minimum detectable concentration (MDC), Decision Level Concentration (DLC), and Determination Limit (DL). The MDC is a measure of radiochemical method performance and was calculated and reported as specified in *Quality Systems for Analytical Services*. The DLC is the minimum concentration of an analyte that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, and is estimated as 3 times the one-sigma total propagated uncertainty. Results that are greater than the MDC, but less than the DLC are qualified with a “U” flag (not detected). The DL for radiochemical results is the lowest concentration that can be reliably measured, and is defined as 3 times the MDC. Results not previously “U” qualified that are less than the DL are qualified with a “J” flag as estimated values.

The reported MDLs for all metal and wet chemical analytes, and MDCs for radiochemical analytes demonstrate compliance with contractual requirements.

Laboratory Instrument Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for all analytes. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear curve. Compliance requirements for

continuing calibration checks are established to ensure that the instrument continues to be capable of producing acceptable qualitative and quantitative data. All laboratory instrument calibrations were performed correctly in accordance with the cited methods. All calibration and laboratory spike standards were prepared from independent sources.

Method EPA 350.1, Ammonia as Nitrogen

Calibrations were performed using six calibration standards on June 19, 2012. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in nine verification checks. All calibration checks met the acceptance criteria.

Method EPA 353.2, Nitrite + Nitrate as Nitrogen

Calibrations were performed using seven calibration standards on June 15, 2012. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in eight verification checks. All calibration checks met the acceptance criteria.

Method SW-846 6010B, Calcium, Iron, Magnesium, Manganese, Potassium, Sodium

Calibrations were performed on June 15, 2012, using three standards. The correlation coefficient values were greater than 0.995. The absolute values of the intercepts were less than or only slightly above 3 times the MDL, with the exception of the intercepts for calcium, magnesium, potassium, and sodium. These intercepts were less than 3 times the reporting limits and all results were above the reporting limits. Initial and continuing calibration verification checks were made at the required frequency resulting in five verification checks. All calibration checks met the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the PQL and all results were within the acceptance range.

Method SW-846 6020A, Arsenic, Molybdenum, Uranium, Vanadium

Calibrations were performed on June 18, 2012, using four standards. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in nine verification checks. All calibration checks met the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the PQL and all results were within the acceptance range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries associated with requested analytes were stable and within acceptable ranges.

Method SW-846 9056, Chloride, Sulfate

Calibrations were performed using six calibration standards on June 12, 2012. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in nine verification checks. All calibration checks met the acceptance criteria.

Radiochemical Analysis

Alpha Spectrometry

Alpha spectrometry calibrations and instrument backgrounds were performed within a month prior to sample analysis. Daily instrument checks met the acceptance criteria. The tracer recoveries met the acceptance criteria of 30 to 110 percent for all samples with two exceptions. The tracer recoveries for location 0657 and a method blank were below 30 percent. A high concentration of uranium in the field sample resulted in low chemical recovery and the method blank had low recovery because the sample was split during analysis. The tracer area counts were greater than 400 and all results are acceptable without further qualification. The full width at half maximum was reviewed to evaluate the spectral resolution. All internal standard full width at half maximum values were below 100 kiloelectron volts demonstrating acceptable resolution. All internal standard peaks were within 50 kiloelectron volts of the expected position. The regions of interest for analyte peaks were reviewed. All regions of interest were satisfactory and all integrations were performed correctly. All uranium isotopic data reported are in agreement with the total uranium reported.

Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis. All method blank and calibration blank results were below the PQLs for all analytes. In cases where a blank concentration exceeds the MDL, the associated sample results are qualified with a “U” flag (not detected) when the sample result is greater than the MDL but less than 5 times the blank concentration. For some metals, some blanks were negative and the absolute values were greater than the MDL but less than the PQL. The associated results less than 5 times the MDL are qualified with a “J” flag as estimated values. The radiochemistry method blank results were less than the DLC.

Inductively Coupled Plasma Interference Check Sample Analysis

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

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) samples are used to measure method performance in the sample matrix. The MS/MSD data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike concentration. The spikes met the recovery and precision criteria with the following exception. The MS/MSD recoveries for ammonia as nitrogen were below the acceptance range. There is no evidence of systematic matrix interference; the sample result associated with the failed spike results is qualified with a “J” flag as an estimated value.

Laboratory Replicate Analysis

Laboratory replicate analyses are used to determine laboratory precision for each sample matrix. The relative percent difference for non-radiochemical replicate results that are greater than 5 times the PQL should be less than 20 percent. For results that are less than 5 times the PQL, the range should be no greater than the PQL. The replicate results met these criteria. The relative error ratio for radiochemical replicate results (calculated using the one-sigma total propagated uncertainty) was less than 3, indicating acceptable precision.

Laboratory Control Sample

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

Metals Serial Dilution

Serial dilutions were prepared and analyzed for the metals analyses to monitor chemical or physical interferences in the sample matrix. Serial dilution data are evaluated when the concentration of the undiluted sample is greater than 50 times the MDL. All evaluated serial dilution data were acceptable with one exception. The serial dilutions for sodium did not meet the acceptance criteria with a positive bias of about 13%. The associated results are qualified with a "J" flag as estimated values.

Completeness

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

Chromatography Peak Integration

The integration of analyte peaks was reviewed for all ion chromatography data. All peak integrations were satisfactory.

Electronic Data Deliverable (EDD) File

A revised EDD file arrived on July 10, 2012, that included results for arsenic and molybdenum at two locations, which were missing in the original EDD. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure that all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

SAMPLE MANAGEMENT SYSTEM

General Data Validation Report

RIN: 12054584 Lab Code: PAR Validator: Gretchen Baer Validation Date: 8/29/2012
Project: Monument Valley Analysis Type: Metals General Chem Rad Organics
of Samples: 50 Matrix: WATER Requested Analysis Completed: Yes

Chain of Custody

Present: OK Signed: OK Dated: OK

Sample

Integrity: OK Preservation: OK Temperature: OK

Select Quality Parameters

- Holding Times
- Detection Limits
- Field/Trip Blanks
- Field Duplicates

All analyses were completed within the applicable holding times.

The reported detection limits are equal to or below contract requirements.

There were 3 duplicates evaluated.

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 12054584Lab Code: PARDate Due: 7/6/2012Matrix: WaterSite Code: MONDate Completed: 7/6/2012

Analyte	Method Type	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
			Int.	R^2	ICV	CCV	ICB	CCB								
Arsenic	ICP/MS	06/18/2012	-0.0120	1.0000	OK	OK	OK	OK	OK	102.0	108.0	106.0	2.0	103.0	1.0	97.0
Arsenic	ICP/MS	06/18/2012							OK	99.0	108.0	104.0	3.0		0.0	
Arsenic	ICP/MS	06/18/2012							OK	100.0	103.0	101.0	2.0			
Calcium	ICP/ES	06/15/2012							OK	104.0	102.0	102.0	0.0		4.0	
Calcium	ICP/ES	06/15/2012	-0.1350	1.0000	OK	OK	OK	OK	OK	102.0	96.0	94.0	1.0	108.0	2.0	108.0
Calcium	ICP/ES	06/15/2012							OK	101.0	100.0	98.0	1.0	110.0	2.0	105.0
Iron	ICP/ES	06/15/2012	-0.0200	1.0000	OK	OK	OK	OK	OK	101.0	99.0	104.0	5.0	109.0		104.0
Iron	ICP/ES	06/15/2012							OK	100.0	97.0	96.0	1.0	109.0		100.0
Iron	ICP/ES	06/15/2012							OK	99.0	97.0	100.0	2.0			
Magnesium	ICP/ES	06/15/2012	0.0910	1.0000	OK	OK	OK	OK	OK	104.0	100.0	101.0	1.0	108.0	2.0	109.0
Magnesium	ICP/ES	06/15/2012							OK	102.0	100.0	100.0	0.0	108.0	1.0	106.0
Magnesium	ICP/ES	06/15/2012							OK	101.0	99.0	97.0	1.0		1.0	
Manganese	ICP/ES	06/15/2012	0.0000	1.0000	OK	OK	OK	OK	OK	99.0	96.0	96.0	0.0	94.0		108.0
Manganese	ICP/ES	06/15/2012							OK	99.0	95.0	95.0	1.0			
Manganese	ICP/ES	06/15/2012							OK	97.0	95.0	94.0	1.0	95.0		106.0
Molybdenum	ICP/MS	06/18/2012							OK	105.0	108.0	107.0	1.0		1.0	
Molybdenum	ICP/MS	06/18/2012							OK	100.0	108.0	104.0	4.0			

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 12054584Lab Code: PARDate Due: 7/6/2012Matrix: WaterSite Code: MONDate Completed: 7/6/2012

Analyte	Method Type	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
			Int.	R^2	ICV	CCV	ICB	CCB								
Molybdenum	ICP/MS	06/18/2012	-0.0640	1.0000	OK	OK	OK	OK	OK	104.0	107.0	103.0	4.0	102.0	4.0	80.0
Potassium	ICP/ES	06/15/2012							OK	104.0	110.0	111.0	1.0			
Potassium	ICP/ES	06/15/2012							OK	104.0	120.0	118.0	1.0			76.0
Potassium	ICP/ES	06/15/2012	-1.3590	1.0000	OK	OK	OK	OK	OK	105.0	119.0	121.0	1.0			77.0
Sodium	ICP/ES	06/15/2012							OK	96.0	99.0	101.0	1.0		11.0	79.0
Sodium	ICP/ES	06/15/2012							OK	94.0	99.0	100.0	1.0		18.0	
Sodium	ICP/ES	06/15/2012	-0.1160	1.0000	OK	OK	OK	OK	OK	94.0	97.0	94.0	1.0		11.0	79.0
Uranium	ICP/MS	06/18/2012							OK	106.0	108.0	113.0	4.0		2.0	
Uranium	ICP/MS	06/18/2012	0.0010	1.0000	OK	OK	OK	OK	OK	105.0	120.0	106.0	4.0	102.0	2.0	90.0
Uranium	ICP/MS	06/18/2012							OK	105.0	104.0	102.0	1.0		2.0	
Vanadium	ICP/MS	06/18/2012	-0.0140	1.0000	OK	OK	OK	OK	OK	105.0	110.0	108.0	2.0	105.0		121.0
Vanadium	ICP/MS	06/18/2012							OK	99.0	109.0	104.0	4.0		1.0	
Vanadium	ICP/MS	06/18/2012							OK	101.0	107.0	102.0	4.0		3.0	

SAMPLE MANAGEMENT SYSTEM

Wet Chemistry Data Validation Worksheet

RIN: 12054584 **Lab Code:** PAR **Date Due:** 7/6/2012
Matrix: Water **Site Code:** MON **Date Completed:** 7/6/2012

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	ICV	CCV	ICB	CCB						
AMMONIA AS N	06/19/2012	0.008	0.9998	OK	OK	OK	OK	OK	102.00	79.0	76.0	4.00	
AMMONIA AS N	06/19/2012							OK	101.00	86.0	84.0	3.00	
AMMONIA AS N	06/19/2012							OK	102.00	66.0	66.0	0	
CHLORIDE	06/12/2012	-0.082	1.0000	OK	OK	OK	OK	OK	95.00	101.0	102.0	0	
CHLORIDE	06/12/2012							OK	96.00	100.0	102.0	0	
CHLORIDE	06/12/2012									102.0	104.0	0	
CHLORIDE	06/12/2012									102.0			
CHLORIDE	06/12/2012									103.0			
CHLORIDE	06/13/2012							OK	91.00				
Nitrate+Nitrite as N	06/15/2012	0.000	0.9999	OK	OK	OK	OK	OK	100.00	104.0	104.0	0	
Nitrate+Nitrite as N	06/15/2012							OK	99.00	102.0	101.0	0	
Nitrate+Nitrite as N	06/15/2012							OK	98.00	103.0	105.0	2.00	
SULFATE	06/12/2012	0.356	0.9999	OK	OK	OK	OK	OK	97.00	101.0	103.0	1.00	
SULFATE	06/12/2012							OK	98.00	99.0	105.0	0	
SULFATE	06/12/2012									106.0	109.0	0	

SAMPLE MANAGEMENT SYSTEM
Radiochemistry Data Validation Worksheet

RIN: 12054584 Lab Code: PAR Date Due: 7/6/2012
 Matrix: Water Site Code: MON Date Completed: 7/6/2012

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
0602	U-234	06/16/2012			78.7			
0603	U-234	06/16/2012			52.1			
0604	U-234	06/16/2012			73.9			
0606	U-234	06/16/2012			83.1			
0618	U-234	06/16/2012			67.9			
0619	U-234	06/16/2012			74.6			
0653	U-234	06/16/2012			73.8			
0656	U-234	06/16/2012			73.1			
0657	U-234	06/20/2012			23.4			
0662	U-234	06/16/2012			64.8			
0669	U-234	06/16/2012			70.9			
0733	U-234	06/16/2012			81.4			
0734	U-234	06/16/2012			68.2			
0735	U-234	06/16/2012			50.7			
0760	U-234	06/16/2012			67.5			
0761	U-234	06/16/2012			80.9			
0764	U-234	06/16/2012			71.3			
0774	U-234	06/16/2012			75.7			
0775	U-234	06/16/2012			75.4			
0776	U-234	06/16/2012			68.2			
2251	U-234	06/17/2012			78.6			
Blank	U-234	06/20/2012	0.0064	U	67.8			
Blank	U-234	06/17/2012	0	U	21.3			
Blank	Uranium-235	06/20/2012	0.0050	U				
Blank	Uranium-235	06/17/2012	0.0159	U				
Blank	Uranium-238	06/20/2012	0.0043	U				
Blank	Uranium-238	06/17/2012	0.0135	U				
Blank_Spike	U-234	06/17/2012			43.0	95.40		
Blank_Spike	U-234	06/16/2012			69.2	102.00		
Blank_Spike	Uranium-238	06/16/2012				98.50		
Blank_Spike	Uranium-238	06/17/2012				91.20		
Blank_Spike_Du	U-234	06/17/2012			33.0	111.00		1.10

SAMPLE MANAGEMENT SYSTEM
Radiochemistry Data Validation Worksheet

RIN: 12054584 **Lab Code:** PAR **Date Due:** 7/6/2012
Matrix: Water **Site Code:** MON **Date Completed:** 7/6/2012

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
Blank_Spike_Du	U-234	06/16/2012			69.9	95.60		0.49
Blank_Spike_Du	Uranium-238	06/16/2012				99.80		0.10
Blank_Spike_Du	Uranium-238	06/17/2012				116.00		1.68

General Information

RIN: 12054586
Sample Event: June 4–6, 2012
Site(s): Monument Valley, Arizona
Laboratory: GEL Laboratories, Charleston, South Carolina
Work Order No.: 305761
Analysis: Tritium
Validator: Gretchen Baer
Review Date: September 27, 2012

This validation was performed according to the *Environmental Procedures Catalog*, (LMS/PRO/S04325, continually updated) “Standard Practice for Validation of Laboratory Data.” The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 5.

Table 5. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Tritium, Enrichment Method	LMR-17	HASL 300	HASL 300
Tritium, Distillation Method	* LSC-A-001	EPA 906.0 Mod	EPA 906.0 Mod

* Based on screening results, the laboratory analyzed some samples using a distillation method.

Data Qualifier Summary

Analytical results were qualified as listed in Table 6. Refer to the sections below for an explanation of the data qualifiers applied.

Table 6. Data Qualifier Summary

Sample Number	Location	Analyte(s)	Flag	Reason
305761-005	0733	Tritium	J	Less than the Determination Limit
305761-006	0734	Tritium	J	Less than the Determination Limit
305761-010	0776	Tritium	J	Less than the Determination Limit

Sample Shipping/Receiving

GEL Laboratories in Charleston, South Carolina, received 11 water samples on June 8, 2012, accompanied by a Chain of Custody (COC) form. The air waybill number was listed on the Sample Receipt and Review Form. The COC form was checked to confirm that all of the samples were listed with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The COC form was complete with no errors or omissions.

Preservation and Holding Times

The sample shipment was received intact at ambient temperature, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

Detection and Quantitation Limits

Radiochemical analytes (those measured by radiometric counting) are evaluated using the MDC, DLC, and DL. The MDC is a measure of radiochemical method performance and was calculated and reported as specified in *Quality Systems for Analytical Services*. The DLC is the minimum concentration of an analyte that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, and is estimated as 3 times the one-sigma total propagated uncertainty. Results that are greater than the MDC, but less than the DLC are qualified with a “U” flag (not detected). The DL for radiochemical results is the lowest concentration that can be reliably measured, and is defined as 3 times the MDC. Results not previously “U” qualified that are less than the DL are qualified with a “J” flag as estimated values.

The reported MDCs for radiochemical analytes demonstrate compliance with contractual requirements, with two exceptions. Based on screening results for locations 0618 and 0657, the laboratory analyzed these samples using a distillation method. The distillation method produced MDCs of approximately 90 picoCuries per liter (pCi/L), which exceeded the requested limit of 3 pCi/L. A reanalysis using the enrichment method was not requested due to the amount of time (3 months) required by that method. Consequently, the results for 0618 and 0657 are reported as non-detects at elevated MDCs.

Laboratory Instrument Calibration

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

Radiochemical Analysis

Tritium by Distillation

Instrument quench calibration curves were generated on July 30, 2012. Daily instrument checks performed on August 6, 2012, met the acceptance criteria.

Enriched Tritium

Instrument quench calibration curves were generated on July 23, 2012. Daily instrument checks performed on August 9, 10, 13, and 14, 2012, met the acceptance criteria. The chemical recoveries were acceptable for all samples.

Method Blank

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. The radiochemistry method blank results were less than the Decision Level Concentration.

Laboratory Replicate Analysis

Laboratory replicate analyses are used to determine laboratory precision for each sample matrix. The relative error ratio for radiochemical replicate results (calculated using the one-sigma total propagated uncertainty) was less than three, indicating acceptable precision.

Laboratory Control Sample

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

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers. The analytical report included all required supporting documentation.

EDD File

The EDD file arrived on September 5, 2012. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD files were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

SAMPLE MANAGEMENT SYSTEM
General Data Validation Report

RIN: 12054586 Lab Code: GEN Validator: Gretchen Baer Validation Date: 9/27/2012
Project: Monument Valley Analysis Type: Metals General Chem Rad Organics
of Samples: 11 Matrix: Water Requested Analysis Completed: Yes

Chain of Custody

Present: OK Signed: OK Dated: OK

Sample

Integrity: OK Preservation: OK Temperature: OK

Select Quality Parameters

- Holding Times
- Detection Limits
- Field/Trip Blanks
- Field Duplicates

All analyses were completed within the applicable holding times.

The reported detection limits are equal to or below contract requirements.

There was 1 duplicate evaluated.

SAMPLE MANAGEMENT SYSTEM
Radiochemistry Data Validation Worksheet

RIN: 12054584 **Lab Code:** PAR **Date Due:** 7/6/2012
Matrix: Water **Site Code:** MON **Date Completed:** 7/6/2012

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
0602	U-234	06/16/2012			78.7			
0603	U-234	06/16/2012			52.1			
0604	U-234	06/16/2012			73.9			
0606	U-234	06/16/2012			83.1			
0618	U-234	06/16/2012			67.9			
0619	U-234	06/16/2012			74.6			
0653	U-234	06/16/2012			73.8			
0656	U-234	06/16/2012			73.1			
0662	U-234	06/16/2012			64.8			
0669	U-234	06/16/2012			70.9			
0733	U-234	06/16/2012			81.4			
0734	U-234	06/16/2012			68.2			
0735	U-234	06/16/2012			50.7			
0760	U-234	06/16/2012			67.5			
0761	U-234	06/16/2012			80.9			
0764	U-234	06/16/2012			71.3			
0774	U-234	06/16/2012			75.7			
0775	U-234	06/16/2012			75.4			
0776	U-234	06/16/2012			68.2			
Blank_Spike	U-234	06/16/2012			69.2	102		
Blank_Spike_Du	U-234	06/16/2012			69.9	95.6		0.49
2251	U-234	06/17/2012			78.6			
Blank_Spike	U-234	06/17/2012			43	95.4		
Blank_Spike_Du	U-234	06/17/2012			33	111		1.1
Blank	U-234	06/17/2012	0	U	21.3			
0657	U-234	06/20/2012			23.4			
Blank	U-234	06/20/2012	0.0064	U	67.8			
Blank	Uranium-235	06/17/2012	0.0159	U				
Blank	Uranium-235	06/20/2012	0.005	U				
Blank_Spike	Uranium-238	06/16/2012				98.5		
Blank_Spike_Du	Uranium-238	06/16/2012				99.8		0.1
Blank_Spike	Uranium-238	06/17/2012				91.2		

SAMPLE MANAGEMENT SYSTEM
Radiochemistry Data Validation Worksheet

RIN: 12054584 **Lab Code:** PAR **Date Due:** 7/6/2012
Matrix: Water **Site Code:** MON **Date Completed:** 7/6/2012

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
Blank_Spike_Du	Uranium-238	06/17/2012				116		1.68
Blank	Uranium-238	06/17/2012	0.0135	U				
Blank	Uranium-238	06/20/2012	0.0043	U				

General Information

RIN: 12054587
Sample Event: June 4–6, 2012
Site(s): Monument Valley, Arizona
Laboratory: Reston Stable Isotope Laboratory, Reston, Virginia
Analysis: Stable Isotopes
Validator: Gretchen Baer
Review Date: August 30, 2012

This validation was performed according to the *Environmental Procedures Catalog*, (LMS/PRO/S04325, continually updated) “Standard Practice for Validation of Laboratory Data.” The procedure was applied at Level 1, Data Deliverables Examination. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 7.

Table 7. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
H-2/H-1 and O-18/O-16–Isotope Ratios	LMW-08	NA	Mass Spectrometry

Data Qualifier Summary

None of the analytical results required qualification.

Sample Shipping/Receiving

The Reston Stable Isotope Laboratory in Reston, Virginia, received 21 water samples on June 8, 2012, submitted for the determination of stable hydrogen and oxygen isotope ratios. The analytical report was checked to confirm that all of the samples scheduled were received and analyzed.

Preservation and Holding Times

The sample shipment was received intact with all samples in the correct container types preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

Laboratory Analysis

Hydrogen-isotope-ratio analyses were performed using a hydrogen equilibration technique, rather than the zinc technique. The hydrogen equilibration technique measures deuterium activity, whereas the zinc technique measures deuterium concentration. For the majority of samples—with the exception of brines—the difference in reported isotopic compositions between the two techniques is not significant.

Water samples are measured for delta O-18 using the CO₂ equilibration technique of Epstein and Mayeda (1953), which has been automated. Therefore, both oxygen and hydrogen isotopic ratio measurements are reported as activities.

Stable Hydrogen and Oxygen Isotope Ratios results are reported in per mill relative to Vienna Standard Mean Ocean Water and normalized (Coplen, 1994) on scales such that the oxygen and hydrogen isotopic values of Standard Light Antarctic Precipitation are -55.5 per mill and -428 per mill, respectively. Oxygen isotopic results of a sample Z can be expressed relative to Vienna Peedee belemnite using the equation:

Delta O-18 of Z relative to Vienna Peedee belemnite = (0.97001 × delta O-18 of Z relative to Vienna Standard Mean Ocean Water) - 29.99

The 2-sigma uncertainties of oxygen and hydrogen isotopic results are 0.2 per mill and 2 per mill, respectively, unless otherwise indicated. This means that if the same sample were resubmitted for isotopic analysis, the newly measured value would lie within the uncertainty bounds 95 percent of the time.

Completeness

The EDD was the only deliverable received for this RIN.

EDD File

The EDD file arrived on July 3, 2012.

Sampling Quality Control Assessment

The following information summarizes and assesses quality control for this sampling event.

Sampling Protocol

Wells were sampled with a peristaltic pump and dedicated tubing, a dedicated bladder pump, or a dedicated submersible pump. The surface water location was sampled by container immersion. With the exception of well 0618, which was sampled from the pump tap, all sample results for monitoring wells were qualified with an “F” flag in the database, indicating the wells were purged and sampled using the low-flow sampling method. Wells 0402, 0602, 0606, 0733, 0735, 0764, and 0771 were qualified with a “Q” flag, indicating the data are qualitative because these wells were classified as Category II.

Equipment Blank Assessment

No equipment blanks were taken because all samples were collected using dedicated equipment.

Field Duplicate Assessment

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates, which measure only laboratory performance. The relative percent difference for duplicate results that are greater than 5 times the PQL should be less than 20 percent. For results that are less than 5 times the PQL, the range should be no greater than the PQL. Duplicate samples were collected from locations 0619, 0767, and 0772. The duplicate results for delta deuterium were -79.46 and -79.60, and for delta oxygen-18, -10.74 and -10.88. The non-radiochemical duplicate results met the criteria, demonstrating acceptable overall precision. The relative error ratio for radiochemical duplicate results (calculated using the one-sigma total propagated uncertainty) was less than 3, indicating acceptable precision.

SAMPLE MANAGEMENT SYSTEM
Validation Report: Field Duplicates

RIN: 12054584 Lab Code: PAR Project: Monument Valley Validation Date: 8/29/2012

Duplicate: 2079

Sample: 0767

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
AMMONIA AS N	0.1	U		1	0.1	U		1			MG/L
CHLORIDE	5.5			1	5.3			1	3.70		MG/L
Nitrate+Nitrite as N	0.01	U		1	0.01	U		1			MG/L
SULFATE	32			1	31			1	3.17		MG/L
Uranium	0.66			1	0.65			1	1.53		UG/L
Vanadium	0.079	B		1	0.052	B		1			UG/L

Duplicate: 2251

Sample: 0619

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
AMMONIA AS N	0.1	U		1	0.1	U		1			MG/L
CHLORIDE	5.5			1	5.3			1	3.70		MG/L
Nitrate+Nitrite as N	0.82			1	0.81			1	1.23		MG/L
SULFATE	29			1	27			1	7.14		MG/L
U-234	2.29		0.432	1	2.3		0.427	1	0.44	0	pCi/L
Uranium	5.2			5	5.3			5	1.90		UG/L
Uranium-235	0.141		0.0631	1	0.0868		0.0456	1		1.4	pCi/L
Uranium-238	1.69		0.333	1	1.86		0.353	1	9.58	0.7	pCi/L
Vanadium	21			5	21			5	0		UG/L

Duplicate: 2711

Sample: 0772

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
AMMONIA AS N	1.1			1	1.2			1	8.70		MG/L
CHLORIDE	14			2	14			2	0		MG/L
Nitrate+Nitrite as N	1.1			1	1.1			1	0		MG/L
SULFATE	110			2	110			2	0		MG/L
Uranium	5.9			1	5.8			5	1.71		UG/L
Vanadium	8.6			1	9.5			5	9.94		UG/L

SAMPLE MANAGEMENT SYSTEM
Validation Report: Field Duplicates

Page 1 of 1

RIN: 12054586 Lab Code: GEN Project: Monument Valley Validation Date: 9/27/2012

Duplicate: 2349

Sample: 0619

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
Tritium	-0.211	U	1.59	1.00	1.67	U	1.44	1.00		1.7	pCi/L

Certification

All laboratory analytical quality control criteria were met except as qualified in this report. The data qualifiers listed on the SEEPro database reports are defined on the last page of each report. All data in this package are considered validated and available for use.

Laboratory Coordinator: Steve Donovan 10-25-2012
Steve Donovan Date

Data Validation Lead: Gretchen Baer 10/25/12
Gretchen Baer Date

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Attachment 1
Assessment of Anomalous Data

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Potential Outliers Report

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Potential Outliers Report

Potential outliers are measurements that are extremely large or small relative to the rest of the data and, therefore, are suspected of misrepresenting the population from which they were collected. Potential outliers may result from transcription errors, data-coding errors, or measurement system problems. However, outliers may also represent true extreme values of a distribution and indicate more variability in the population than was expected.

Statistical outlier tests give probabilistic evidence that an extreme value does not "fit" with the distribution of the remainder of the data and is therefore a statistical outlier. These tests should only be used to identify data points that require further investigation. The tests alone cannot determine whether a statistical outlier should be discarded or corrected within a data set.

There are three steps involved in identifying extreme values or outliers:

1. Identify extreme values that may be potential outliers by generating the Outliers Report using the Sample Management System from data in the SEEPro database. The application compares the new data set with historical data and lists the new data that fall outside the historical data range. A determination is also made if the data are normally distributed using the Shapiro-Wilk Test.
2. Apply the appropriate statistical test. Dixon's Extreme Value test is used to test for statistical outliers when the sample size is less than or equal to 25. This test considers both extreme values that are much smaller than the rest of the data (case 1) and extreme values that are much larger than the rest of the data (case 2). This test is valid only if the data without the suspected outlier are normally distributed. Rosner's Test is a parametric test that is used to detect outliers for sample sizes of 25 or more. This test also assumes that the data without the suspected outliers are normally distributed.
3. Scientifically review statistical outliers and decide on their disposition.

Five laboratory results were identified as potentially anomalous. The uranium result for location 0648 was identified as a potential outlier because there is low variability in the few historical data points at this location. Four analyte concentrations at location 0618 were higher than previously observed. The fact that multiple results from different types of analyses are high indicates the data are likely not outliers. The data associated with these results were further reviewed. There were no errors noted and the data for this RIN are acceptable as qualified.

Potential anomalies in the field parameters were also examined for patterns of repeated high or low bias, which suggest a systematic error due to instrument malfunction. A pattern of low bias was found for the oxidation-reduction data collected by one of the field instruments. The results of the calibration checks do not suggest any serious malfunctions; however, all oxidation-reduction data collected with the instrument are qualified with a "J" flag (estimated) for possible low bias. The pH measurement at 0768 was identified as a potential outlier because of the low variability of the historical data. All field data for this RIN are acceptable as qualified.

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: ALS Laboratory Group

RIN: 12054584

Report Date: 9/26/2012

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current			Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Qualifiers Lab	Data	Result	Qualifiers Lab	Data	Result	Qualifiers Lab	Data	N	N Below Detect	
MON01	0603	N001	06/05/2012	Iron	0.0049	U	JF	0.16		F	0.0093	B	F	11	6	No
MON01	0605	N001	06/06/2012	Ammonia Total as N	0.31		F	0.43		F	0.311		F	7	0	No
MON01	0606	N001	06/06/2012	Ammonia Total as N	95		FQ	140		F	99.8		FQ	14	0	No
MON01	0618	N001	06/05/2012	Calcium	56			39			30.6			8	0	Yes
MON01	0618	N001	06/05/2012	Magnesium	32			23			17			8	0	Yes
MON01	0618	N001	06/05/2012	Nitrate + Nitrite as Nitrogen	2.8			1.7			0.81			6	0	No
MON01	0618	N001	06/05/2012	Sodium	10	E	J	7.9			6.37			8	0	Yes
MON01	0618	N001	06/05/2012	Uranium	0.046			0.013			0.0038			8	0	Yes
MON01	0619	N002	06/05/2012	Uranium	0.0053		F	0.135			0.0066		F	34	0	No
MON01	0619	N001	06/05/2012	Uranium	0.0052		F	0.135			0.0066		F	34	0	No
MON01	0619	N002	06/05/2012	Uranium-234	2.3		F	11.3		F	3.01		F	6	0	No
MON01	0619	N001	06/05/2012	Uranium-234	2.29		F	11.3		F	3.01		F	6	0	No
MON01	0619	N001	06/05/2012	Uranium-238	1.69		F	10.2		F	2.4		F	6	0	No
MON01	0619	N002	06/05/2012	Uranium-238	1.86		F	10.2		F	2.4		F	6	0	No
MON01	0648	N001	06/06/2012	Ammonia Total as N	0.64		F	9.2		F	2.2		F	8	0	No
MON01	0648	N001	06/06/2012	Uranium	0.012		F	0.0107		F	0.0097		F	8	0	Yes
MON01	0650	N001	06/05/2012	Chloride	18		F	16		F	6		GF	25	0	No
MON01	0650	N001	06/05/2012	Nitrate + Nitrite as Nitrogen	4		F	3.41		F	0.53		F	10	0	No
MON01	0650	N001	06/05/2012	Sulfate	330		F	292		F	25.5		F	25	0	No

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: ALS Laboratory Group

RIN: 12054584

Report Date: 9/26/2012

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current			Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Qualifiers Lab	Data	Result	Qualifiers Lab	Data	Result	Qualifiers Lab	Data	N	N Below Detect	
MON01	0652	N001	06/05/2012	Nitrate + Nitrite as Nitrogen	5		F	4.87		F	4.1		F	8	0	No
MON01	0655	N001	06/06/2012	Chloride	16		F	38		F	16.6		F	44	0	No
MON01	0655	N001	06/06/2012	Sulfate	720		F	3540		F	949		F	51	0	No
MON01	0656	N001	06/06/2012	Sulfate	140		F	845		F	145		F	30	0	No
MON01	0657	N001	06/04/2012	Sulfate	490		F	472		F	15		F	34	0	No
MON01	0657	N001	06/04/2012	Uranium	0.39		F	0.35		F	0.0036		F	36	0	No
MON01	0657	N001	06/04/2012	Uranium-234	120		F	116		F	1.95		F	5	0	No
MON01	0657	N001	06/04/2012	Uranium-238	119		F	110		F	1.26		F	5	0	No
MON01	0711	N001	06/04/2012	Uranium	0.0041		F	0.0039		F	0.00378		F	7	0	No
MON01	0764	0001	06/06/2012	Chloride	9.9		FQ	19.6		L	10.4		FQ	18	0	No
MON01	0765	0001	06/06/2012	Uranium	0.00023		F	0.015			0.000349		F	18	0	No
MON01	0765	0001	06/06/2012	Vanadium	0.00032		F	0.015	U	F	0.001	U	F	17	5	No
MON01	0767	N002	06/05/2012	Vanadium	0.000052	B	F	0.015	U	F	0.000075	U	F	17	15	No
MON01	0768	N001	06/06/2012	Ammonia Total as N	0.39	N	JF	0.811		F	0.42		F	16	0	No
MON01	0770	N001	06/06/2012	Ammonia Total as N	28		F	40		F	29		F	14	0	No
MON01	0772	N002	06/06/2012	Ammonia Total as N	1.2		F	7.9		F	1.93		F	16	0	No
MON01	0772	N001	06/06/2012	Ammonia Total as N	1.1		F	7.9		F	1.93		F	16	0	No
MON01	0772	N001	06/06/2012	Magnesium	17		F	16.8		F	9.92			8	0	No
MON01	0772	N001	06/06/2012	Potassium	0.63	B	F	1.9		F	0.64	B	F	8	0	No

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: ALS Laboratory Group

RIN: 12054584

Report Date: 9/26/2012

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current			Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Qualifiers Lab	Data	Result	Qualifiers Lab	Data	Result	Qualifiers Lab	Data	N	N Below Detect	
MON01	0772	N001	06/06/2012	Sodium	86	E	JF	232			93	F	8	0	No	
MON01	0772	N002	06/06/2012	Uranium	0.0058		F	0.0387			0.006	F	20	0	No	
MON01	0772	N001	06/06/2012	Uranium	0.0059		F	0.0387			0.006	F	20	0	No	
MON01	0772	N001	06/06/2012	Vanadium	0.0086		F	0.0542			0.01	FJ	19	2	No	
MON01	0772	N002	06/06/2012	Vanadium	0.0095		F	0.0542			0.01	FJ	19	2	No	
MON01	0774	N001	06/05/2012	Vanadium	0.021		F	0.02	F		0.015	F	18	0	No	
MON01	0776	N001	06/05/2012	Nitrate + Nitrite as Nitrogen	0.74		F	0.86	F		0.75	F	6	0	No	
MON01	0776	N001	06/05/2012	Sulfate	28		F	40.4			29	F	15	0	No	
MON01	0776	N001	06/05/2012	Uranium	0.0066		F	0.0366			0.00776	F	12	0	No	
MON01	0776	N001	06/05/2012	Vanadium	0.018		F	0.0162	F		0.0112	F	9	1	No	

STATISTICAL TESTS:

The distribution of the data is tested for normality or lognormality using the Shapiro-Wilk Test

Outliers are identified using Dixon's Test when there are 25 or fewer data points.

Outliers are identified using Rosner's Test when there are 26 or more data points.

See Data Quality Assessment: Statistical Methods for Practitioners, EPA QC/G-9S, February 2006.

Data Validation Outliers Report - Field Parameters Only

Comparison: All Historical Data

Laboratory: Field Measurements

RIN: 12054584

Report Date: 9/26/2012

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Qualifiers Lab Data	Result	Qualifiers Lab Data	Result	Qualifiers Lab Data	N	N Below Detect			
MON01	0402	N001	06/05/2012	Turbidity	8.9	FQ	85.9	L	10.2	FQ	9	0	No		
MON01	0602	N001	06/04/2012	Temperature	18.57	FQ	18.07	F	13.2	L	21	0	No		
MON01	0603	N001	06/05/2012	Oxidation Reduction Potential	-167.9	JF	462		3		12	0	Yes		
MON01	0603	N001	06/05/2012	Temperature	17.96	F	17.35	F	12		19	0	No		
MON01	0604	N001	06/05/2012	Oxidation Reduction Potential	-160	JF	453.1		-153		25	0	No		
MON01	0605	N001	06/06/2012	pH	6.97	F	8.45	F	6.99		26	0	No		
MON01	0606	N001	06/06/2012	Oxidation Reduction Potential	-93.9	JFQ	481.7		53	F	27	0	No		
MON01	0618	N001	06/05/2012	Oxidation Reduction Potential	-28.3	J	230		79		5	0	No		
MON01	0618	N001	06/05/2012	Temperature	22.36		20		13.2		8	0	No		
MON01	0619	N001	06/05/2012	Oxidation Reduction Potential	-54	JF	447		-18.9	F	26	0	No		
MON01	0648	N001	06/06/2012	pH	7.58	F	7.57	F	7.06		11	0	No		
MON01	0655	N001	06/06/2012	Oxidation Reduction Potential	-238.1	JF	460		-73.1	F	26	0	No		
MON01	0669	N001	06/05/2012	Oxidation Reduction Potential	-136	JF	410	GF	-95.5	F	25	0	No		
MON01	0711	N001	06/04/2012	Oxidation Reduction Potential	-30.5	JF	209.8	F	31	F	8	0	No		
MON01	0711	N001	06/04/2012	Temperature	18.07	F	17.46	F	13.94	F	7	0	No		
MON01	0715	N001	06/04/2012	Oxidation Reduction Potential	19.1	JF	172.6	F	29	F	8	0	No		
MON01	0715	N001	06/04/2012	Temperature	18.11	F	16.82	F	14.79	F	7	0	No		
MON01	0719	N001	06/04/2012	Oxidation Reduction Potential	11.2	JF	154.2	F	20.9		8	0	No		
MON01	0719	N001	06/04/2012	Temperature	18.75	F	17	F	14.36	F	7	0	No		

Data Validation Outliers Report - Field Parameters Only

Comparison: All Historical Data

Laboratory: Field Measurements

RIN: 12054584

Report Date: 9/26/2012

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current			Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Qualifiers		Result	Qualifiers		Result	Qualifiers		N	N Below Detect	
						Lab	Data		Lab	Data		Lab	Data			
MON01	0727	N001	06/04/2012	Temperature	18.55		F	18.07		F	15.09		F	7	0	No
MON01	0766	N001	06/06/2012	Oxidation Reduction Potential	-223.9		JF	194		F	-219.5		F	7	0	No
MON01	0766	N001	06/06/2012	Turbidity	4.7		F	26.3		FQ	5.27		F	7	0	No
MON01	0768	N001	06/06/2012	pH	6.99		F	8.6		F	7.01			23	0	Yes
MON01	0771	N001	06/06/2012	Oxidation Reduction Potential	-157.9		JFQ	217		F	-72.5		FQ	22	0	No
MON01	0772	N001	06/06/2012	Specific Conductance	694		F	1422			697		F	23	0	No
MON01	0774	N001	06/05/2012	Oxidation Reduction Potential	-35.8		JF	225		F	-26			23	0	No
MON01	0774	N001	06/05/2012	Temperature	20.33		F	20.2			13.6		F	23	0	No
MON01	0776	N001	06/05/2012	Oxidation Reduction Potential	-52.5		JF	214.2		F	-31.3		F	13	0	No

STATISTICAL TESTS:

The distribution of the data is tested for normality or lognormality using the Shapiro-Wilk Test

Outliers are identified using Dixon's Test when there are 25 or fewer data points.

Outliers are identified using Rosner's Test when there are 26 or more data points.

See Data Quality Assessment: Statistical Methods for Practitioners, EPA QC/G-9S, February 2006.

Attachment 2

Data Presentation

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Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0402 WELL Tribal Well No. 08-0643.

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
						Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	N001	5.17 - 9.63	0.1	U	FQ	#	0.1	
Chloride	mg/L	06/05/2012	N001	5.17 - 9.63	15		FQ	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	5.17 - 9.63	0.066		FQ	#	0.01	
Oxidation Reduction Potential	mV	06/05/2012	N001	5.17 - 9.63	-124.8		JFQ	#		
pH	s.u.	06/05/2012	N001	5.17 - 9.63	7.86		FQ	#		
Specific Conductance	umhos/cm	06/05/2012	N001	5.17 - 9.63	557		FQ	#		
Sulfate	mg/L	06/05/2012	N001	5.17 - 9.63	18		FQ	#	1	
Temperature	C	06/05/2012	N001	5.17 - 9.63	18.45		FQ	#		
Turbidity	NTU	06/05/2012	N001	5.17 - 9.63	8.9		FQ	#		
Uranium	mg/L	06/05/2012	N001	5.17 - 9.63	0.000053		FQ	#	0.000029	
Vanadium	mg/L	06/05/2012	N001	5.17 - 9.63	0.0007		FQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0602 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	06/04/2012	N001	19.5	-	29.5	0.1	U	FQ	#	0.1	
Chloride	mg/L	06/04/2012	N001	19.5	-	29.5	14		FQ	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/04/2012	N001	19.5	-	29.5	0.76		FQ	#	0.01	
Oxidation Reduction Potential	mV	06/04/2012	N001	19.5	-	29.5	42		JFQ	#		
pH	s.u.	06/04/2012	N001	19.5	-	29.5	7.78		FQ	#		
Specific Conductance	umhos/cm	06/04/2012	N001	19.5	-	29.5	658		FQ	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/04/2012	0001	19.5	-	29.5	-86.08		FQ	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/04/2012	0001	19.5	-	29.5	-11.62		FQ	#		
Sulfate	mg/L	06/04/2012	N001	19.5	-	29.5	110		FQ	#	1	
Temperature	C	06/04/2012	N001	19.5	-	29.5	18.57		FQ	#		
Turbidity	NTU	06/04/2012	N001	19.5	-	29.5	2.51		FQ	#		
Uranium	mg/L	06/04/2012	N001	19.5	-	29.5	0.004		FQ	#	0.0000029	
Uranium-234	pCi/L	06/04/2012	N001	19.5	-	29.5	1.8		FQ	#	0.047	0.346
Uranium-235	pCi/L	06/04/2012	N001	19.5	-	29.5	0.0479		UFQ	#	0.029	0.0347
Uranium-238	pCi/L	06/04/2012	N001	19.5	-	29.5	1.23		FQ	#	0.051	0.253
Vanadium	mg/L	06/04/2012	N001	19.5	-	29.5	0.00078		FQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0603 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Qualifiers			Detection Limit	Uncertainty
							Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/05/2012	N001	43	-	53		F	#		
Ammonia Total as N	mg/L	06/05/2012	N001	43	-	53	0.23		F	#	0.1
Arsenic	mg/L	06/05/2012	N001	43	-	53	0.0032		F	#	0.000015
Calcium	mg/L	06/05/2012	N001	43	-	53	18		F	#	0.012
Chloride	mg/L	06/05/2012	N001	43	-	53	13		F	#	0.4
Iron	mg/L	06/05/2012	N001	43	-	53	0.0049	U	JF	#	0.0049
Magnesium	mg/L	06/05/2012	N001	43	-	53	14		F	#	0.013
Manganese	mg/L	06/05/2012	N001	43	-	53	0.0031	B	F	#	0.00011
Molybdenum	mg/L	06/05/2012	N001	43	-	53	0.0029		F	#	0.000032
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	43	-	53	0.37		F	#	0.01
Oxidation Reduction Potential	mV	06/05/2012	N001	43	-	53	-167.9		JF	#	
pH	s.u.	06/05/2012	N001	43	-	53	7.82		F	#	
Potassium	mg/L	06/05/2012	N001	43	-	53	2.7	N	F	#	0.11
Sodium	mg/L	06/05/2012	N001	43	-	53	87	E	JF	#	0.0066
Specific Conductance	umhos/cm	06/05/2012	N001	43	-	53	630		F	#	
Stable isotope ratio H2/H1 in Water	parts per thousand	06/05/2012	0001	43	-	53	-90.42		F	#	
Stable isotope ratio O18/O16 in Water	parts per thousand	06/05/2012	0001	43	-	53	-12.09		F	#	
Sulfate	mg/L	06/05/2012	N001	43	-	53	110		F	#	1
Temperature	C	06/05/2012	N001	43	-	53	17.96		F	#	
Turbidity	NTU	06/05/2012	N001	43	-	53	6.08		F	#	
Uranium	mg/L	06/05/2012	N001	43	-	53	0.003		F	#	0.0000029

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0603 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers		Detection Limit	Uncertainty
								Lab	Data QA		
Uranium-234	pCi/L	06/05/2012	N001	43	-	53	1.51	F	#	0.092	0.326
Uranium-235	pCi/L	06/05/2012	N001	43	-	53	0.0683	UF	#	0.056	0.052
Uranium-238	pCi/L	06/05/2012	N001	43	-	53	0.888	F	#	0.083	0.218
Vanadium	mg/L	06/05/2012	N001	43	-	53	0.0006	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0604 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	N001	13	-	28	0.1	U	F	#	0.1	
Chloride	mg/L	06/05/2012	N001	13	-	28	12		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	13	-	28	0.058		F	#	0.01	
Oxidation Reduction Potential	mV	06/05/2012	N001	13	-	28	-160		JF	#		
pH	s.u.	06/05/2012	N001	13	-	28	8.16		F	#		
Specific Conductance	umhos/cm	06/05/2012	N001	13	-	28	606		F	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/05/2012	0001	13	-	28	-89.1		F	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/05/2012	0001	13	-	28	-12.03		F	#		
Sulfate	mg/L	06/05/2012	N001	13	-	28	110		F	#	1	
Temperature	C	06/05/2012	N001	13	-	28	16.04		F	#		
Turbidity	NTU	06/05/2012	N001	13	-	28	4.06		F	#		
Uranium	mg/L	06/05/2012	N001	13	-	28	0.002		F	#	0.0000029	
Uranium-234	pCi/L	06/05/2012	N001	13	-	28	0.925		F	#	0.05	0.203
Uranium-235	pCi/L	06/05/2012	N001	13	-	28	0.041	U	F	#	0.041	0.0296
Uranium-238	pCi/L	06/05/2012	N001	13	-	28	0.68		F	#	0.041	0.161
Vanadium	mg/L	06/05/2012	N001	13	-	28	0.0022		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0605 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Ammonia Total as N	mg/L	06/06/2012	N001	14	-	29	0.31		F	#	0.1	
Chloride	mg/L	06/06/2012	N001	14	-	29	18		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	14	-	29	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	06/06/2012	N001	14	-	29	-160.9		F	#		
pH	s.u.	06/06/2012	N001	14	-	29	6.97		F	#		
Specific Conductance	umhos/cm	06/06/2012	N001	14	-	29	597		F	#		
Sulfate	mg/L	06/06/2012	N001	14	-	29	110		F	#	1	
Temperature	C	06/06/2012	N001	14	-	29	17.87		F	#		
Turbidity	NTU	06/06/2012	N001	14	-	29	2.29		F	#		
Uranium	mg/L	06/06/2012	N001	14	-	29	0.000067		F	#	0.000029	
Vanadium	mg/L	06/06/2012	N001	14	-	29	0.00025	B	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0606 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Ammonia Total as N	mg/L	06/06/2012	N001	32	-	42	95	FQ	#	5	
Chloride	mg/L	06/06/2012	N001	32	-	42	28	FQ	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	32	-	42	260	FQ	#	2	
Oxidation Reduction Potential	mV	06/06/2012	N001	32	-	42	-93.9	JFQ	#		
pH	s.u.	06/06/2012	N001	32	-	42	7.03	FQ	#		
Specific Conductance	umhos/cm	06/06/2012	N001	32	-	42	2959	FQ	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/06/2012	0001	32	-	42	-84.04	FQ	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/06/2012	0001	32	-	42	-11.21	FQ	#		
Sulfate	mg/L	06/06/2012	N001	32	-	42	400	FQ	#	10	
Temperature	C	06/06/2012	N001	32	-	42	16.85	FQ	#		
Turbidity	NTU	06/06/2012	N001	32	-	42	1.48	FQ	#		
Uranium	mg/L	06/06/2012	N001	32	-	42	0.0089	FQ	#	0.0000029	
Uranium-234	pCi/L	06/06/2012	N001	32	-	42	3.51	FQ	#	0.039	0.618
Uranium-235	pCi/L	06/06/2012	N001	32	-	42	0.134	FQ	#	0.014	0.0566
Uranium-238	pCi/L	06/06/2012	N001	32	-	42	2.62	FQ	#	0.023	0.474
Vanadium	mg/L	06/06/2012	N001	32	-	42	0.0004	FQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0618 WELL 12" DIA Steel CSG. Old Mill Well??

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Total (As CaCO ₃)	mg/L	06/05/2012	N001	-	135			#		
Ammonia Total as N	mg/L	06/05/2012	N001	-	0.1	U		#	0.1	
Arsenic	mg/L	06/05/2012	N001	-	0.0017			#	0.00015	
Calcium	mg/L	06/05/2012	N001	-	56			#	0.012	
Chloride	mg/L	06/05/2012	N001	-	4.9			#	0.4	
Iron	mg/L	06/05/2012	N001	-	0.072	B		#	0.0049	
Magnesium	mg/L	06/05/2012	N001	-	32			#	0.013	
Manganese	mg/L	06/05/2012	N001	-	0.0023	B		#	0.00011	
Molybdenum	mg/L	06/05/2012	N001	-	0.0074			#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	-	2.8			#	0.02	
Oxidation Reduction Potential	mV	06/05/2012	N001	-	-28.3		J	#		
pH	s.u.	06/05/2012	N001	-	7.81			#		
Potassium	mg/L	06/05/2012	N001	-	1.5			#	0.11	
Sodium	mg/L	06/05/2012	N001	-	10	E	J	#	0.0066	
Specific Conductance	umhos/cm	06/05/2012	N001	-	550			#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/05/2012	0001	-	-77.42			#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/05/2012	0001	-	-10.5			#		
Sulfate	mg/L	06/05/2012	N001	-	110			#	1	
Temperature	C	06/05/2012	N001	-	22.36			#		
Tritium	pCi/L	06/05/2012	N003	-	91.9	U		#	91.9	50.1
Turbidity	NTU	06/05/2012	N001	-	1.54			#		

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0618 WELL 12" DIA Steel CSG. Old Mill Well??

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Uranium	mg/L	06/05/2012	N001	-	0.046			#	0.000029	
Uranium-234	pCi/L	06/05/2012	N001	-	16.3			#	0.047	2.75
Uranium-235	pCi/L	06/05/2012	N001	-	0.728			#	0.041	0.184
Uranium-238	pCi/L	06/05/2012	N001	-	15			#	0.029	2.54
Vanadium	mg/L	06/05/2012	N001	-	0.045			#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0619 WELL Water Use Permit No. 92-082.

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	N001	103.9	-	153.9	0.1	U	F	#	0.1	
Ammonia Total as N	mg/L	06/05/2012	N002	103.9	-	153.9	0.1	U	F	#	0.1	
Chloride	mg/L	06/05/2012	N001	103.9	-	153.9	5.5		F	#	0.2	
Chloride	mg/L	06/05/2012	N002	103.9	-	153.9	5.3		F	#	0.2	
Enriched Tritium	pCi/L	06/05/2012	N003	103.9	-	153.9	2.88	U	F	#	2.88	1.59
Enriched Tritium	pCi/L	06/05/2012	N004	103.9	-	153.9	2.33	U	F	#	2.33	1.44
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	103.9	-	153.9	0.82		F	#	0.01	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N002	103.9	-	153.9	0.81		F	#	0.01	
Oxidation Reduction Potential	mV	06/05/2012	N001	103.9	-	153.9	-54		JF	#		
pH	s.u.	06/05/2012	N001	103.9	-	153.9	7.91		F	#		
Specific Conductance	umhos/cm	06/05/2012	N001	103.9	-	153.9	385		F	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/05/2012	0001	103.9	-	153.9	-79.46		F	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/05/2012	0002	103.9	-	153.9	-79.6		F	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/05/2012	0001	103.9	-	153.9	-10.74		F	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/05/2012	0002	103.9	-	153.9	-10.88		F	#		
Sulfate	mg/L	06/05/2012	N001	103.9	-	153.9	29		F	#	0.5	
Sulfate	mg/L	06/05/2012	N002	103.9	-	153.9	27		F	#	0.5	
Temperature	C	06/05/2012	N001	103.9	-	153.9	18.48		F	#		
Turbidity	NTU	06/05/2012	N001	103.9	-	153.9	1.6		F	#		
Uranium	mg/L	06/05/2012	N001	103.9	-	153.9	0.0052		F	#	0.000015	
Uranium	mg/L	06/05/2012	N002	103.9	-	153.9	0.0053		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0619 WELL Water Use Permit No. 92-082.

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Uranium-234	pCi/L	06/05/2012	N001	103.9	-	153.9	2.29	F	#	0.04	0.432
Uranium-234	pCi/L	06/05/2012	N002	103.9	-	153.9	2.3	F	#	0.041	0.427
Uranium-235	pCi/L	06/05/2012	N001	103.9	-	153.9	0.141	F	#	0.031	0.0631
Uranium-235	pCi/L	06/05/2012	N002	103.9	-	153.9	0.0868	F	#	0.015	0.0456
Uranium-238	pCi/L	06/05/2012	N001	103.9	-	153.9	1.69	F	#	0.032	0.333
Uranium-238	pCi/L	06/05/2012	N002	103.9	-	153.9	1.86	F	#	0.024	0.353
Vanadium	mg/L	06/05/2012	N001	103.9	-	153.9	0.021	F	#	0.000076	
Vanadium	mg/L	06/05/2012	N002	103.9	-	153.9	0.021	F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0648 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers		Detection Limit	Uncertainty
						Lab	Data QA		
Ammonia Total as N	mg/L	06/06/2012	N001	38.5 - 88.5	0.64		F #	0.1	
Chloride	mg/L	06/06/2012	N001	38.5 - 88.5	29		F #	4	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	38.5 - 88.5	87		F #	0.5	
Oxidation Reduction Potential	mV	06/06/2012	N001	38.5 - 88.5	123.4		F #		
pH	s.u.	06/06/2012	N001	38.5 - 88.5	7.58		F #		
Specific Conductance	umhos/cm	06/06/2012	N001	38.5 - 88.5	2631		F #		
Sulfate	mg/L	06/06/2012	N001	38.5 - 88.5	990		F #	10	
Temperature	C	06/06/2012	N001	38.5 - 88.5	18.12		F #		
Turbidity	NTU	06/06/2012	N001	38.5 - 88.5	1.3		F #		
Uranium	mg/L	06/06/2012	N001	38.5 - 88.5	0.012		F #	0.000015	
Vanadium	mg/L	06/06/2012	N001	38.5 - 88.5	0.011		F #	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0650 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
						Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	N001	77.5 - 97.5	0.1	U	F	#	0.1	
Chloride	mg/L	06/05/2012	N001	77.5 - 97.5	18		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	77.5 - 97.5	4		F	#	0.05	
pH	s.u.	06/05/2012	N001	77.5 - 97.5	8.04		F	#		
Specific Conductance	umhos/cm	06/05/2012	N001	77.5 - 97.5	1091		F	#		
Sulfate	mg/L	06/05/2012	N001	77.5 - 97.5	330		F	#	5	
Temperature	C	06/05/2012	N001	77.5 - 97.5	18		F	#		
Turbidity	NTU	06/05/2012	N001	77.5 - 97.5	1.39		F	#		
Uranium	mg/L	06/05/2012	N001	77.5 - 97.5	0.0024		F	#	0.0000029	
Vanadium	mg/L	06/05/2012	N001	77.5 - 97.5	0.0032		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0651 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	N001	20	-	80	0.1	U	F	#	0.1	
Chloride	mg/L	06/05/2012	N001	20	-	80	13		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	20	-	80	0.15		F	#	0.01	
Oxidation Reduction Potential	mV	06/05/2012	N001	20	-	80	125.8		F	#		
pH	s.u.	06/05/2012	N001	20	-	80	8.24		F	#		
Specific Conductance	umhos/cm	06/05/2012	N001	20	-	80	637		F	#		
Sulfate	mg/L	06/05/2012	N001	20	-	80	120		F	#	1	
Temperature	C	06/05/2012	N001	20	-	80	16.04		F	#		
Turbidity	NTU	06/05/2012	N001	20	-	80	7.11		F	#		
Uranium	mg/L	06/05/2012	N001	20	-	80	0.0023		F	#	0.000015	
Vanadium	mg/L	06/05/2012	N001	20	-	80	0.012		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0652 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	N001	34	-	54	0.1	U	F	#	0.1	
Chloride	mg/L	06/05/2012	N001	34	-	54	15		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	34	-	54	5		F	#	0.05	
Oxidation Reduction Potential	mV	06/05/2012	N001	34	-	54	142.2		F	#		
pH	s.u.	06/05/2012	N001	34	-	54	7.88		F	#		
Specific Conductance	umhos/cm	06/05/2012	N001	34	-	54	564		F	#		
Sulfate	mg/L	06/05/2012	N001	34	-	54	65		F	#	1	
Temperature	C	06/05/2012	N001	34	-	54	17.09		F	#		
Turbidity	NTU	06/05/2012	N001	34	-	54	1.21		F	#		
Uranium	mg/L	06/05/2012	N001	34	-	54	0.0046		F	#	0.000015	
Vanadium	mg/L	06/05/2012	N001	34	-	54	0.013		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0653 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Qualifiers			Detection Limit	Uncertainty
							Lab	Data	QA		
Ammonia Total as N	mg/L	06/06/2012	N001	56	- 76	0.1	U	F	#	0.1	
Chloride	mg/L	06/06/2012	N001	56	- 76	23		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	56	- 76	51		F	#	0.5	
Oxidation Reduction Potential	mV	06/06/2012	N001	56	- 76	135		F	#		
pH	s.u.	06/06/2012	N001	56	- 76	7.58		F	#		
Specific Conductance	umhos/cm	06/06/2012	N001	56	- 76	2216		F	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/06/2012	0001	56	- 76	-90.65		F	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/06/2012	0001	56	- 76	-12.15		F	#		
Sulfate	mg/L	06/06/2012	N001	56	- 76	870		F	#	10	
Temperature	C	06/06/2012	N001	56	- 76	18.51		F	#		
Turbidity	NTU	06/06/2012	N001	56	- 76	2.11		F	#		
Uranium	mg/L	06/06/2012	N001	56	- 76	0.011		F	#	0.000015	
Uranium-234	pCi/L	06/06/2012	N001	56	- 76	4.56		F	#	0.049	0.803
Uranium-235	pCi/L	06/06/2012	N001	56	- 76	0.147		F	#	0.037	0.0646
Uranium-238	pCi/L	06/06/2012	N001	56	- 76	3.47		F	#	0.031	0.625
Vanadium	mg/L	06/06/2012	N001	56	- 76	0.0053		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0655 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers		Detection Limit	Uncertainty
								Lab	Data QA		
Ammonia Total as N	mg/L	06/06/2012	N001	38	-	58	140	F	#	5	
Chloride	mg/L	06/06/2012	N001	38	-	58	16	F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	38	-	58	190	F	#	1	
Oxidation Reduction Potential	mV	06/06/2012	N001	38	-	58	-238.1	JF	#		
pH	s.u.	06/06/2012	N001	38	-	58	7.2	F	#		
Specific Conductance	umhos/cm	06/06/2012	N001	38	-	58	3322	F	#		
Sulfate	mg/L	06/06/2012	N001	38	-	58	720	F	#	25	
Temperature	C	06/06/2012	N001	38	-	58	18.73	F	#		
Turbidity	NTU	06/06/2012	N001	38	-	58	2.93	F	#		
Uranium	mg/L	06/06/2012	N001	38	-	58	0.013	F	#	0.000015	
Vanadium	mg/L	06/06/2012	N001	38	-	58	0.0076	F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0656 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	06/06/2012	N001	38	-	58	41		F	#	1	
Chloride	mg/L	06/06/2012	N001	38	-	58	14		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	38	-	58	15		F	#	0.1	
Oxidation Reduction Potential	mV	06/06/2012	N001	38	-	58	103.2		F	#		
pH	s.u.	06/06/2012	N001	38	-	58	7.71		F	#		
Specific Conductance	umhos/cm	06/06/2012	N001	38	-	58	959		F	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/06/2012	0001	38	-	58	-86.5		F	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/06/2012	0001	38	-	58	-11.43		F	#		
Sulfate	mg/L	06/06/2012	N001	38	-	58	140		F	#	2.5	
Temperature	C	06/06/2012	N001	38	-	58	17.72		F	#		
Turbidity	NTU	06/06/2012	N001	38	-	58	5.46		F	#		
Uranium	mg/L	06/06/2012	N001	38	-	58	0.0056		F	#	0.0000029	
Uranium-234	pCi/L	06/06/2012	N001	38	-	58	2.39		F	#	0.043	0.449
Uranium-235	pCi/L	06/06/2012	N001	38	-	58	0.0843		JF	#	0.038	0.0486
Uranium-238	pCi/L	06/06/2012	N001	38	-	58	1.59		F	#	0.032	0.317
Vanadium	mg/L	06/06/2012	N001	38	-	58	0.00057		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0657 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
						Lab	Data	QA		
Ammonia Total as N	mg/L	06/04/2012	N001	121 - 136	0.1	U	F	#	0.1	
Chloride	mg/L	06/04/2012	N001	121 - 136	9.3		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	06/04/2012	N001	121 - 136	8.8		F	#	0.1	
Oxidation Reduction Potential	mV	06/04/2012	N001	121 - 136	154.8		F	#		
pH	s.u.	06/04/2012	N001	121 - 136	7.35		F	#		
Specific Conductance	umhos/cm	06/04/2012	N001	121 - 136	1285		F	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/04/2012	0001	121 - 136	-77.67		F	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/04/2012	0001	121 - 136	-10.5		F	#		
Sulfate	mg/L	06/04/2012	N001	121 - 136	490		F	#	5	
Temperature	C	06/04/2012	N001	121 - 136	17.6		F	#		
Tritium	pCi/L	06/04/2012	N003	121 - 136	90.1	U	F	#	90.1	52.6
Turbidity	NTU	06/04/2012	N001	121 - 136	5.5		F	#		
Uranium	mg/L	06/04/2012	N001	121 - 136	0.39		F	#	0.00015	
Uranium-234	pCi/L	06/04/2012	N001	121 - 136	120		F	#	0.075	20.2
Uranium-235	pCi/L	06/04/2012	N001	121 - 136	5.58		F	#	0.097	1.02
Uranium-238	pCi/L	06/04/2012	N001	121 - 136	119		F	#	0.058	20
Vanadium	mg/L	06/04/2012	N001	121 - 136	0.058		F	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0662 WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)	Lab		Data	QA			
Ammonia Total as N	mg/L	06/04/2012	N001	37.5	- 67.5	0.1	U	F	#	0.1	
Chloride	mg/L	06/04/2012	N001	37.5	- 67.5	17		F	#	2	
Enriched Tritium	pCi/L	06/04/2012	N003	37.5	- 67.5	14.6		F	#	2.27	2.95
Nitrate + Nitrite as Nitrogen	mg/L	06/04/2012	N001	37.5	- 67.5	20		F	#	0.2	
Oxidation Reduction Potential	mV	06/04/2012	N001	37.5	- 67.5	181.2		F	#		
pH	s.u.	06/04/2012	N001	37.5	- 67.5	7.32		F	#		
Specific Conductance	umhos/cm	06/04/2012	N001	37.5	- 67.5	1120		F	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/04/2012	0001	37.5	- 67.5	-79.1		F	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/04/2012	0001	37.5	- 67.5	-10.33		F	#		
Sulfate	mg/L	06/04/2012	N001	37.5	- 67.5	360		F	#	5	
Temperature	C	06/04/2012	N001	37.5	- 67.5	18.44		F	#		
Turbidity	NTU	06/04/2012	N001	37.5	- 67.5	1.34		F	#		
Uranium	mg/L	06/04/2012	N001	37.5	- 67.5	0.1		F	#	0.000029	
Uranium-234	pCi/L	06/04/2012	N001	37.5	- 67.5	36.4		F	#	0.051	6.03
Uranium-235	pCi/L	06/04/2012	N001	37.5	- 67.5	2.24		F	#	0.047	0.435
Uranium-238	pCi/L	06/04/2012	N001	37.5	- 67.5	34		F	#	0.04	5.63
Vanadium	mg/L	06/04/2012	N001	37.5	- 67.5	0.027		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0669 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Qualifiers		Detection Limit	Uncertainty
							Lab	Data QA		
Ammonia Total as N	mg/L	06/05/2012	N001	34	- 54	3.1		F #	0.1	
Chloride	mg/L	06/05/2012	N001	34	- 54	8.4		F #	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	34	- 54	14		F #	0.1	
Oxidation Reduction Potential	mV	06/05/2012	N001	34	- 54	-136		JF #		
pH	s.u.	06/05/2012	N001	34	- 54	7.59		F #		
Specific Conductance	umhos/cm	06/05/2012	N001	34	- 54	718		F #		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/05/2012	0001	34	- 54	-79.96		F #		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/05/2012	0001	34	- 54	-10.78		F #		
Sulfate	mg/L	06/05/2012	N001	34	- 54	110		F #	1	
Temperature	C	06/05/2012	N001	34	- 54	18.82		F #		
Turbidity	NTU	06/05/2012	N001	34	- 54	3.85		F #		
Uranium	mg/L	06/05/2012	N001	34	- 54	0.0065		F #	0.000029	
Uranium-234	pCi/L	06/05/2012	N001	34	- 54	3.13		F #	0.051	0.563
Uranium-235	pCi/L	06/05/2012	N001	34	- 54	0.083		F #	0.015	0.0449
Uranium-238	pCi/L	06/05/2012	N001	34	- 54	2.13		F #	0.03	0.4
Vanadium	mg/L	06/05/2012	N001	34	- 54	0.057		F #	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0711 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
						Lab	Data	QA		
Ammonia Total as N	mg/L	06/04/2012	N001	25.5 - 30.5	0.1	U	F	#	0.1	
Chloride	mg/L	06/04/2012	N001	25.5 - 30.5	15		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/04/2012	N001	25.5 - 30.5	0.56		F	#	0.01	
Oxidation Reduction Potential	mV	06/04/2012	N001	25.5 - 30.5	-30.5		JF	#		
pH	s.u.	06/04/2012	N001	25.5 - 30.5	7.82		F	#		
Specific Conductance	umhos/cm	06/04/2012	N001	25.5 - 30.5	691		F	#		
Sulfate	mg/L	06/04/2012	N001	25.5 - 30.5	120		F	#	1	
Temperature	C	06/04/2012	N001	25.5 - 30.5	18.07		F	#		
Turbidity	NTU	06/04/2012	N001	25.5 - 30.5	2.39		F	#		
Uranium	mg/L	06/04/2012	N001	25.5 - 30.5	0.0041		F	#	0.000029	
Vanadium	mg/L	06/04/2012	N001	25.5 - 30.5	0.0011		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0715 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Ammonia Total as N	mg/L	06/04/2012	N001	16	-	21	0.1	U	F	#	0.1	
Chloride	mg/L	06/04/2012	N001	16	-	21	9.7		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/04/2012	N001	16	-	21	0.77		F	#	0.01	
Oxidation Reduction Potential	mV	06/04/2012	N001	16	-	21	19.1		JF	#		
pH	s.u.	06/04/2012	N001	16	-	21	7.85		F	#		
Specific Conductance	umhos/cm	06/04/2012	N001	16	-	21	535		F	#		
Sulfate	mg/L	06/04/2012	N001	16	-	21	70		F	#	1	
Temperature	C	06/04/2012	N001	16	-	21	18.11		F	#		
Turbidity	NTU	06/04/2012	N001	16	-	21	2		F	#		
Uranium	mg/L	06/04/2012	N001	16	-	21	0.0031		F	#	0.000029	
Vanadium	mg/L	06/04/2012	N001	16	-	21	0.00076		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0719 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
						Lab	Data	QA		
Ammonia Total as N	mg/L	06/04/2012	N001	19.35 - 24.35	0.1	U	F	#	0.1	
Chloride	mg/L	06/04/2012	N001	19.35 - 24.35	15		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/04/2012	N001	19.35 - 24.35	0.8		F	#	0.01	
Oxidation Reduction Potential	mV	06/04/2012	N001	19.35 - 24.35	11.2		JF	#		
pH	s.u.	06/04/2012	N001	19.35 - 24.35	7.77		F	#		
Specific Conductance	umhos/cm	06/04/2012	N001	19.35 - 24.35	722		F	#		
Sulfate	mg/L	06/04/2012	N001	19.35 - 24.35	120		F	#	1	
Temperature	C	06/04/2012	N001	19.35 - 24.35	18.75		F	#		
Turbidity	NTU	06/04/2012	N001	19.35 - 24.35	2.54		F	#		
Uranium	mg/L	06/04/2012	N001	19.35 - 24.35	0.004		F	#	0.000029	
Vanadium	mg/L	06/04/2012	N001	19.35 - 24.35	0.0044		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0727 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
						Lab	Data	QA		
Ammonia Total as N	mg/L	06/04/2012	0001	23.73 - 28.78	0.1	U	F	#	0.1	
Chloride	mg/L	06/04/2012	0001	23.73 - 28.78	10		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/04/2012	0001	23.73 - 28.78	0.83		F	#	0.01	
Oxidation Reduction Potential	mV	06/04/2012	N001	23.73 - 28.78	77.1		JF	#		
pH	s.u.	06/04/2012	N001	23.73 - 28.78	7.81		F	#		
Specific Conductance	umhos/cm	06/04/2012	N001	23.73 - 28.78	567		F	#		
Sulfate	mg/L	06/04/2012	0001	23.73 - 28.78	84		F	#	1	
Temperature	C	06/04/2012	N001	23.73 - 28.78	18.55		F	#		
Turbidity	NTU	06/04/2012	N001	23.73 - 28.78	16		F	#		
Uranium	mg/L	06/04/2012	0001	23.73 - 28.78	0.002		F	#	0.000029	
Vanadium	mg/L	06/04/2012	0001	23.73 - 28.78	0.0024		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0733 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Qualifiers			Detection Limit	Uncertainty
							Lab	Data	QA		
Ammonia Total as N	mg/L	06/06/2012	0001	49	- 54	0.1	U	FQ	#	0.1	
Chloride	mg/L	06/06/2012	0001	49	- 54	6.2		FQ	#	0.4	
Enriched Tritium	pCi/L	06/06/2012	N003	49	- 54	6.36		FQJ	#	2.57	2.03
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	0001	49	- 54	5.3		FQ	#	0.05	
Oxidation Reduction Potential	mV	06/06/2012	N001	49	- 54	121.8		FQ	#		
pH	s.u.	06/06/2012	N001	49	- 54	7.55		FQ	#		
Specific Conductance	umhos/cm	06/06/2012	N001	49	- 54	588		FQ	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/06/2012	0002	49	- 54	-78.02		FQ	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/06/2012	0002	49	- 54	-10.6		FQ	#		
Sulfate	mg/L	06/06/2012	0001	49	- 54	81		FQ	#	1	
Temperature	C	06/06/2012	N001	49	- 54	27.2		FQ	#		
Turbidity	NTU	06/06/2012	N001	49	- 54	11.5		FQ	#		
Uranium	mg/L	06/06/2012	0001	49	- 54	0.0058		FQ	#	0.000029	
Uranium-234	pCi/L	06/06/2012	0001	49	- 54	2.68		FQ	#	0.036	0.482
Uranium-235	pCi/L	06/06/2012	0001	49	- 54	0.069		JFQ	#	0.036	0.0411
Uranium-238	pCi/L	06/06/2012	0001	49	- 54	1.88		FQ	#	0.022	0.352
Vanadium	mg/L	06/06/2012	0001	49	- 54	0.047		FQ	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0734 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	06/04/2012	0001	50	-	80	0.1	U	F	#	0.1	
Chloride	mg/L	06/04/2012	0001	50	-	80	5.7		F	#	0.4	
Enriched Tritium	pCi/L	06/04/2012	N003	50	-	80	4.39		FJ	#	2.68	1.85
Nitrate + Nitrite as Nitrogen	mg/L	06/04/2012	0001	50	-	80	3.3		F	#	0.02	
Oxidation Reduction Potential	mV	06/04/2012	N001	50	-	80	162		F	#		
pH	s.u.	06/04/2012	N001	50	-	80	7.56		F	#		
Specific Conductance	umhos/cm	06/04/2012	N001	50	-	80	487		F	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/06/2012	0002	50	-	80	-78.86		F	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/06/2012	0002	50	-	80	-10.72		F	#		
Sulfate	mg/L	06/04/2012	0001	50	-	80	55		F	#	1	
Temperature	C	06/04/2012	N001	50	-	80	18.8		F	#		
Turbidity	NTU	06/04/2012	N001	50	-	80	18.5		F	#		
Uranium	mg/L	06/04/2012	0001	50	-	80	0.026		F	#	0.000029	
Uranium-234	pCi/L	06/04/2012	0001	50	-	80	9.96		F	#	0.046	1.68
Uranium-235	pCi/L	06/04/2012	0001	50	-	80	0.33		F	#	0.03	0.103
Uranium-238	pCi/L	06/04/2012	0001	50	-	80	8.44		F	#	0.031	1.43
Vanadium	mg/L	06/04/2012	0001	50	-	80	0.023		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0735 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	N001	53.5	-	58.5	0.1	U	FQ	#	0.1	
Chloride	mg/L	06/05/2012	N001	53.5	-	58.5	1.9		FQ	#	0.4	
Enriched Tritium	pCi/L	06/05/2012	N003	53.5	-	58.5	15.5		FQ	#	2.58	3.2
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	53.5	-	58.5	4.8		FQ	#	0.05	
Oxidation Reduction Potential	mV	06/05/2012	N001	53.5	-	58.5	-18.8		JFQ	#		
pH	s.u.	06/05/2012	N001	53.5	-	58.5	7.57		FQ	#		
Specific Conductance	umhos/cm	06/05/2012	N001	53.5	-	58.5	677		FQ	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/05/2012	0001	53.5	-	58.5	-63.25		FQ	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/05/2012	0001	53.5	-	58.5	-9.06		FQ	#		
Sulfate	mg/L	06/05/2012	N001	53.5	-	58.5	180		FQ	#	1	
Temperature	C	06/05/2012	N001	53.5	-	58.5	25.39		FQ	#		
Turbidity	NTU	06/05/2012	N001	53.5	-	58.5	4.88		FQ	#		
Uranium	mg/L	06/05/2012	N001	53.5	-	58.5	0.18		FQ	#	0.000029	
Uranium-234	pCi/L	06/05/2012	N001	53.5	-	58.5	56.1		FQ	#	0.062	9.55
Uranium-235	pCi/L	06/05/2012	N001	53.5	-	58.5	2.66		FQ	#	0.064	0.538
Uranium-238	pCi/L	06/05/2012	N001	53.5	-	58.5	54.1		FQ	#	0.049	9.22
Vanadium	mg/L	06/05/2012	N001	53.5	-	58.5	0.034		FQ	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0738 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	N001	26	-	31	0.1	U	F	#	0.1	
Chloride	mg/L	06/05/2012	N001	26	-	31	15		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	26	-	31	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	06/05/2012	N001	26	-	31	-19.5		F	#		
pH	s.u.	06/05/2012	N001	26	-	31	8.1		F	#		
Specific Conductance	umhos/cm	06/05/2012	N001	26	-	31	793		F	#		
Sulfate	mg/L	06/05/2012	N001	26	-	31	180		F	#	2.5	
Temperature	C	06/05/2012	N001	26	-	31	20.47		F	#		
Turbidity	NTU	06/05/2012	N001	26	-	31	9.7		F	#		
Uranium	mg/L	06/05/2012	N001	26	-	31	0.00029		F	#	0.000029	
Vanadium	mg/L	06/05/2012	N001	26	-	31	0.00085		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0739 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	0001	33	-	38	0.27		F	#	0.1	
Chloride	mg/L	06/05/2012	0001	33	-	38	16		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	0001	33	-	38	1.3		F	#	0.01	
Oxidation Reduction Potential	mV	06/05/2012	N001	33	-	38	-49.2		F	#		
pH	s.u.	06/05/2012	N001	33	-	38	7.89		F	#		
Specific Conductance	umhos/cm	06/05/2012	N001	33	-	38	835		F	#		
Sulfate	mg/L	06/05/2012	0001	33	-	38	180		F	#	2.5	
Temperature	C	06/05/2012	N001	33	-	38	19.34		F	#		
Turbidity	NTU	06/05/2012	N001	33	-	38	26.7		F	#		
Uranium	mg/L	06/05/2012	0001	33	-	38	0.004		F	#	0.000015	
Vanadium	mg/L	06/05/2012	0001	33	-	38	0.0096		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0740 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	N001	30	-	35	0.1	U	F	#	0.1	
Chloride	mg/L	06/05/2012	N001	30	-	35	40		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	30	-	35	14		F	#	0.1	
Oxidation Reduction Potential	mV	06/05/2012	N001	30	-	35	115.3		F	#		
pH	s.u.	06/05/2012	N001	30	-	35	7.63		F	#		
Specific Conductance	umhos/cm	06/05/2012	N001	30	-	35	2552		F	#		
Sulfate	mg/L	06/05/2012	N001	30	-	35	1200		F	#	10	
Temperature	C	06/05/2012	N001	30	-	35	22.33		F	#		
Turbidity	NTU	06/05/2012	N001	30	-	35	5.04		F	#		
Uranium	mg/L	06/05/2012	N001	30	-	35	0.034		F	#	0.000029	
Vanadium	mg/L	06/05/2012	N001	30	-	35	0.022		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0741 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Ammonia Total as N	mg/L	06/06/2012	N001	50	-	80	110		F	#	5	
Chloride	mg/L	06/06/2012	N001	50	-	80	17		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	50	-	80	100		F	#	1	
Oxidation Reduction Potential	mV	06/06/2012	N001	50	-	80	-91.9		JF	#		
pH	s.u.	06/06/2012	N001	50	-	80	7.43		F	#		
Specific Conductance	umhos/cm	06/06/2012	N001	50	-	80	2422		F	#		
Sulfate	mg/L	06/06/2012	N001	50	-	80	530		F	#	10	
Temperature	C	06/06/2012	N001	50	-	80	23.02		F	#		
Turbidity	NTU	06/06/2012	N001	50	-	80	7.16		F	#		
Uranium	mg/L	06/06/2012	N001	50	-	80	0.012		F	#	0.000015	
Vanadium	mg/L	06/06/2012	N001	50	-	80	0.007		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0742 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers		Detection Limit	Uncertainty
								Lab	Data QA		
Ammonia Total as N	mg/L	06/06/2012	N001	50	-	80	120	F	#	5	
Chloride	mg/L	06/06/2012	N001	50	-	80	17	F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	50	-	80	110	F	#	1	
Oxidation Reduction Potential	mV	06/06/2012	N001	50	-	80	-191.5	JF	#		
pH	s.u.	06/06/2012	N001	50	-	80	7.37	F	#		
Specific Conductance	umhos/cm	06/06/2012	N001	50	-	80	2485	F	#		
Sulfate	mg/L	06/06/2012	N001	50	-	80	520	F	#	10	
Temperature	C	06/06/2012	N001	50	-	80	19.49	F	#		
Turbidity	NTU	06/06/2012	N001	50	-	80	1.43	F	#		
Uranium	mg/L	06/06/2012	N001	50	-	80	0.0097	F	#	0.000015	
Vanadium	mg/L	06/06/2012	N001	50	-	80	0.0078	F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0743 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
				Lab	Data	QA						
Ammonia Total as N	mg/L	06/06/2012	0001	45	-	75	81	F	#	5		
Chloride	mg/L	06/06/2012	0001	45	-	75	16	F	#	4		
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	0001	45	-	75	15	F	#	0.1		
Oxidation Reduction Potential	mV	06/06/2012	N001	45	-	75	-222.7	JF	#			
pH	s.u.	06/06/2012	N001	45	-	75	8.04	F	#			
Specific Conductance	umhos/cm	06/06/2012	N001	45	-	75	2042	F	#			
Sulfate	mg/L	06/06/2012	0001	45	-	75	710	F	#	10		
Temperature	C	06/06/2012	N001	45	-	75	20.48	F	#			
Turbidity	NTU	06/06/2012	N001	45	-	75	22.4	F	#			
Uranium	mg/L	06/06/2012	0001	45	-	75	0.052	F	#	0.000029		
Vanadium	mg/L	06/06/2012	0001	45	-	75	0.00069	F	#	0.000015		

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0744 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers		Detection Limit	Uncertainty
								Lab	Data QA		
Ammonia Total as N	mg/L	06/06/2012	N001	31	-	61	130	F	#	5	
Chloride	mg/L	06/06/2012	N001	31	-	61	15	F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	31	-	61	140	F	#	1	
Oxidation Reduction Potential	mV	06/06/2012	N001	31	-	61	-178.4	JF	#		
pH	s.u.	06/06/2012	N001	31	-	61	7.41	F	#		
Specific Conductance	umhos/cm	06/06/2012	N001	31	-	61	2490	F	#		
Sulfate	mg/L	06/06/2012	N001	31	-	61	410	F	#	10	
Temperature	C	06/06/2012	N001	31	-	61	17.98	F	#		
Turbidity	NTU	06/06/2012	N001	31	-	61	3.83	F	#		
Uranium	mg/L	06/06/2012	N001	31	-	61	0.0091	F	#	0.000015	
Vanadium	mg/L	06/06/2012	N001	31	-	61	0.007	F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0760 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	0001	55	-	75	0.1	U	F	#	0.1	
Chloride	mg/L	06/05/2012	0001	55	-	75	9.7		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	0001	55	-	75	0.034		F	#	0.01	
Oxidation Reduction Potential	mV	06/05/2012	N001	55	-	75	-111.6		F	#		
pH	s.u.	06/05/2012	N001	55	-	75	8.13		F	#		
Specific Conductance	umhos/cm	06/05/2012	N001	55	-	75	523		F	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/05/2012	0002	55	-	75	-82.62		F	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/05/2012	0002	55	-	75	-11.18		F	#		
Sulfate	mg/L	06/05/2012	0001	55	-	75	85		F	#	1	
Temperature	C	06/05/2012	N001	55	-	75	18.45		F	#		
Turbidity	NTU	06/05/2012	N001	55	-	75	14.8		F	#		
Uranium	mg/L	06/05/2012	0001	55	-	75	0.00026		F	#	0.0000029	
Uranium-234	pCi/L	06/05/2012	0001	55	-	75	0.0967		JF	#	0.047	0.0517
Uranium-235	pCi/L	06/05/2012	0001	55	-	75	0.044	U	F	#	0.044	0.0292
Uranium-238	pCi/L	06/05/2012	0001	55	-	75	0.0595		UF	#	0.058	0.0454
Vanadium	mg/L	06/05/2012	0001	55	-	75	0.0001	B	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0761 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	06/06/2012	0001	39	-	49	0.1	U	F	#	0.1	
Chloride	mg/L	06/06/2012	0001	39	-	49	13		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	0001	39	-	49	31		F	#	0.2	
Oxidation Reduction Potential	mV	06/06/2012	N001	39	-	49	150.3		F	#		
pH	s.u.	06/06/2012	N001	39	-	49	7.44		F	#		
Specific Conductance	umhos/cm	06/06/2012	N001	39	-	49	1372		F	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/06/2012	0002	39	-	49	-78.85		F	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/06/2012	0002	39	-	49	-10.74		F	#		
Sulfate	mg/L	06/06/2012	0001	39	-	49	430		F	#	5	
Temperature	C	06/06/2012	N001	39	-	49	17.6		F	#		
Turbidity	NTU	06/06/2012	N001	39	-	49	25.5		F	#		
Uranium	mg/L	06/06/2012	0001	39	-	49	0.029		F	#	0.0000029	
Uranium-234	pCi/L	06/06/2012	0001	39	-	49	10.1		F	#	0.037	1.69
Uranium-235	pCi/L	06/06/2012	0001	39	-	49	0.448		F	#	0.032	0.121
Uranium-238	pCi/L	06/06/2012	0001	39	-	49	9.09		F	#	0.045	1.52
Vanadium	mg/L	06/06/2012	0001	39	-	49	0.0017		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0762 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	N001	29	-	49	0.1	U	F	#	0.1	
Chloride	mg/L	06/05/2012	N001	29	-	49	61		F	#	10	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	29	-	49	100		F	#	1	
Oxidation Reduction Potential	mV	06/05/2012	N001	29	-	49	90.1		F	#		
pH	s.u.	06/05/2012	N001	29	-	49	7.5		F	#		
Specific Conductance	umhos/cm	06/05/2012	N001	29	-	49	3703		F	#		
Sulfate	mg/L	06/05/2012	N001	29	-	49	1400		F	#	25	
Temperature	C	06/05/2012	N001	29	-	49	17.62		F	#		
Turbidity	NTU	06/05/2012	N001	29	-	49	6.73		F	#		
Uranium	mg/L	06/05/2012	N001	29	-	49	0.011		F	#	0.000015	
Vanadium	mg/L	06/05/2012	N001	29	-	49	0.0077		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0764 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Qualifiers		Detection Limit	Uncertainty
							Lab	Data QA		
Ammonia Total as N	mg/L	06/06/2012	0001	47	- 52	0.1	U	FQ #	0.1	
Chloride	mg/L	06/06/2012	0001	47	- 52	9.9		FQ #	2	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	0001	47	- 52	42		FQ #	0.5	
Oxidation Reduction Potential	mV	06/06/2012	N001	47	- 52	163.4		FQ #		
pH	s.u.	06/06/2012	N001	47	- 52	7.84		FQ #		
Specific Conductance	umhos/cm	06/06/2012	N001	47	- 52	1208		FQ #		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/06/2012	0002	47	- 52	-79.95		FQ #		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/06/2012	0002	47	- 52	-10.7		FQ #		
Sulfate	mg/L	06/06/2012	0001	47	- 52	260		FQ #	5	
Temperature	C	06/06/2012	N001	47	- 52	18.51		FQ #		
Turbidity	NTU	06/06/2012	N001	47	- 52	23.4		FQ #		
Uranium	mg/L	06/06/2012	0001	47	- 52	0.011		FQ #	0.000015	
Uranium-234	pCi/L	06/06/2012	0001	47	- 52	5.31		FQ #	0.044	0.925
Uranium-235	pCi/L	06/06/2012	0001	47	- 52	0.216		FQ #	0.037	0.0803
Uranium-238	pCi/L	06/06/2012	0001	47	- 52	3.39		FQ #	0.044	0.611
Vanadium	mg/L	06/06/2012	0001	47	- 52	0.016		FQ #	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0765 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
						Lab	Data	QA		
Ammonia Total as N	mg/L	06/06/2012	0001	58.6 - 88.7	110		F	#	5	
Chloride	mg/L	06/06/2012	0001	58.6 - 88.7	17		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	0001	58.6 - 88.7	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	06/06/2012	N001	58.6 - 88.7	-245.3		JF	#		
pH	s.u.	06/06/2012	N001	58.6 - 88.7	6.11		F	#		
Specific Conductance	umhos/cm	06/06/2012	N001	58.6 - 88.7	1972		F	#		
Sulfate	mg/L	06/06/2012	0001	58.6 - 88.7	45		F	#	1	
Temperature	C	06/06/2012	N001	58.6 - 88.7	19.59		F	#		
Turbidity	NTU	06/06/2012	N001	58.6 - 88.7	22		F	#		
Uranium	mg/L	06/06/2012	0001	58.6 - 88.7	0.00023		F	#	0.000029	
Vanadium	mg/L	06/06/2012	0001	58.6 - 88.7	0.00032		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0766 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers		Detection Limit	Uncertainty
						Lab	Data QA		
Ammonia Total as N	mg/L	06/06/2012	N001	47.2 - 57.2	120		F #	5	
Chloride	mg/L	06/06/2012	N001	47.2 - 57.2	15		F #	4	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	47.2 - 57.2	110		F #	1	
Oxidation Reduction Potential	mV	06/06/2012	N001	47.2 - 57.2	-223.9		JF #		
pH	s.u.	06/06/2012	N001	47.2 - 57.2	7.6		F #		
Specific Conductance	umhos/cm	06/06/2012	N001	47.2 - 57.2	2374		F #		
Sulfate	mg/L	06/06/2012	N001	47.2 - 57.2	420		F #	10	
Temperature	C	06/06/2012	N001	47.2 - 57.2	18.05		F #		
Turbidity	NTU	06/06/2012	N001	47.2 - 57.2	4.7		F #		
Uranium	mg/L	06/06/2012	N001	47.2 - 57.2	0.012		F #	0.000029	
Vanadium	mg/L	06/06/2012	N001	47.2 - 57.2	0.0041		F #	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0767 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
						Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	N001	43.5 - 63.5	0.1	U	F	#	0.1	
Ammonia Total as N	mg/L	06/05/2012	N002	43.5 - 63.5	0.1	U	F	#	0.1	
Chloride	mg/L	06/05/2012	N001	43.5 - 63.5	5.5		F	#	0.2	
Chloride	mg/L	06/05/2012	N002	43.5 - 63.5	5.3		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	43.5 - 63.5	0.01	U	F	#	0.01	
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N002	43.5 - 63.5	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	06/05/2012	N001	43.5 - 63.5	-112.8		F	#		
pH	s.u.	06/05/2012	N001	43.5 - 63.5	7.86		F	#		
Specific Conductance	umhos/cm	06/05/2012	N001	43.5 - 63.5	408		F	#		
Sulfate	mg/L	06/05/2012	N001	43.5 - 63.5	32		F	#	0.5	
Sulfate	mg/L	06/05/2012	N002	43.5 - 63.5	31		F	#	0.5	
Temperature	C	06/05/2012	N001	43.5 - 63.5	18.04		F	#		
Turbidity	NTU	06/05/2012	N001	43.5 - 63.5	1.54		F	#		
Uranium	mg/L	06/05/2012	N001	43.5 - 63.5	0.00066		F	#	0.000029	
Uranium	mg/L	06/05/2012	N002	43.5 - 63.5	0.00065		F	#	0.000029	
Vanadium	mg/L	06/05/2012	N001	43.5 - 63.5	0.000079	B	F	#	0.000015	
Vanadium	mg/L	06/05/2012	N002	43.5 - 63.5	0.000052	B	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0768 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
						Lab	Data	QA		
Ammonia Total as N	mg/L	06/06/2012	N001	24.4 - 44.4	0.39	N	JF	#	0.1	
Chloride	mg/L	06/06/2012	N001	24.4 - 44.4	12		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	24.4 - 44.4	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	06/06/2012	N001	24.4 - 44.4	-174.9		F	#		
pH	s.u.	06/06/2012	N001	24.4 - 44.4	6.99		F	#		
Specific Conductance	umhos/cm	06/06/2012	N001	24.4 - 44.4	486		F	#		
Sulfate	mg/L	06/06/2012	N001	24.4 - 44.4	64		F	#	1	
Temperature	C	06/06/2012	N001	24.4 - 44.4	16.81		F	#		
Turbidity	NTU	06/06/2012	N001	24.4 - 44.4	7.24		F	#		
Uranium	mg/L	06/06/2012	N001	24.4 - 44.4	0.000063		F	#	0.000029	
Vanadium	mg/L	06/06/2012	N001	24.4 - 44.4	0.00026	B	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0770 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Qualifiers		Detection Limit	Uncertainty
							Lab	Data QA		
Ammonia Total as N	mg/L	06/06/2012	N001	54.9	- 64.9	28	F	#	1	
Chloride	mg/L	06/06/2012	N001	54.9	- 64.9	14	F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	54.9	- 64.9	16	F	#	0.1	
Oxidation Reduction Potential	mV	06/06/2012	N001	54.9	- 64.9	53.1	F	#		
pH	s.u.	06/06/2012	N001	54.9	- 64.9	7.48	F	#		
Specific Conductance	umhos/cm	06/06/2012	N001	54.9	- 64.9	986	F	#		
Sulfate	mg/L	06/06/2012	N001	54.9	- 64.9	180	F	#	5	
Temperature	C	06/06/2012	N001	54.9	- 64.9	17.93	F	#		
Turbidity	NTU	06/06/2012	N001	54.9	- 64.9	1.06	F	#		
Uranium	mg/L	06/06/2012	N001	54.9	- 64.9	0.0056	F	#	0.000029	
Vanadium	mg/L	06/06/2012	N001	54.9	- 64.9	0.00072	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0771 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers		Detection Limit	Uncertainty
						Lab	Data QA		
Ammonia Total as N	mg/L	06/06/2012	N001	57.4 - 77.4	240		FQ #	5	
Chloride	mg/L	06/06/2012	N001	57.4 - 77.4	19		FQ #	1	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	57.4 - 77.4	190		FQ #	1	
Oxidation Reduction Potential	mV	06/06/2012	N001	57.4 - 77.4	-157.9		JFQ #		
pH	s.u.	06/06/2012	N001	57.4 - 77.4	7.26		FQ #		
Specific Conductance	umhos/cm	06/06/2012	N001	57.4 - 77.4	4456		FQ #		
Sulfate	mg/L	06/06/2012	N001	57.4 - 77.4	1300		FQ #	25	
Temperature	C	06/06/2012	N001	57.4 - 77.4	17.89		FQ #		
Turbidity	NTU	06/06/2012	N001	57.4 - 77.4	2.13		FQ #		
Uranium	mg/L	06/06/2012	N001	57.4 - 77.4	0.014		FQ #	0.000015	
Vanadium	mg/L	06/06/2012	N001	57.4 - 77.4	0.008		FQ #	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0772 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers			Detection Limit	Uncertainty
								Lab	Data	QA		
Alkalinity, Total (As CaCO3)	mg/L	06/06/2012	N001	7.4	-	27.4	221		F	#		
Ammonia Total as N	mg/L	06/06/2012	N001	7.4	-	27.4	1.1		F	#	0.1	
Ammonia Total as N	mg/L	06/06/2012	N002	7.4	-	27.4	1.2		F	#	0.1	
Arsenic	mg/L	06/06/2012	N001	7.4	-	27.4	0.0018		F	#	0.000015	
Calcium	mg/L	06/06/2012	N001	7.4	-	27.4	25		F	#	0.012	
Chloride	mg/L	06/06/2012	N001	7.4	-	27.4	14		F	#	0.4	
Chloride	mg/L	06/06/2012	N002	7.4	-	27.4	14		F	#	0.4	
Iron	mg/L	06/06/2012	N001	7.4	-	27.4	0.0049	U	JF	#	0.0049	
Magnesium	mg/L	06/06/2012	N001	7.4	-	27.4	17		F	#	0.013	
Manganese	mg/L	06/06/2012	N001	7.4	-	27.4	0.0048	B	F	#	0.00011	
Molybdenum	mg/L	06/06/2012	N001	7.4	-	27.4	0.0029		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	7.4	-	27.4	1.1		F	#	0.01	
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N002	7.4	-	27.4	1.1		F	#	0.01	
Oxidation Reduction Potential	mV	06/06/2012	N001	7.4	-	27.4	-18.6		JF	#		
pH	s.u.	06/06/2012	N001	7.4	-	27.4	7.68		F	#		
Potassium	mg/L	06/06/2012	N001	7.4	-	27.4	0.63	B	F	#	0.11	
Sodium	mg/L	06/06/2012	N001	7.4	-	27.4	86	E	JF	#	0.0066	
Specific Conductance	umhos/cm	06/06/2012	N001	7.4	-	27.4	694		F	#		
Sulfate	mg/L	06/06/2012	N001	7.4	-	27.4	110		F	#	1	
Sulfate	mg/L	06/06/2012	N002	7.4	-	27.4	110		F	#	1	
Temperature	C	06/06/2012	N001	7.4	-	27.4	14.89		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0772 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers		Detection Limit	Uncertainty
								Lab	Data QA		
Turbidity	NTU	06/06/2012	N001	7.4	-	27.4	2.32	F	#		
Uranium	mg/L	06/06/2012	N001	7.4	-	27.4	0.0059	F	#	0.0000029	
Uranium	mg/L	06/06/2012	N002	7.4	-	27.4	0.0058	F	#	0.000015	
Vanadium	mg/L	06/06/2012	N001	7.4	-	27.4	0.0086	F	#	0.000015	
Vanadium	mg/L	06/06/2012	N002	7.4	-	27.4	0.0095	F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0774 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	N001	45	-	55	0.1	U	F	#	0.1	
Chloride	mg/L	06/05/2012	N001	45	-	55	5.3		F	#	0.2	
Enriched Tritium	pCi/L	06/05/2012	N003	45	-	55	2.94	U	F	#	2.94	1.74
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	45	-	55	1.5		F	#	0.01	
Oxidation Reduction Potential	mV	06/05/2012	N001	45	-	55	-35.8		JF	#		
pH	s.u.	06/05/2012	N001	45	-	55	7.78		F	#		
Specific Conductance	umhos/cm	06/05/2012	N001	45	-	55	404		F	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/05/2012	0001	45	-	55	-79.27		F	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/05/2012	0001	45	-	55	-10.74		F	#		
Sulfate	mg/L	06/05/2012	N001	45	-	55	36		F	#	0.5	
Temperature	C	06/05/2012	N001	45	-	55	20.33		F	#		
Turbidity	NTU	06/05/2012	N001	45	-	55	4.71		F	#		
Uranium	mg/L	06/05/2012	N001	45	-	55	0.032		F	#	0.000015	
Uranium-234	pCi/L	06/05/2012	N001	45	-	55	10.9		F	#	0.039	1.83
Uranium-235	pCi/L	06/05/2012	N001	45	-	55	0.473		F	#	0.015	0.127
Uranium-238	pCi/L	06/05/2012	N001	45	-	55	10.5		F	#	0.024	1.76
Vanadium	mg/L	06/05/2012	N001	45	-	55	0.021		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0775 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
						Lab	Data	QA		
Ammonia Total as N	mg/L	06/06/2012	N001	142 - 167	0.1	U	F	#	0.1	
Chloride	mg/L	06/06/2012	N001	142 - 167	5.4		F	#	0.2	
Enriched Tritium	pCi/L	06/06/2012	N003	142 - 167	2.6	U	F	#	2.6	1.57
Nitrate + Nitrite as Nitrogen	mg/L	06/06/2012	N001	142 - 167	0.6		F	#	0.01	
Oxidation Reduction Potential	mV	06/06/2012	N001	142 - 167	131.4		F	#		
pH	s.u.	06/06/2012	N001	142 - 167	7.82		F	#		
Specific Conductance	umhos/cm	06/06/2012	N001	142 - 167	399		F	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/06/2012	0001	142 - 167	-80.44		F	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/06/2012	0001	142 - 167	-10.95		F	#		
Sulfate	mg/L	06/06/2012	N001	142 - 167	24		F	#	0.5	
Temperature	C	06/06/2012	N001	142 - 167	19.99		F	#		
Turbidity	NTU	06/06/2012	N001	142 - 167	1.69		F	#		
Uranium	mg/L	06/06/2012	N001	142 - 167	0.0029		F	#	0.0000029	
Uranium-234	pCi/L	06/06/2012	N001	142 - 167	1.55		F	#	0.06	0.309
Uranium-235	pCi/L	06/06/2012	N001	142 - 167	0.0718		F	#	0.016	0.043
Uranium-238	pCi/L	06/06/2012	N001	142 - 167	0.98		F	#	0.036	0.213
Vanadium	mg/L	06/06/2012	N001	142 - 167	0.00068		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0776 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Ammonia Total as N	mg/L	06/05/2012	N001	99.5 - 149.5	0.1	U	F	#	0.1	
Chloride	mg/L	06/05/2012	N001	99.5 - 149.5	5.4		F	#	0.2	
Enriched Tritium	pCi/L	06/05/2012	N003	99.5 - 149.5	3.8		FJ	#	2.43	1.68
Nitrate + Nitrite as Nitrogen	mg/L	06/05/2012	N001	99.5 - 149.5	0.74		F	#	0.01	
Oxidation Reduction Potential	mV	06/05/2012	N001	99.5 - 149.5	-52.5		JF	#		
pH	s.u.	06/05/2012	N001	99.5 - 149.5	7.88		F	#		
Specific Conductance	umhos/cm	06/05/2012	N001	99.5 - 149.5	401		F	#		
Stable isotope ratio H2/H1 in Water	parts per thousand	06/05/2012	0001	99.5 - 149.5	-79.92		F	#		
Stable isotope ratio O18/O16 in Water	parts per thousand	06/05/2012	0001	99.5 - 149.5	-10.85		F	#		
Sulfate	mg/L	06/05/2012	N001	99.5 - 149.5	28		F	#	0.5	
Temperature	C	06/05/2012	N001	99.5 - 149.5	22.76		F	#		
Turbidity	NTU	06/05/2012	N001	99.5 - 149.5	4.08		F	#		
Uranium	mg/L	06/05/2012	N001	99.5 - 149.5	0.0066		F	#	0.000015	
Uranium-234	pCi/L	06/05/2012	N001	99.5 - 149.5	3		F	#	0.048	0.55
Uranium-235	pCi/L	06/05/2012	N001	99.5 - 149.5	0.133		F	#	0.038	0.0617
Uranium-238	pCi/L	06/05/2012	N001	99.5 - 149.5	2.09		F	#	0.032	0.4
Vanadium	mg/L	06/05/2012	N001	99.5 - 149.5	0.018		F	#	0.000076	

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

LAB QUALIFIERS:

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

DATA QUALIFIERS:

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

QA QUALIFIER:

Validated according to quality assurance guidelines.

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Surface Water Quality Data

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Surface Water Quality Data by Location (USEE102) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 10/18/2012

Location: 0623 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID		Lab	Data	QA		
Ammonia Total as N	mg/L	06/04/2012	N001	0.1	U		#	0.1	
Chloride	mg/L	06/04/2012	N001	9.3			#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/04/2012	N001	0.03			#	0.01	
Oxidation Reduction Potential	mV	06/04/2012	N001	98.8		J	#		
pH	s.u.	06/04/2012	N001	7.79			#		
Specific Conductance	umhos/cm	06/04/2012	N001	636			#		
Sulfate	mg/L	06/04/2012	N001	43			#	1	
Temperature	C	06/04/2012	N001	28.38			#		
Turbidity	NTU	06/04/2012	N001	8.49			#		
Uranium	mg/L	06/04/2012	N001	0.0011			#	0.000029	
Vanadium	mg/L	06/04/2012	N001	0.0018			#	0.000015	

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

LAB QUALIFIERS:

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

DATA QUALIFIERS:

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

QA QUALIFIER:

- # Validated according to quality assurance guidelines.

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Static Water Level Data

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STATIC WATER LEVELS (USEE700) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/18/2012

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)	Water Level Flag
0402	U	4840.3	06/05/2012	10:13:31	5.12	4835.18	
0602	U	4864.43	06/04/2012	15:36:11	9.91	4854.52	
0603	U	4849.41	06/05/2012	09:13:48	11.69	4837.72	
0604	C	4840.42	06/05/2012	09:42:53	9.71	4830.71	
0605	C	4835.07	06/06/2012	15:49:12	11.29	4823.78	
0606	D	4864.73	06/06/2012	08:58:23	37.03	4827.7	
0619	O	4888.63	06/05/2012	12:16:00	60.84	4827.79	
0648	N	4835.14	06/06/2012	11:16:46	35.18	4799.96	
0650	D	4794.28	06/05/2012	14:30:29	20.63	4773.65	
0651	C	4787.88	06/05/2012	10:20:58	9	4778.88	
0652	C	4808.93	06/05/2012	09:51:46	19.09	4789.84	
0653	D	4837.08	06/06/2012	10:50:35	36.97	4800.11	
0655	D	4862.06	06/06/2012	13:36:56	41.35	4820.71	
0656	D	4856.33	06/06/2012	13:48:26	38.55	4817.78	
0657	O	4878.99	06/04/2012	18:25:19	53.88	4825.11	
0662	D	4878.56	06/04/2012	18:45:16	53.4	4825.16	
0669	D	4867.19	06/05/2012	11:26:59	51.29	4815.9	
0711			06/04/2012	16:33:42	11.74		E
0715			06/04/2012	16:06:17	11.22		E
0719			06/04/2012	15:07:42	12.76		E
0727			06/04/2012	14:39:18	14.74		E
0733			06/06/2012	14:50:01	51.72		E
0734			06/04/2012	19:40:47	53.19		E
0735			06/05/2012	15:14:38	54		E
0738			06/05/2012	12:11:02	16.85		E
0739			06/05/2012	15:15:09	23.1		E
0740			06/05/2012	16:15:59	27.82		E
0741			06/06/2012	10:02:43	37.21		E

STATIC WATER LEVELS (USEE700) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/18/2012

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)	Water Level Flag
0742			06/06/2012	10:45:25	37.56		E
0743			06/06/2012	11:13:06	36.99		E
0744			06/06/2012	11:51:02	37.48		E
0760	D	4814.8	06/05/2012	10:56:43	26.23	4788.57	
0761	D	4835.02	06/06/2012	10:11:58	44.4	4790.62	
0762	D	4820.74	06/05/2012	15:42:51	33.21	4787.53	
0764	D	4851.53	06/06/2012	09:15:44	51.12	4800.41	
0765	D	4848.45	06/06/2012	12:16:01	37.19	4811.26	
0766	D	4847.97	06/06/2012	13:02:08	37.81	4810.16	
0767	D	4808.25	06/05/2012	11:28:46	7.3	4800.95	
0768	D	4820.73	06/06/2012	16:16:55	14.74	4805.99	
0770	D	4857.26	06/06/2012	13:28:49	34.33	4822.93	
0771	D	4863.26	06/06/2012	13:53:13	43.46	4819.8	
0772	O	4847.6	06/06/2012	08:29:52	12.44	4835.16	
0774	O	4880.14	06/05/2012	14:28:01			B
0775	D	4879.68	06/06/2012	12:50:58	55.49	4824.19	
0776	O	4883.33	06/05/2012	13:45:05	56.54	4826.79	

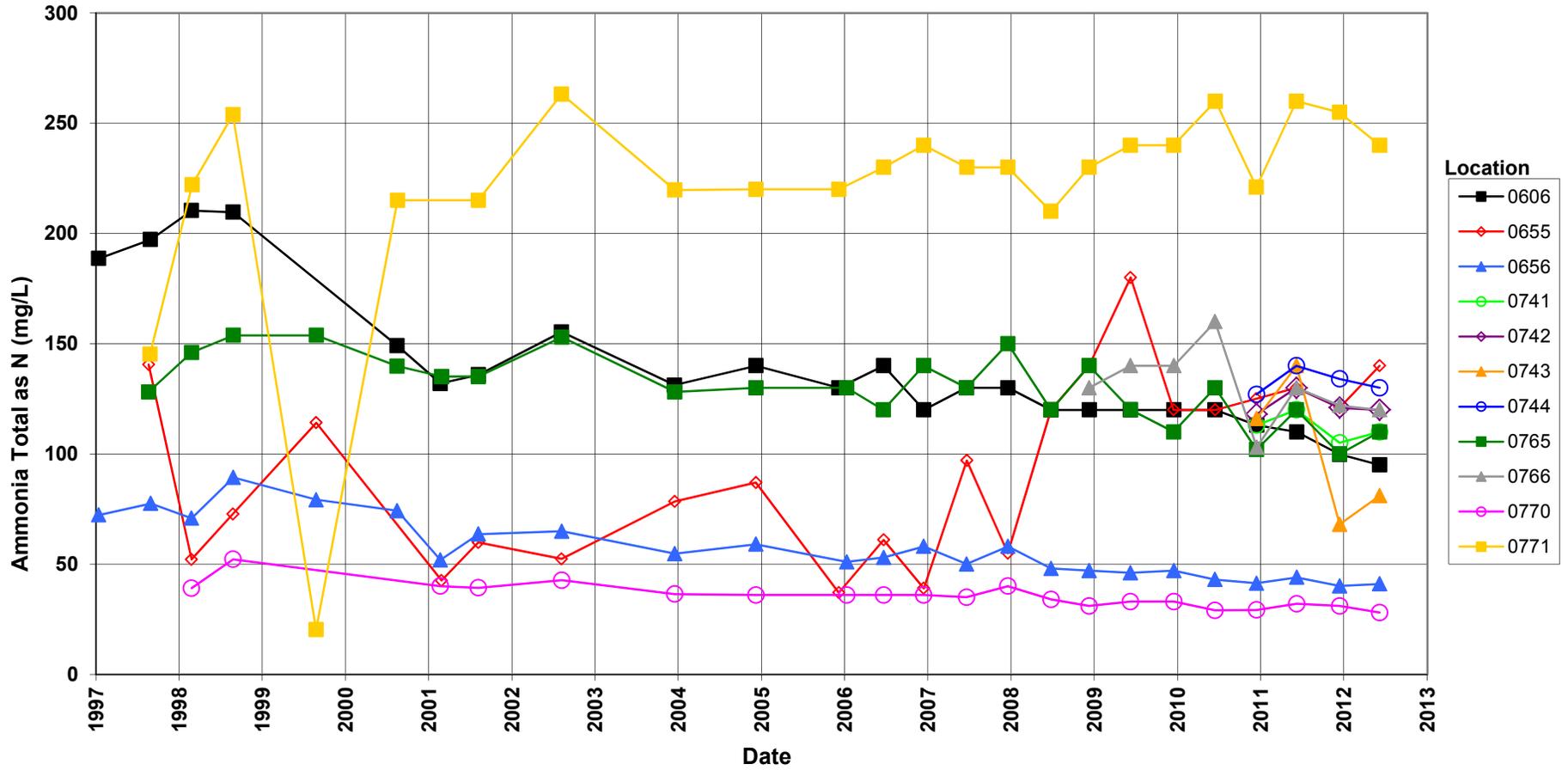
FLOW CODES: B BACKGROUND C CROSS GRADIENT D DOWN GRADIENT F OFF SITE
 N UNKNOWN O ON SITE U UPGRADIENT

WATER LEVEL FLAGS: D Dry F Flowing B Below top of pump
 E TOP OF CASING ELEVATION DATA NOT AVAILABLE

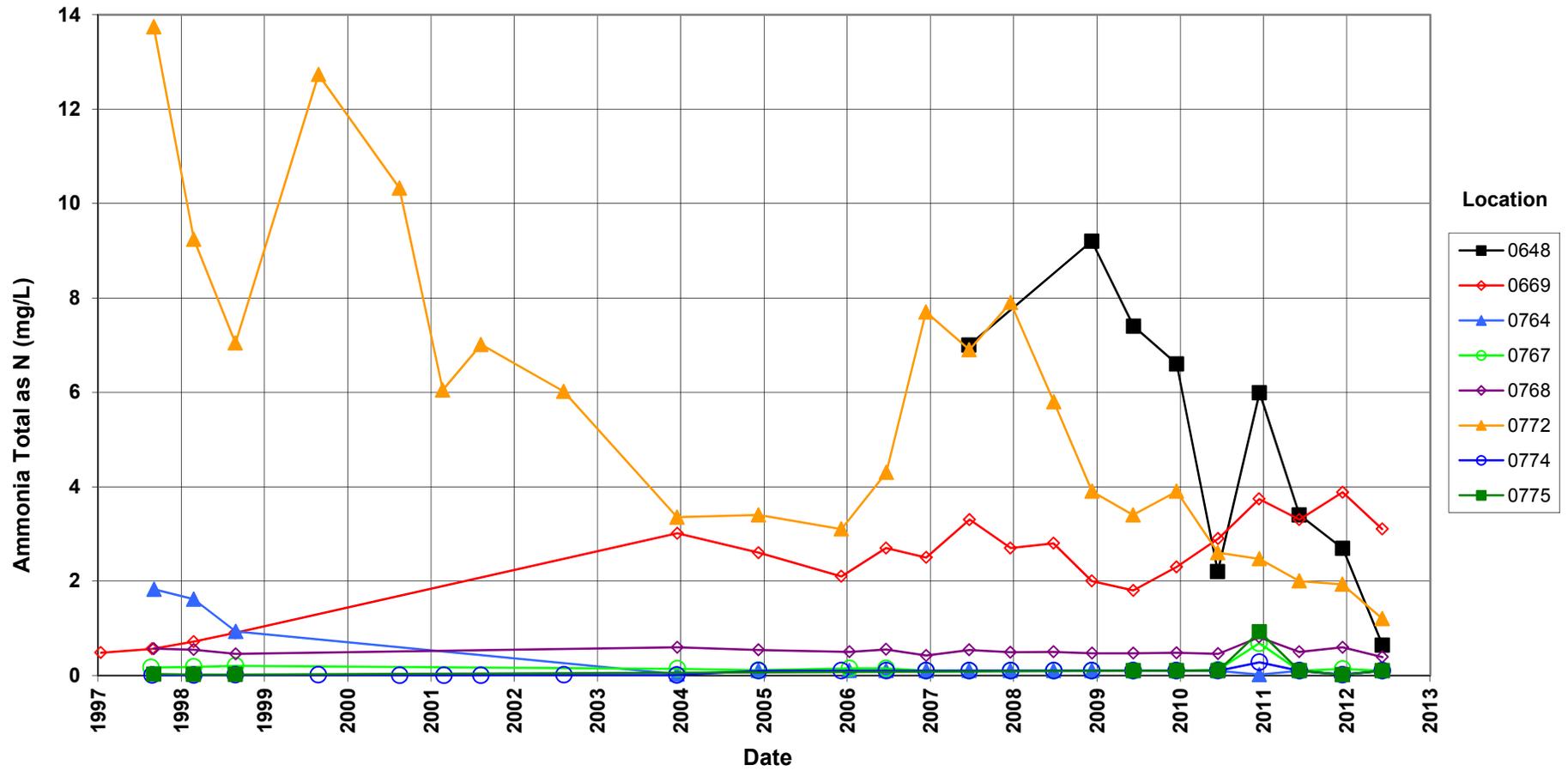
Time-Concentration Graphs

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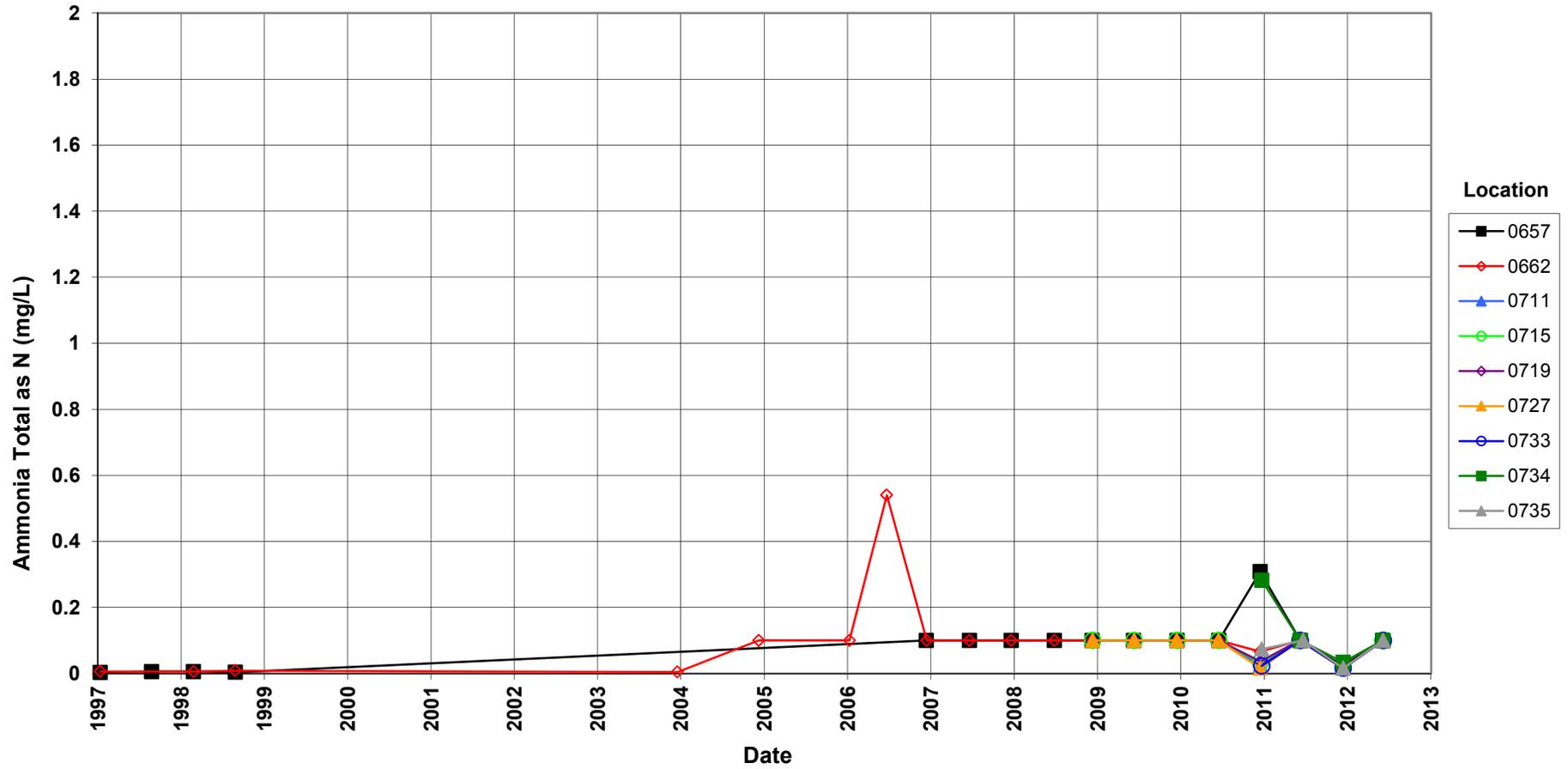
Monument Valley Processing Site Ammonia Total as N Concentration



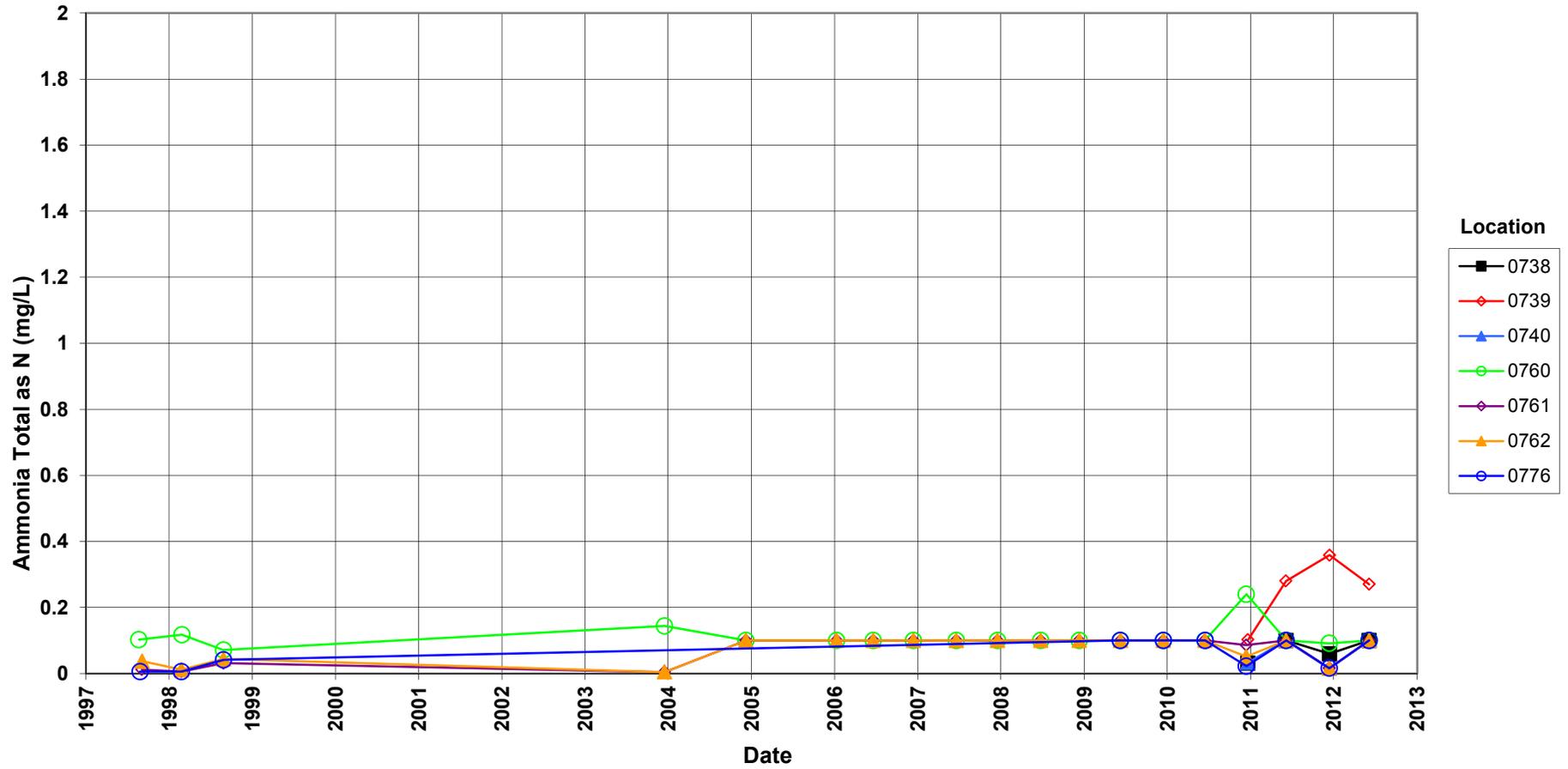
Monument Valley Processing Site Ammonia Total as N Concentration



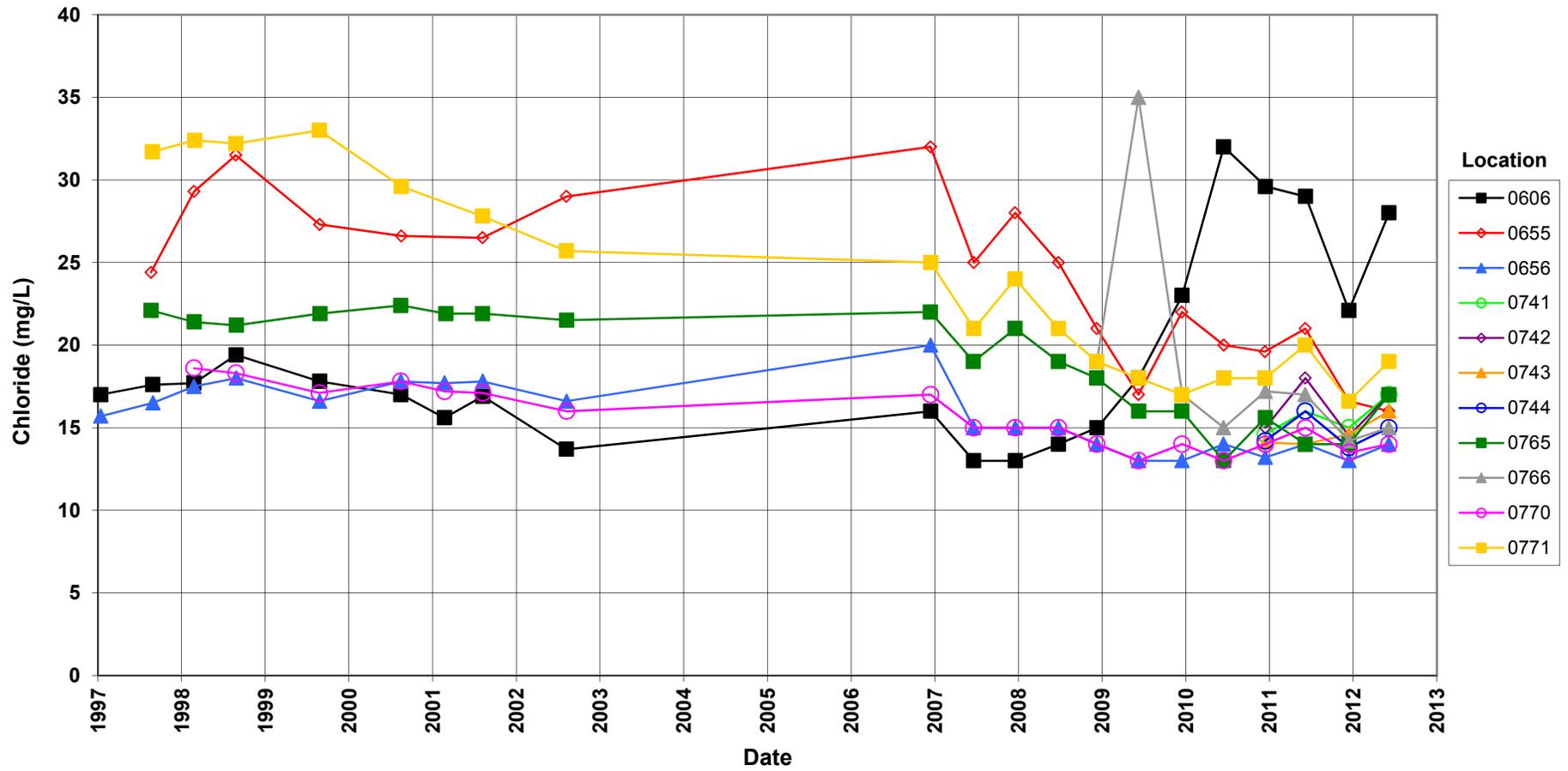
Monument Valley Processing Site Ammonia Total as N Concentration



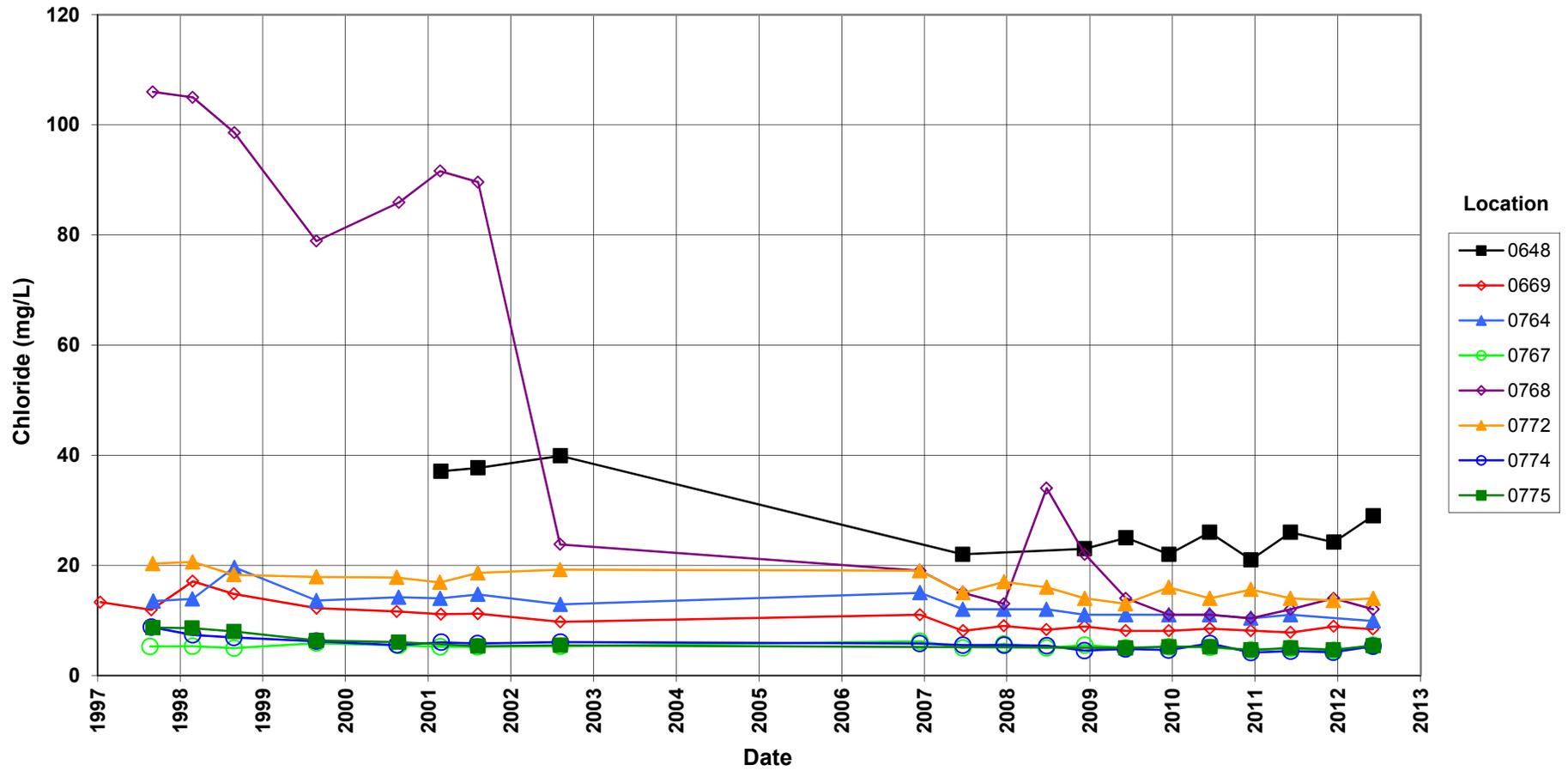
Monument Valley Processing Site Ammonia Total as N Concentration



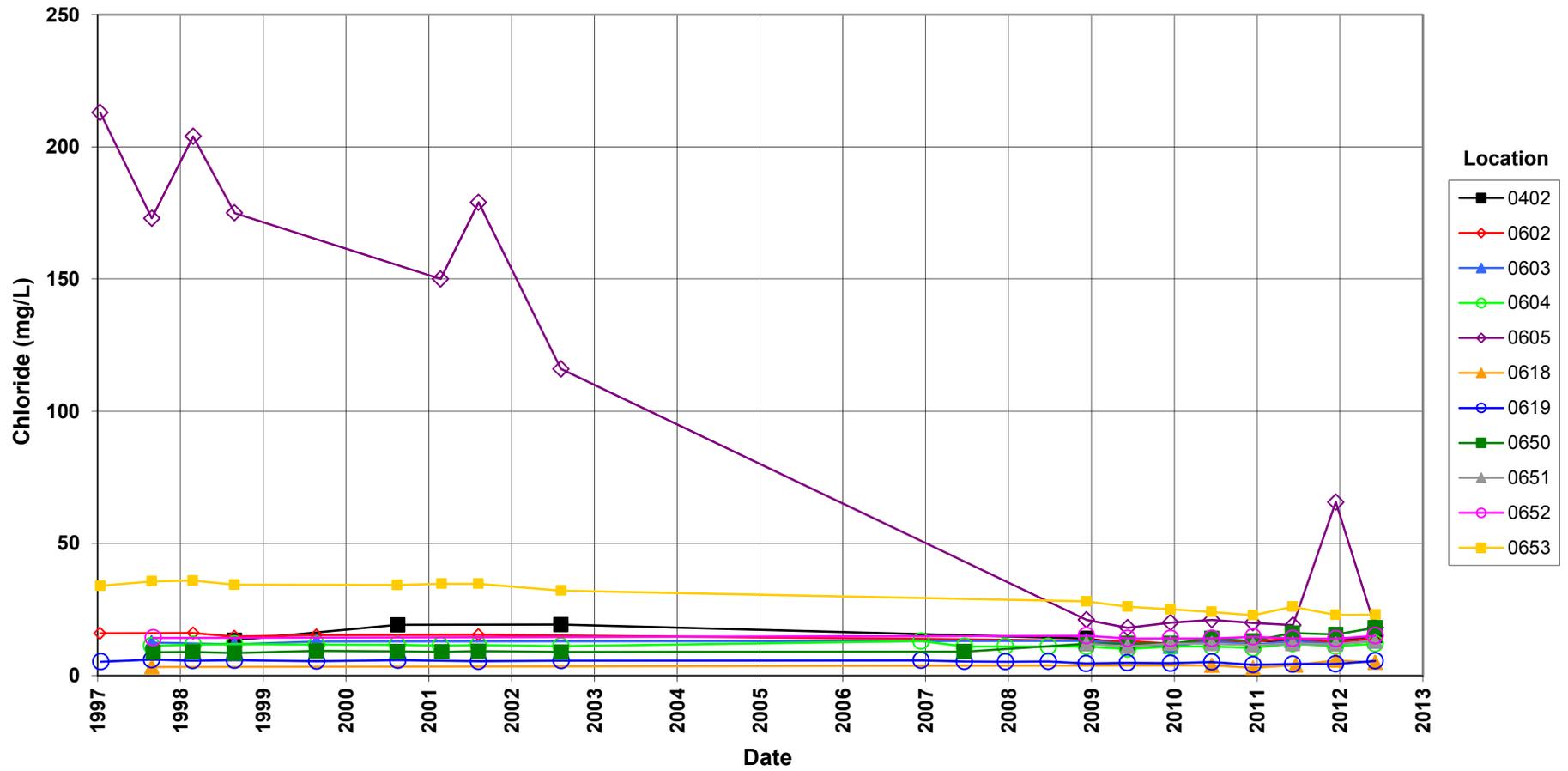
Monument Valley Processing Site Chloride Concentration



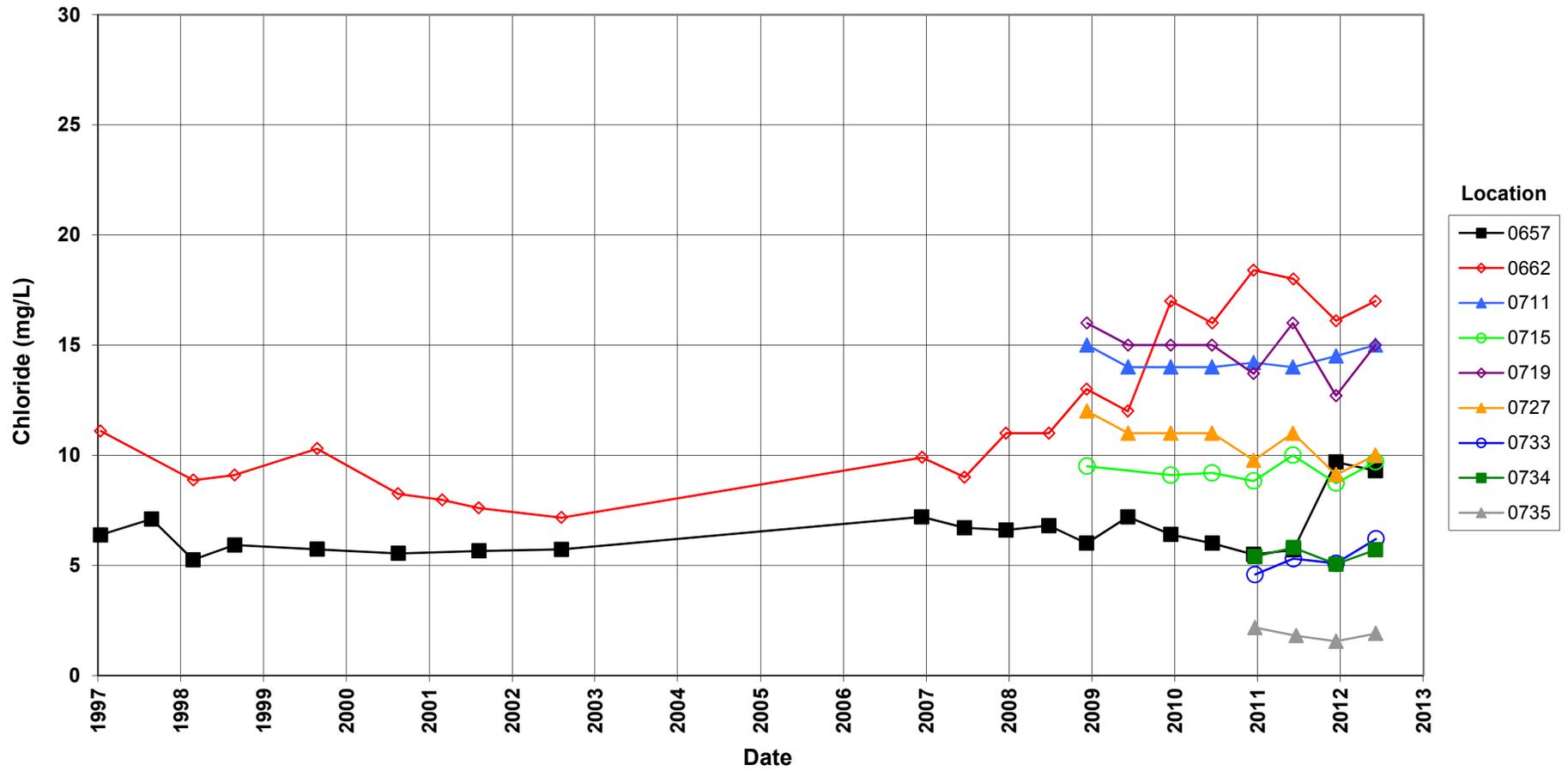
Monument Valley Processing Site Chloride Concentration



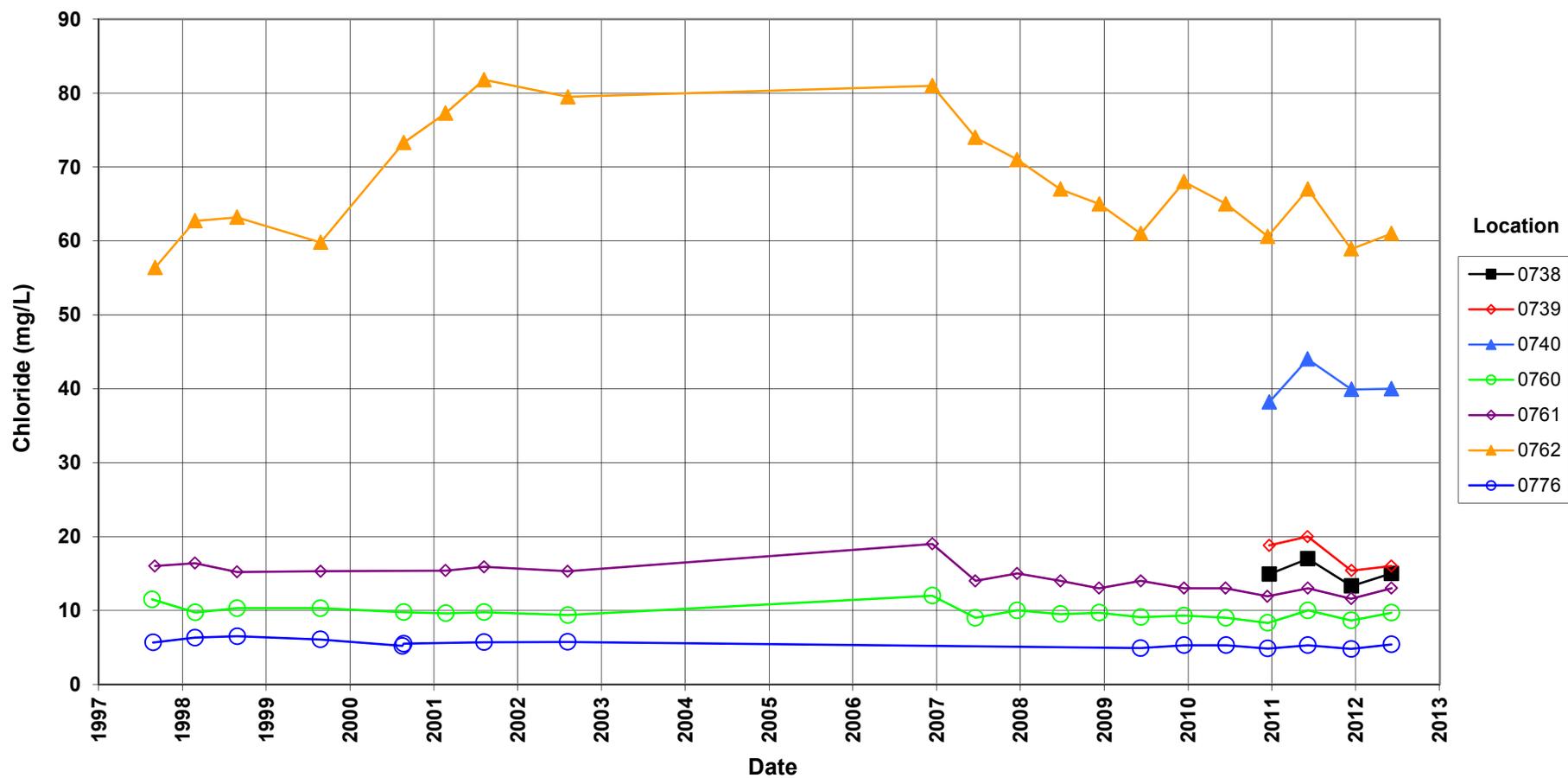
Monument Valley Processing Site Chloride Concentration



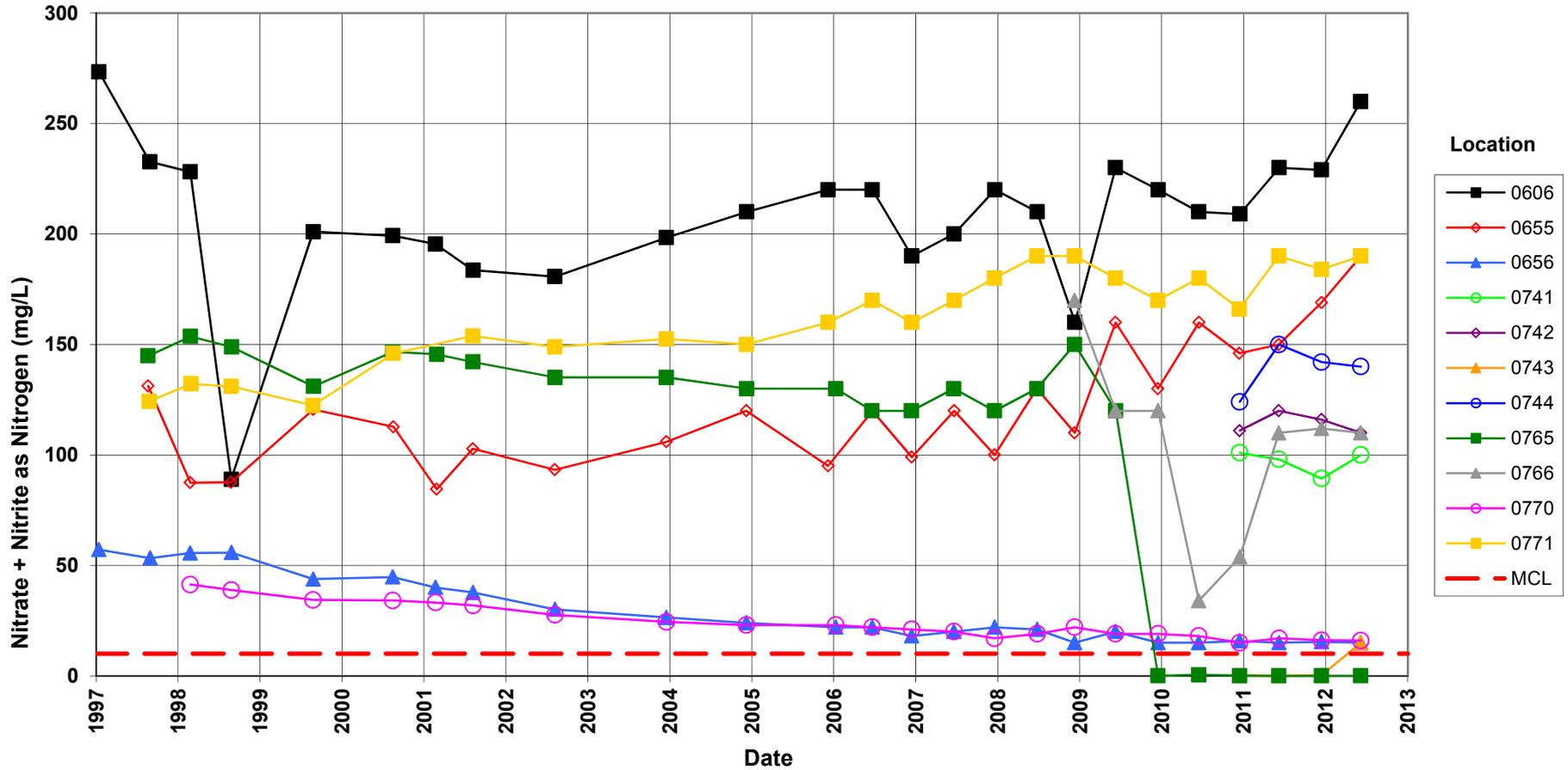
Monument Valley Processing Site Chloride Concentration



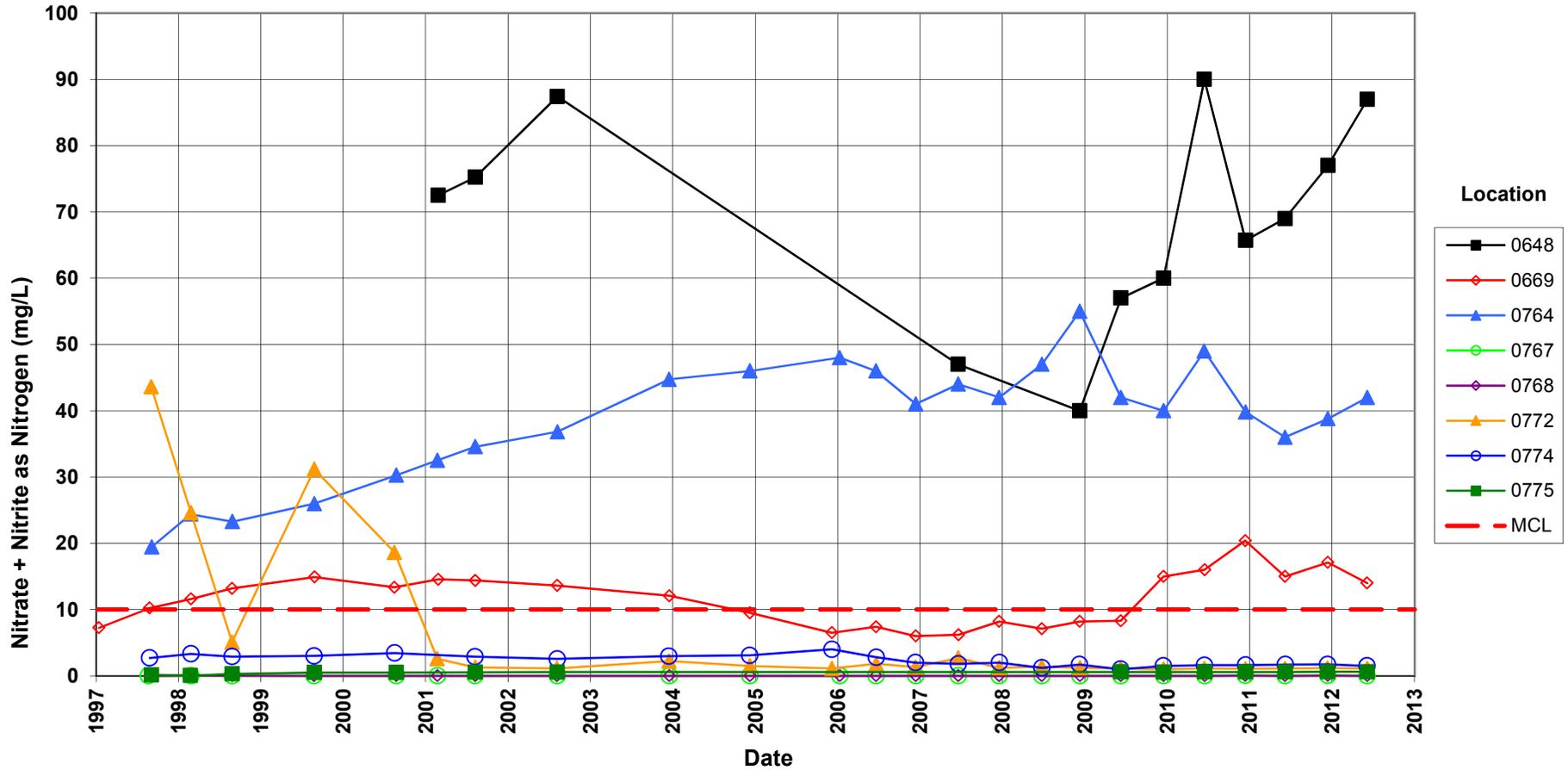
Monument Valley Processing Site Chloride Concentration



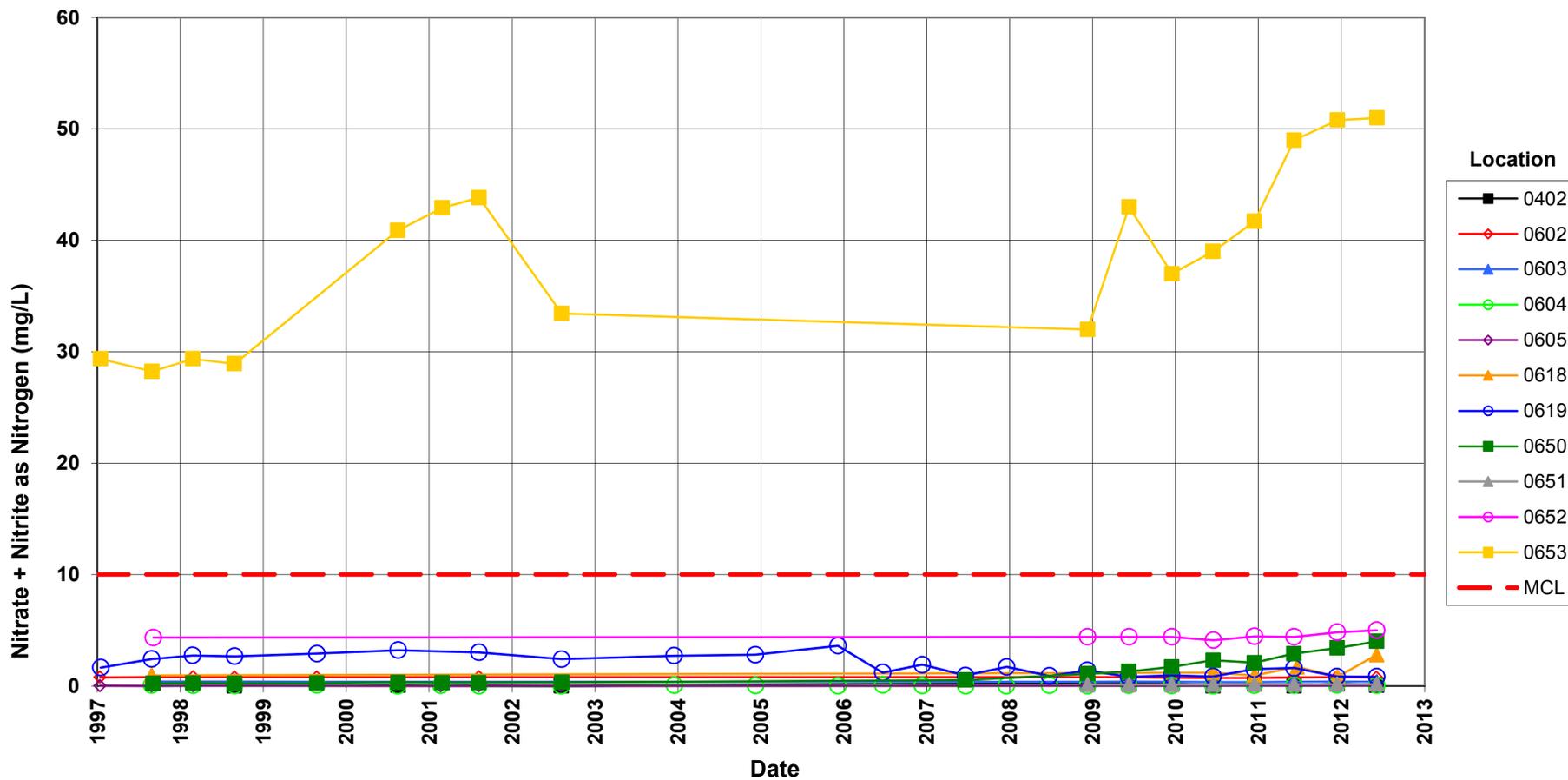
Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
 Maximum Concentration Limit (MCL) = 10 mg/L



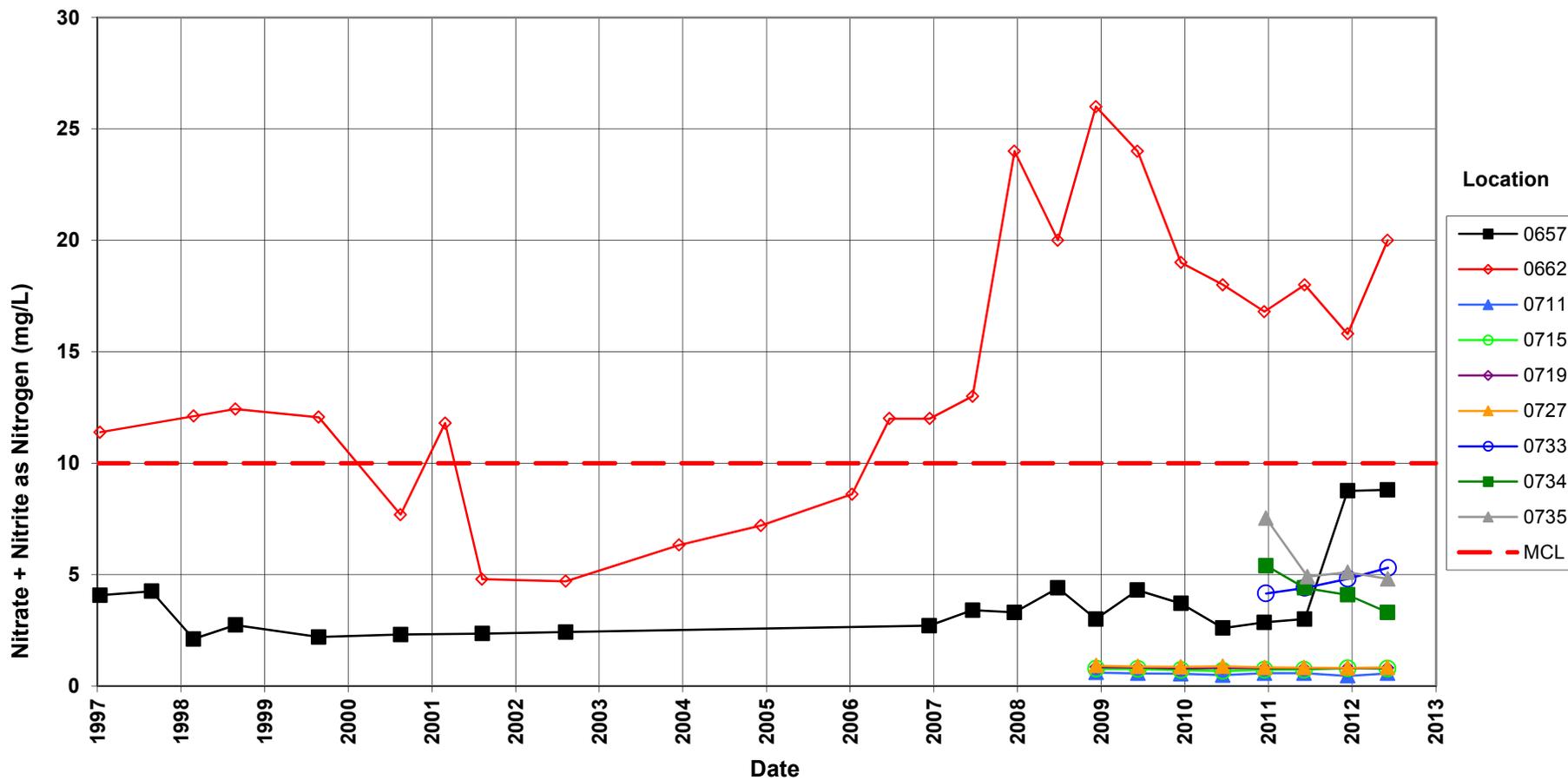
Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
 Maximum Concentration Limit (MCL) = 10 mg/L



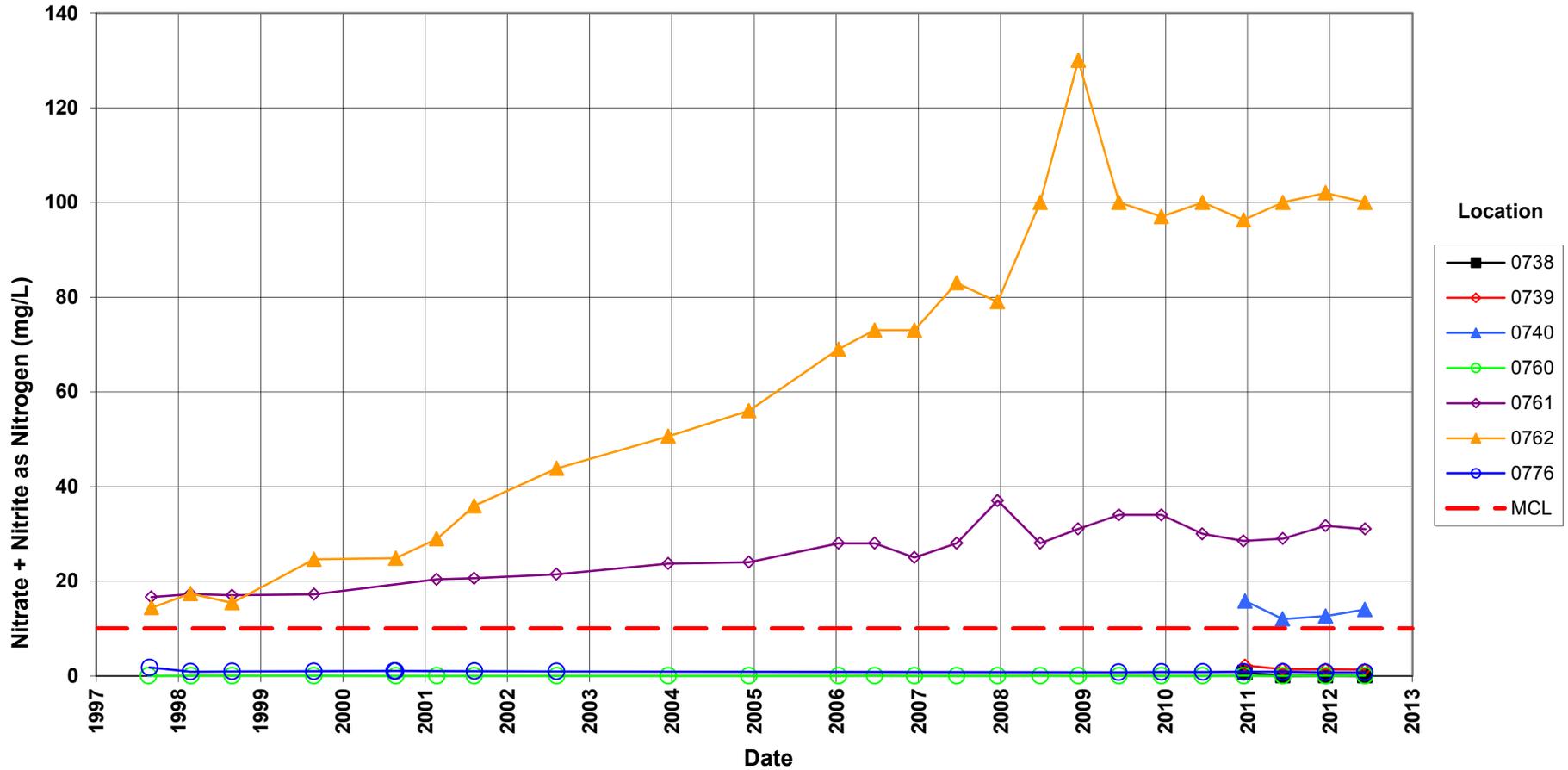
Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
 Maximum Concentration Limit (MCL) = 10 mg/L



Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
 Maximum Concentration Limit (MCL) = 10 mg/L

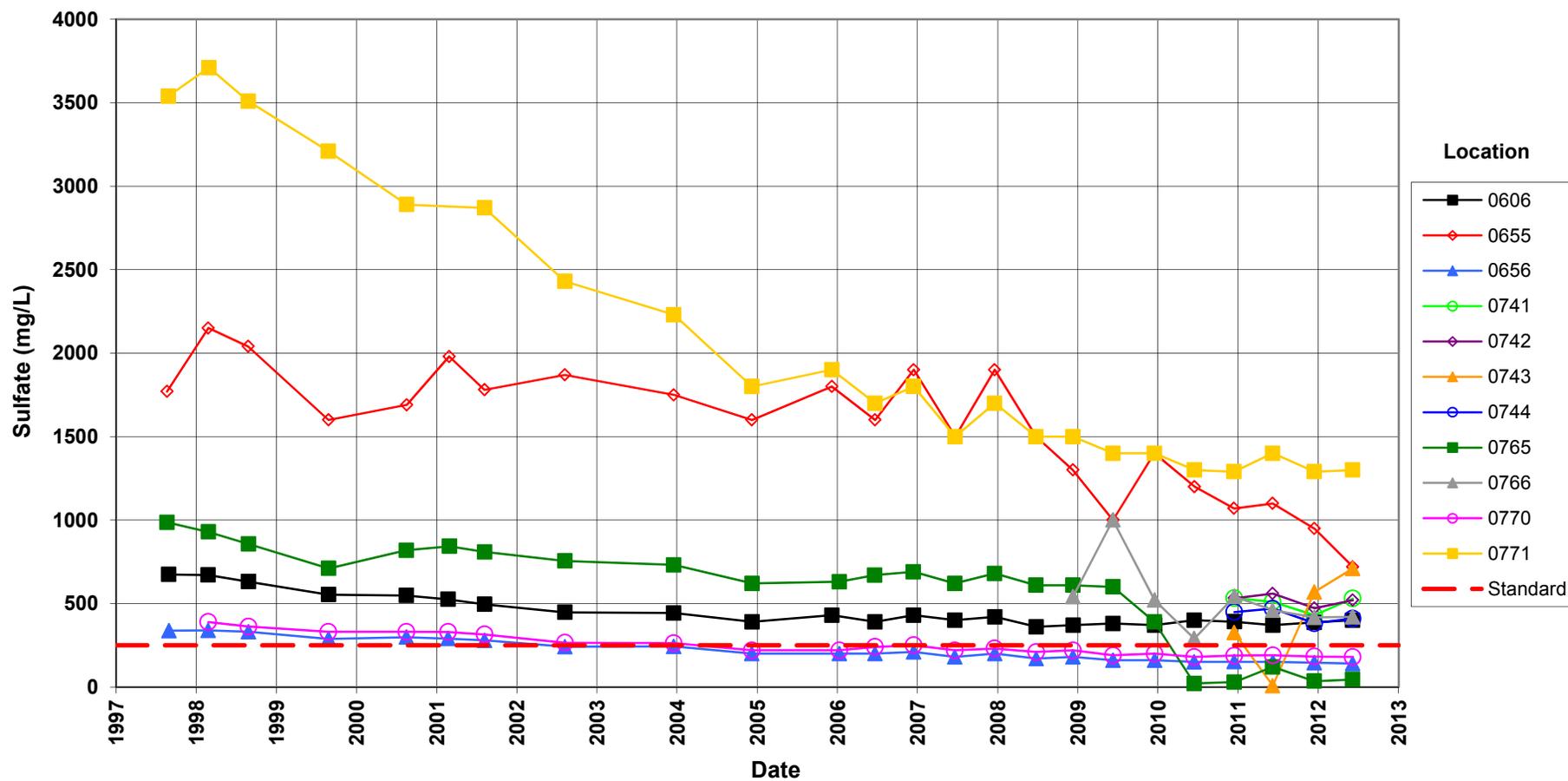


Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
 Maximum Concentration Limit (MCL) = 10 mg/L



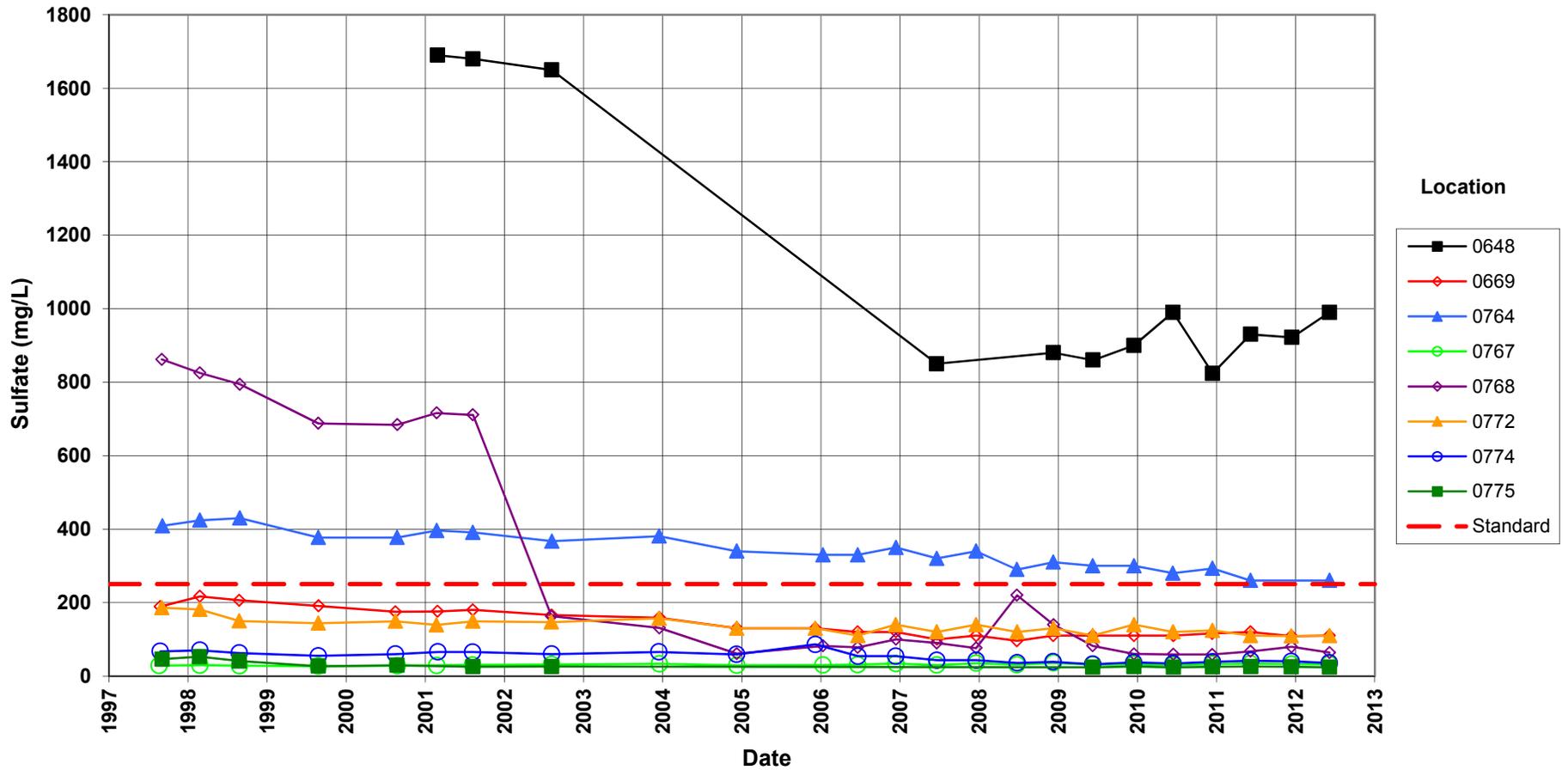
Monument Valley Processing Site Sulfate Concentration

Proposed Cleanup Standard = 250 mg/L

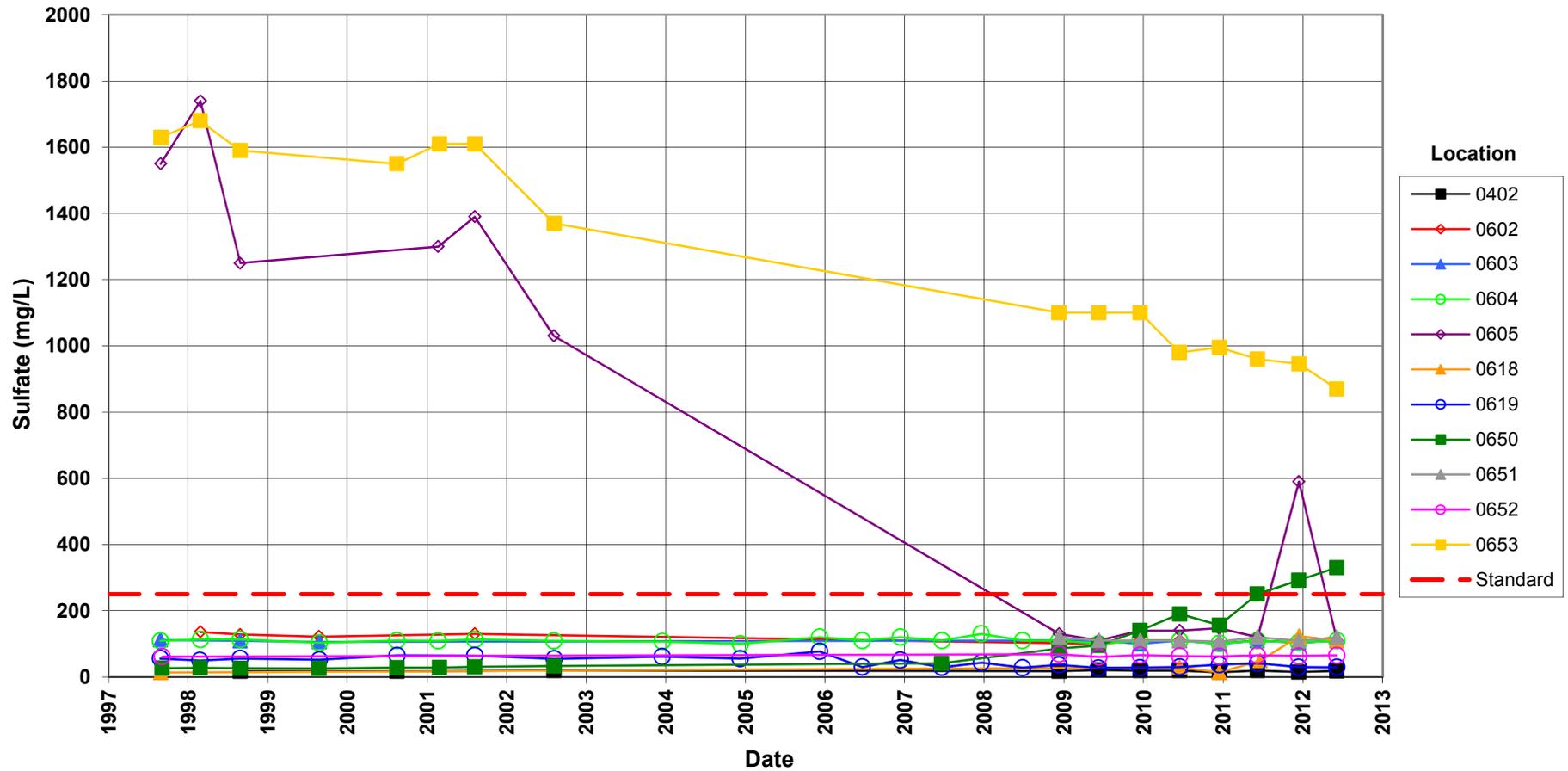


Monument Valley Processing Site Sulfate Concentration

Proposed Cleanup Standard = 250 mg/L

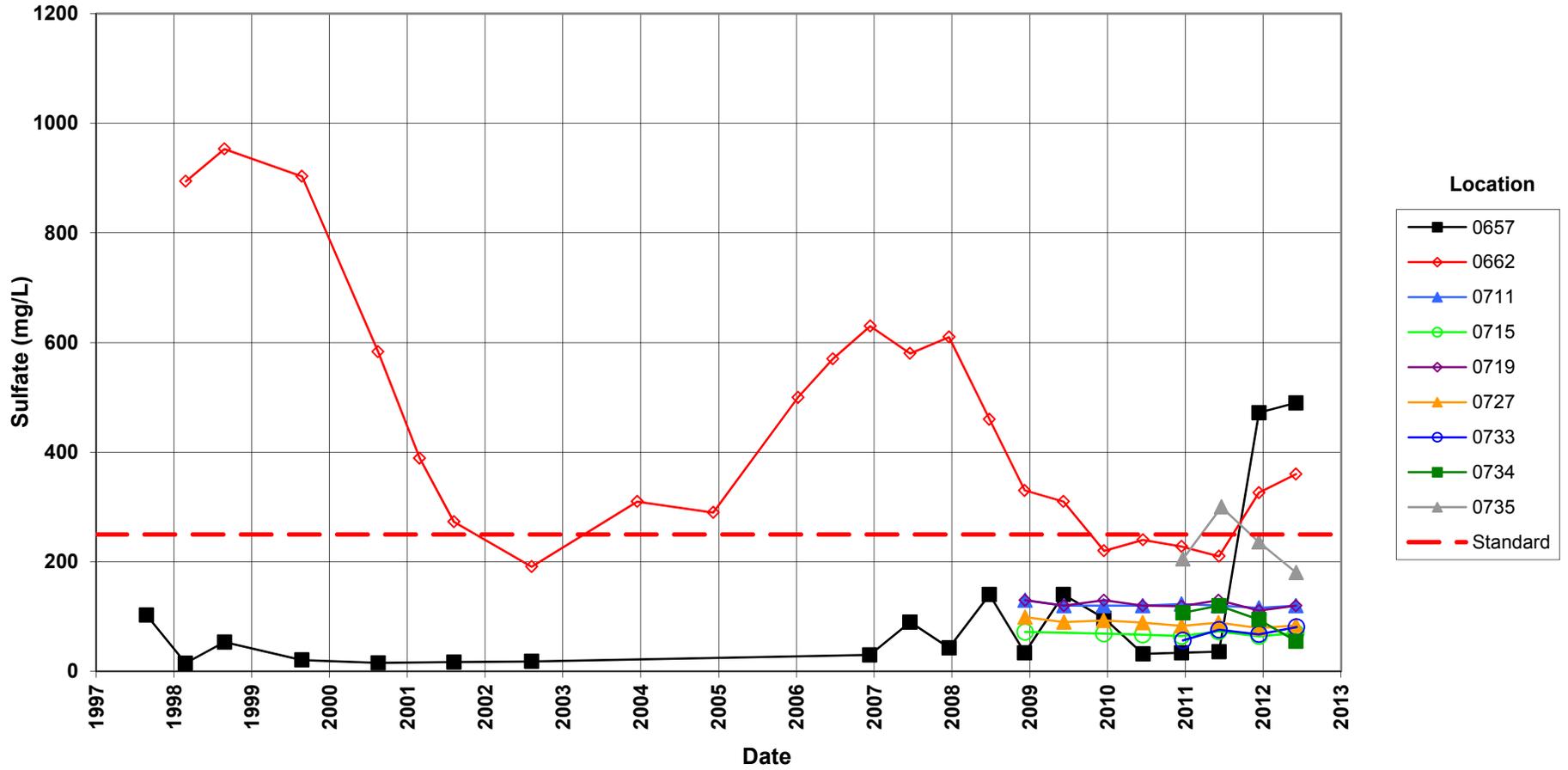


Monument Valley Processing Site
Sulfate Concentration
 Proposed Cleanup Standard = 250 mg/L



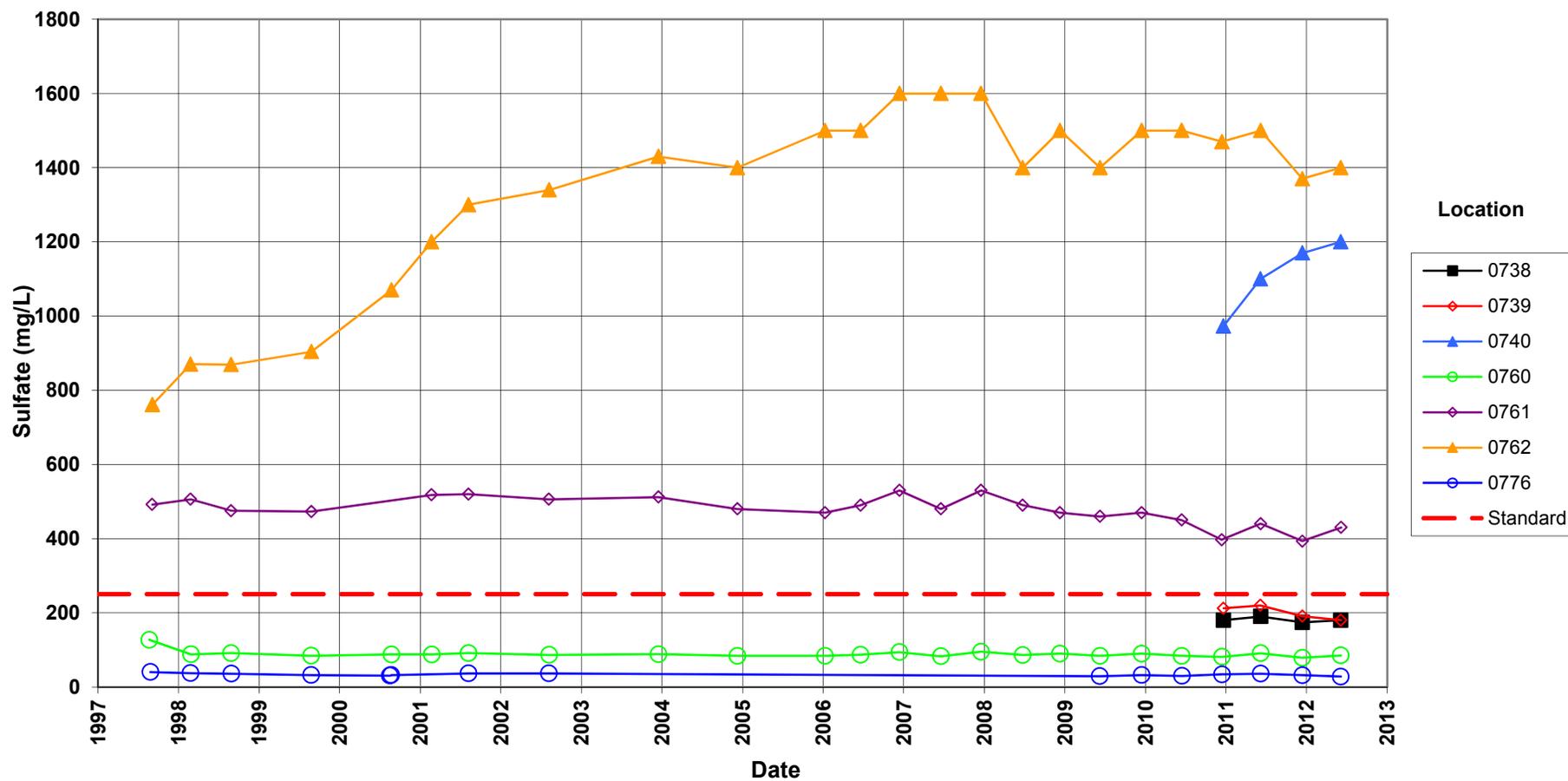
Monument Valley Processing Site Sulfate Concentration

Proposed Cleanup Standard = 250 mg/L

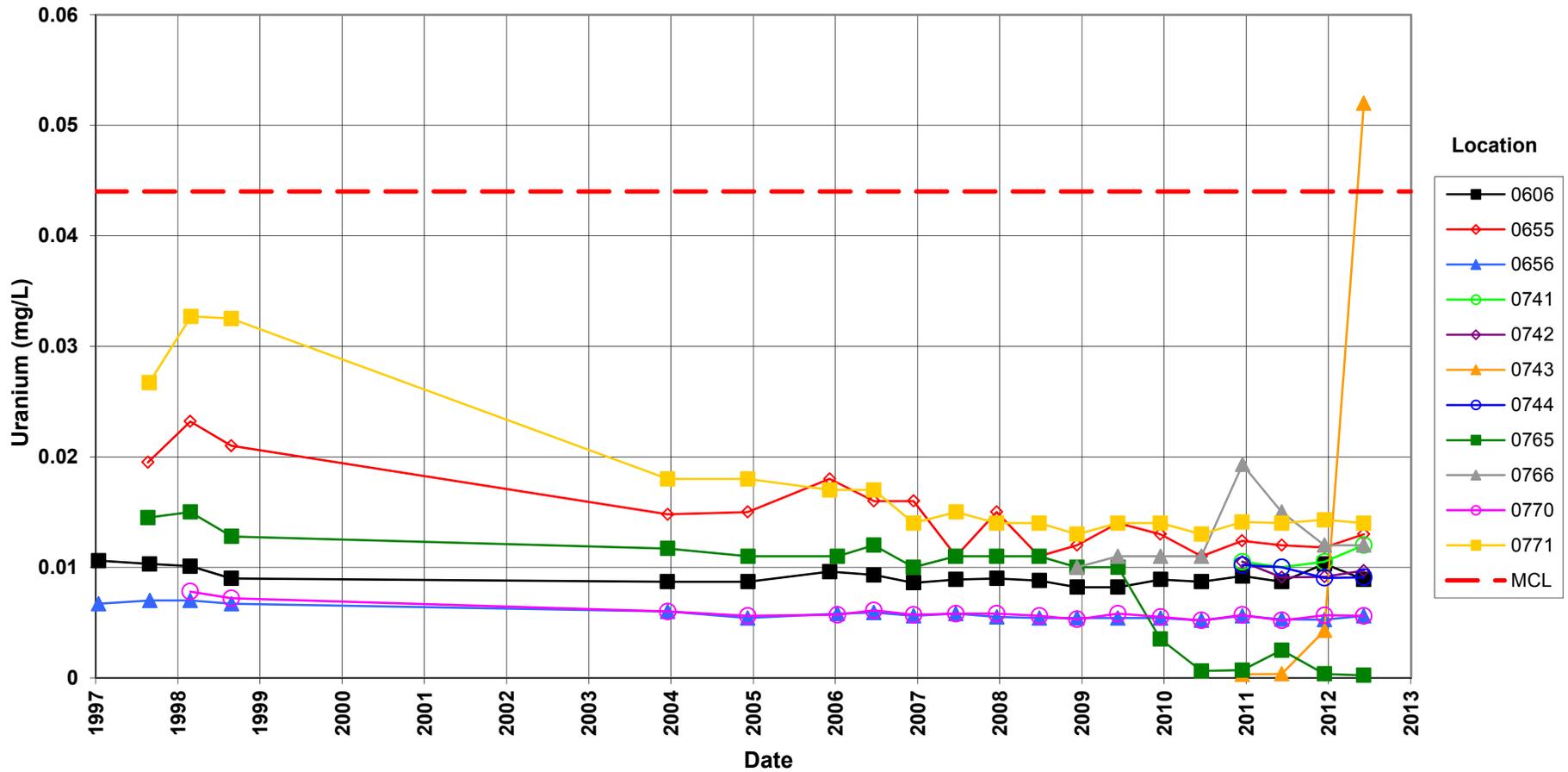


Monument Valley Processing Site Sulfate Concentration

Proposed Cleanup Standard = 250 mg/L

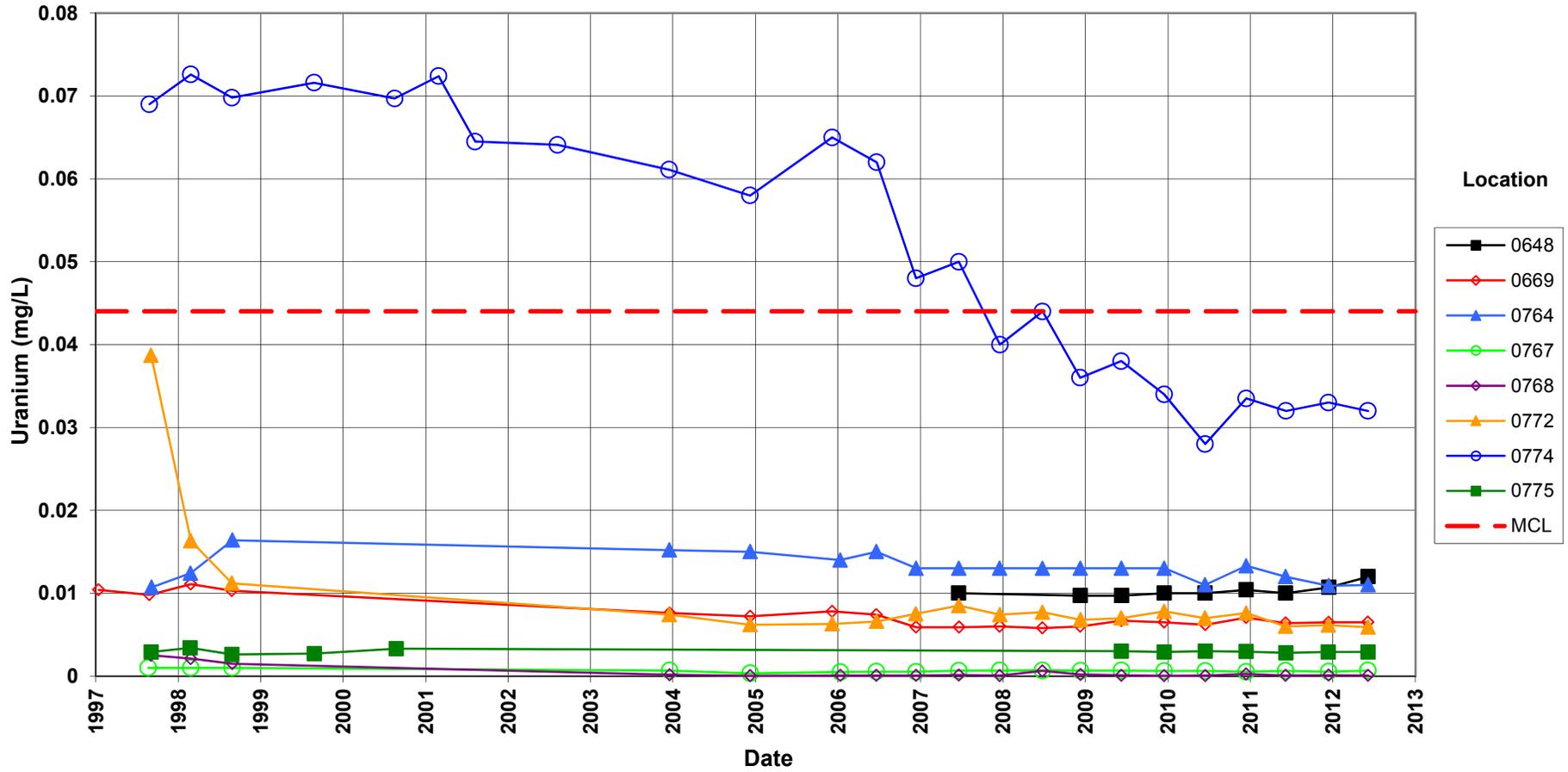


Monument Valley Processing Site
Uranium Concentration
Maximum Concentration Limit (MCL) = 0.044 mg/L

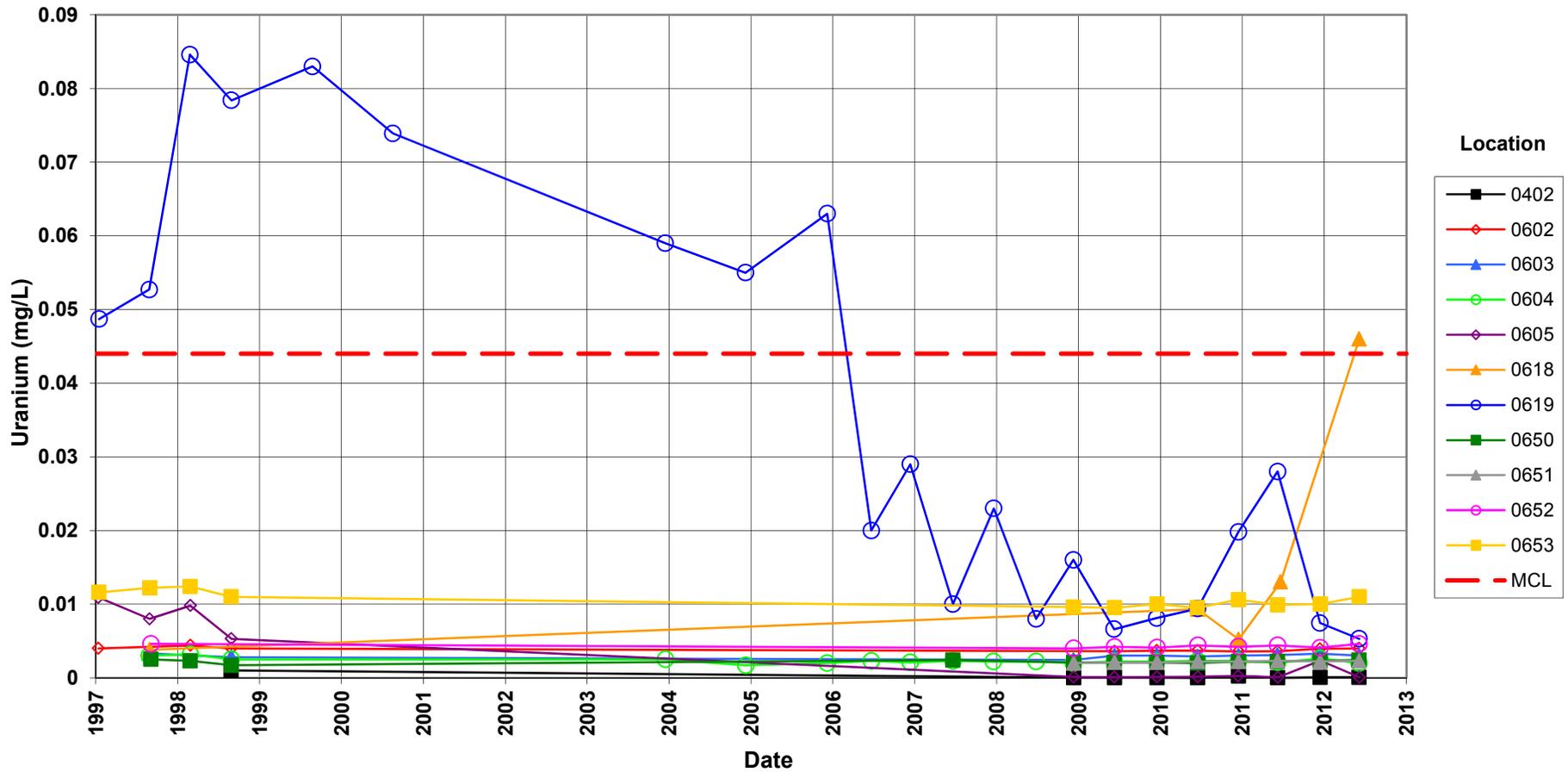


Monument Valley Processing Site Uranium Concentration

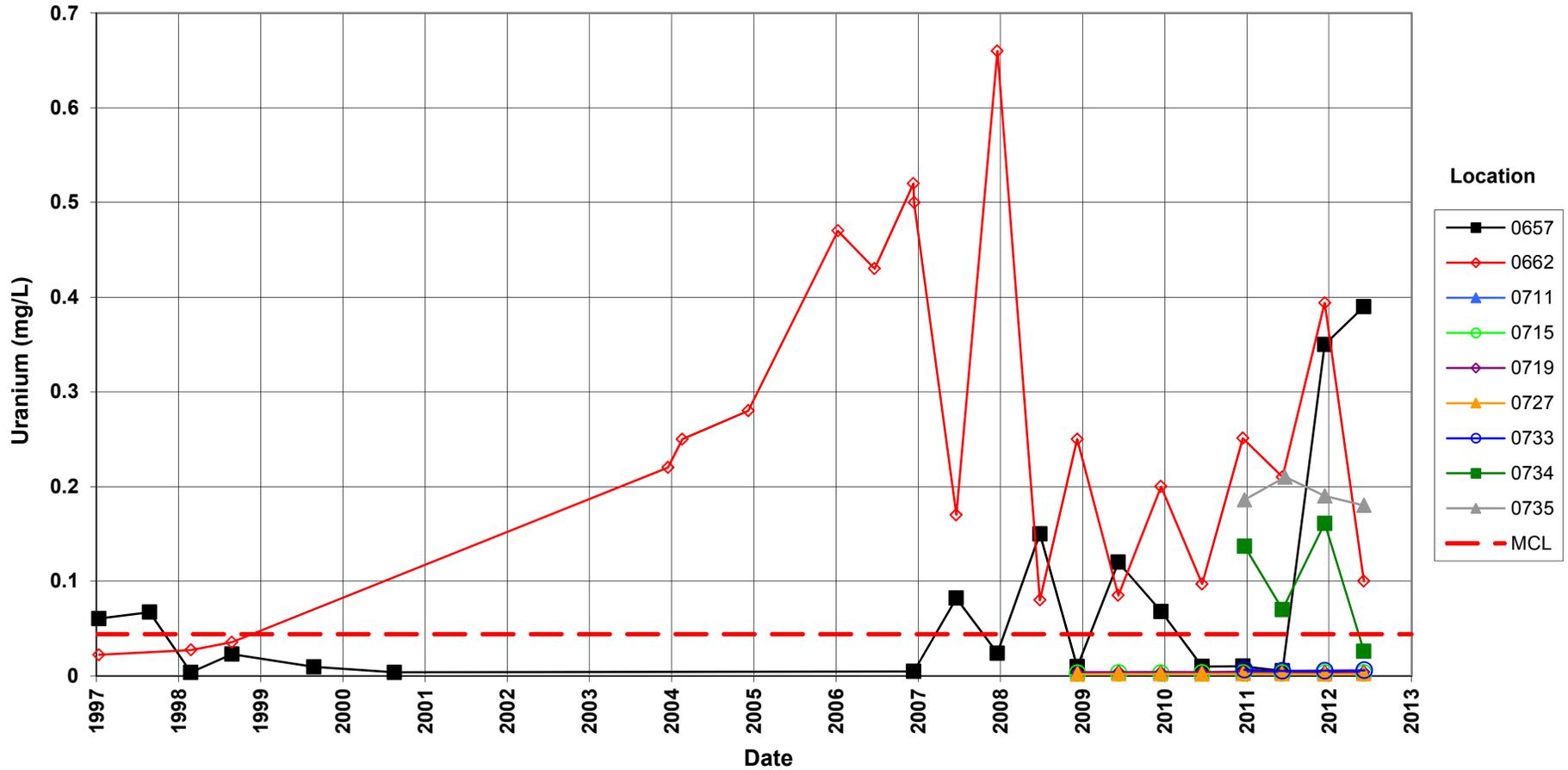
Maximum Concentration Limit (MCL) = 0.044 mg/L



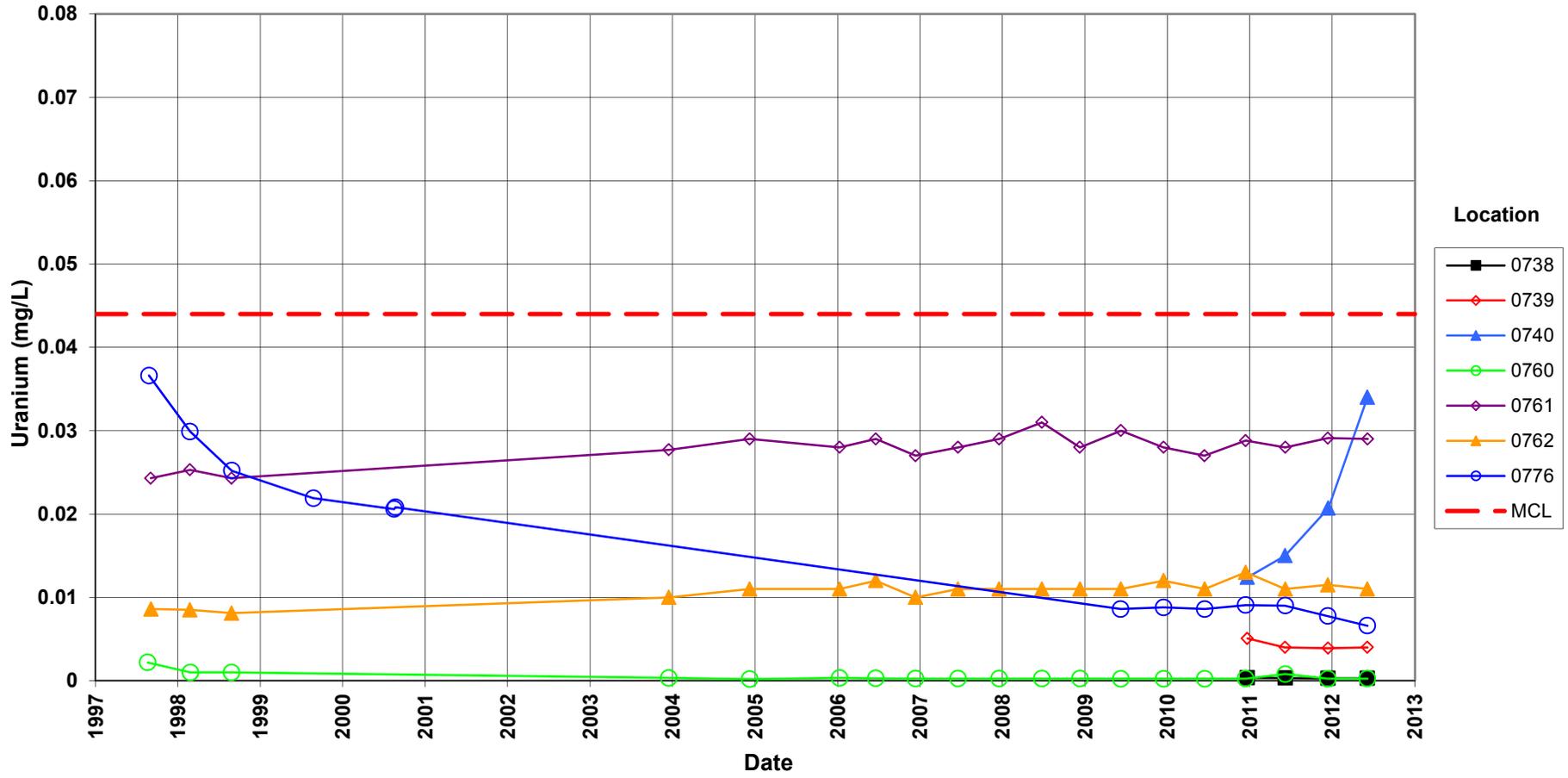
**Monument Valley Processing Site
Uranium Concentration**
Maximum Concentration Limit (MCL) = 0.044 mg/L



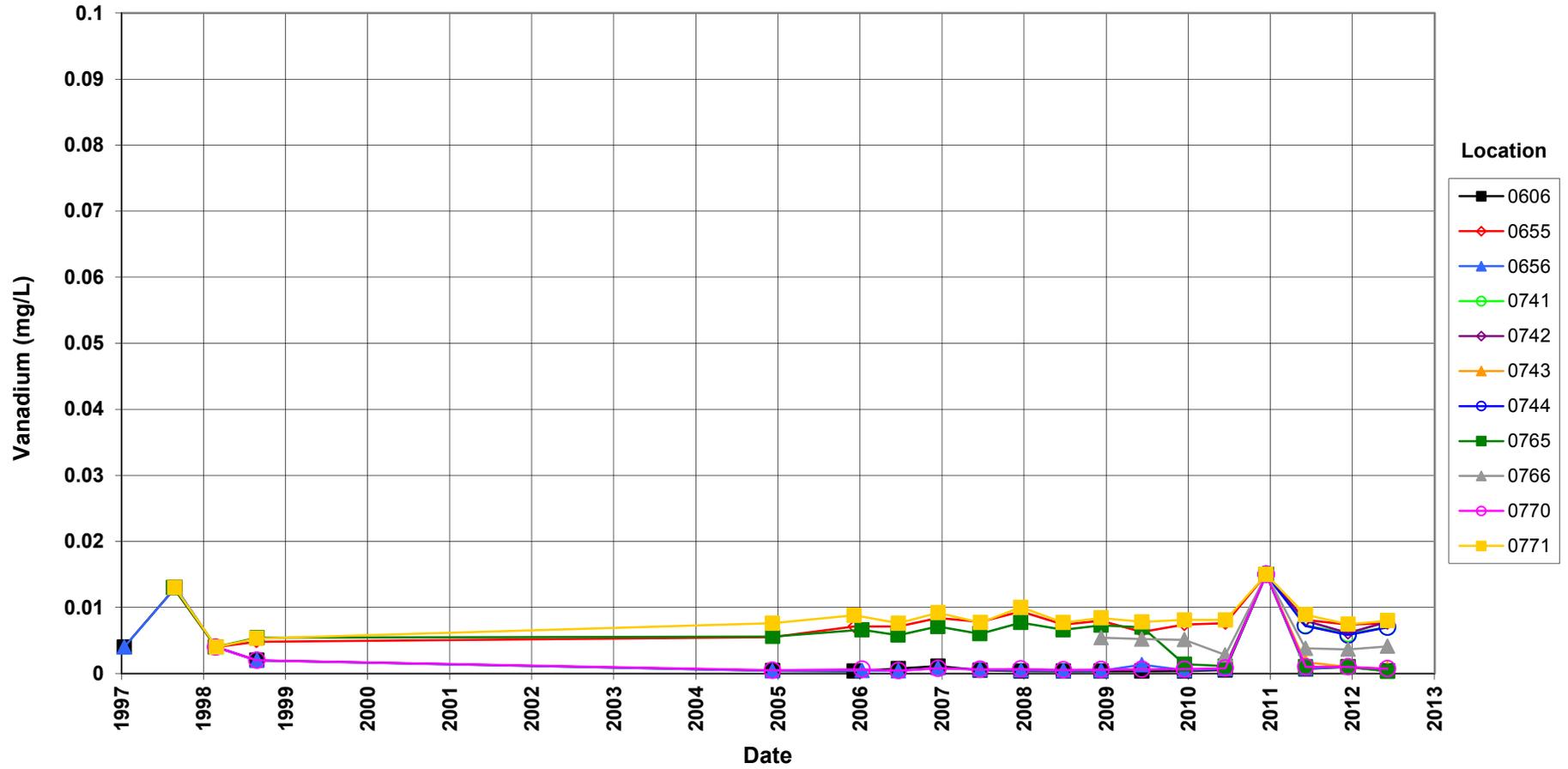
**Monument Valley Processing Site
Uranium Concentration**
Maximum Concentration Limit (MCL) = 0.044 mg/L



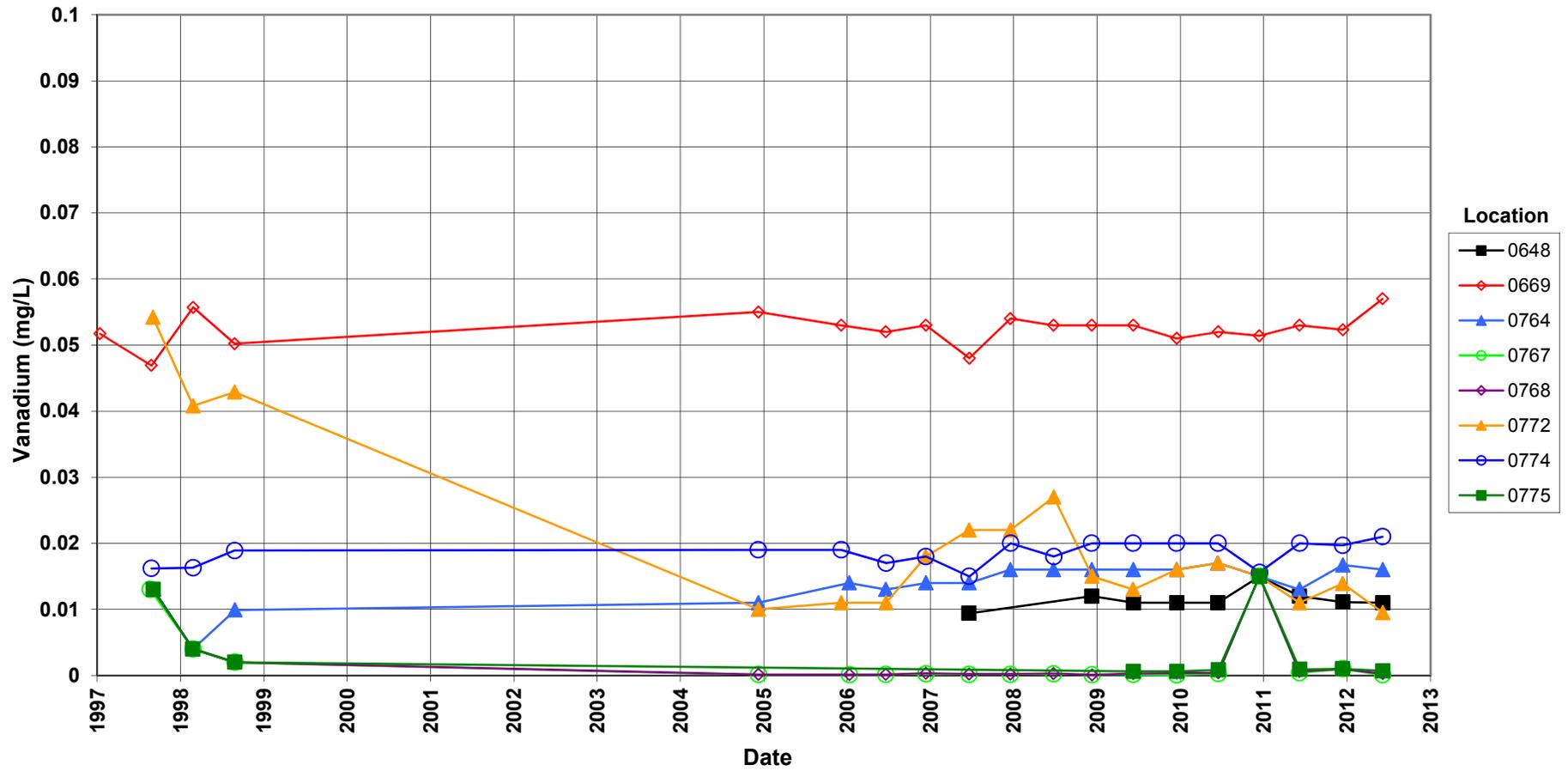
**Monument Valley Processing Site
Uranium Concentration**
Maximum Concentration Limit (MCL) = 0.044 mg/L



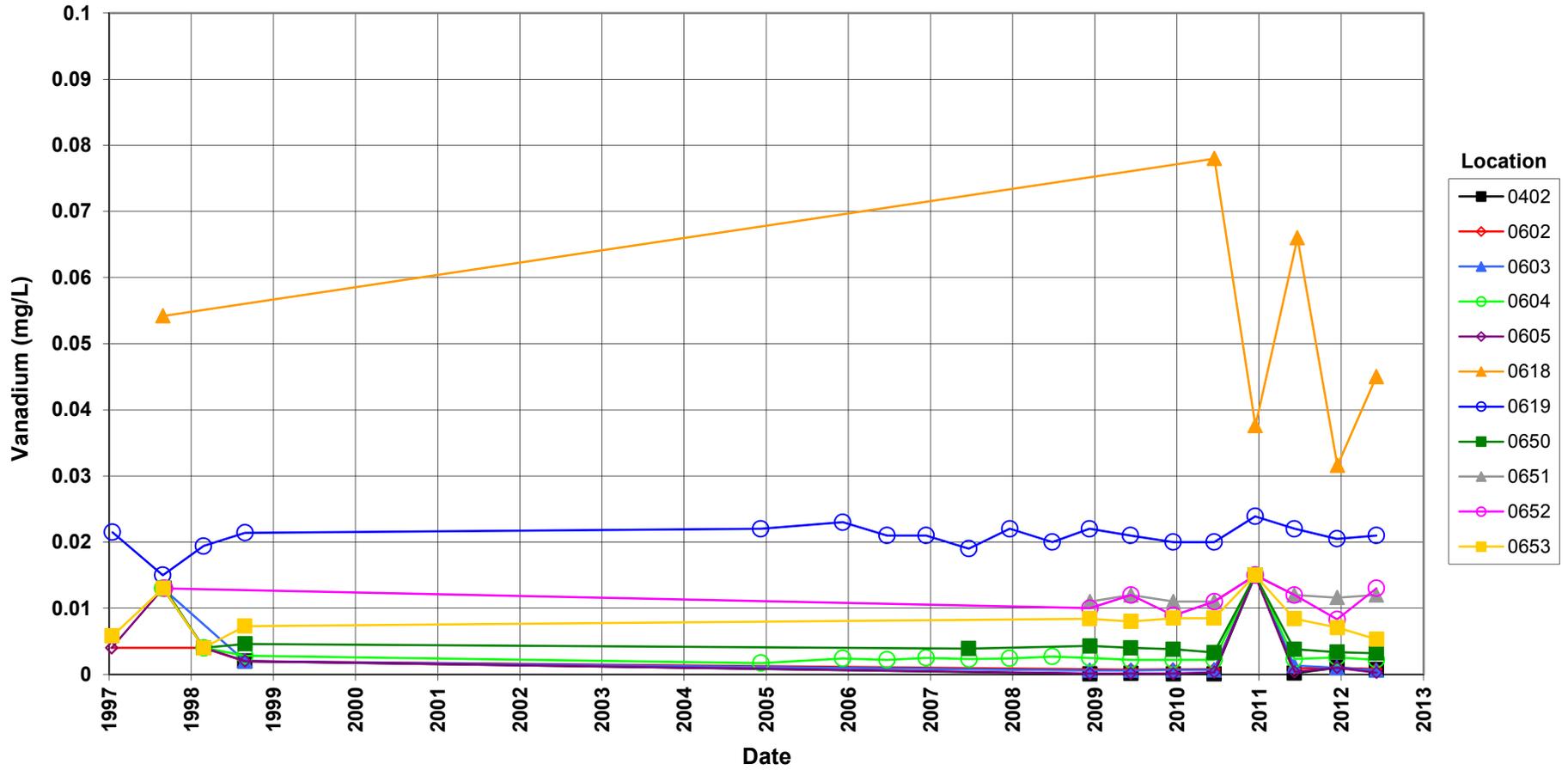
Monument Valley Processing Site Vanadium Concentration



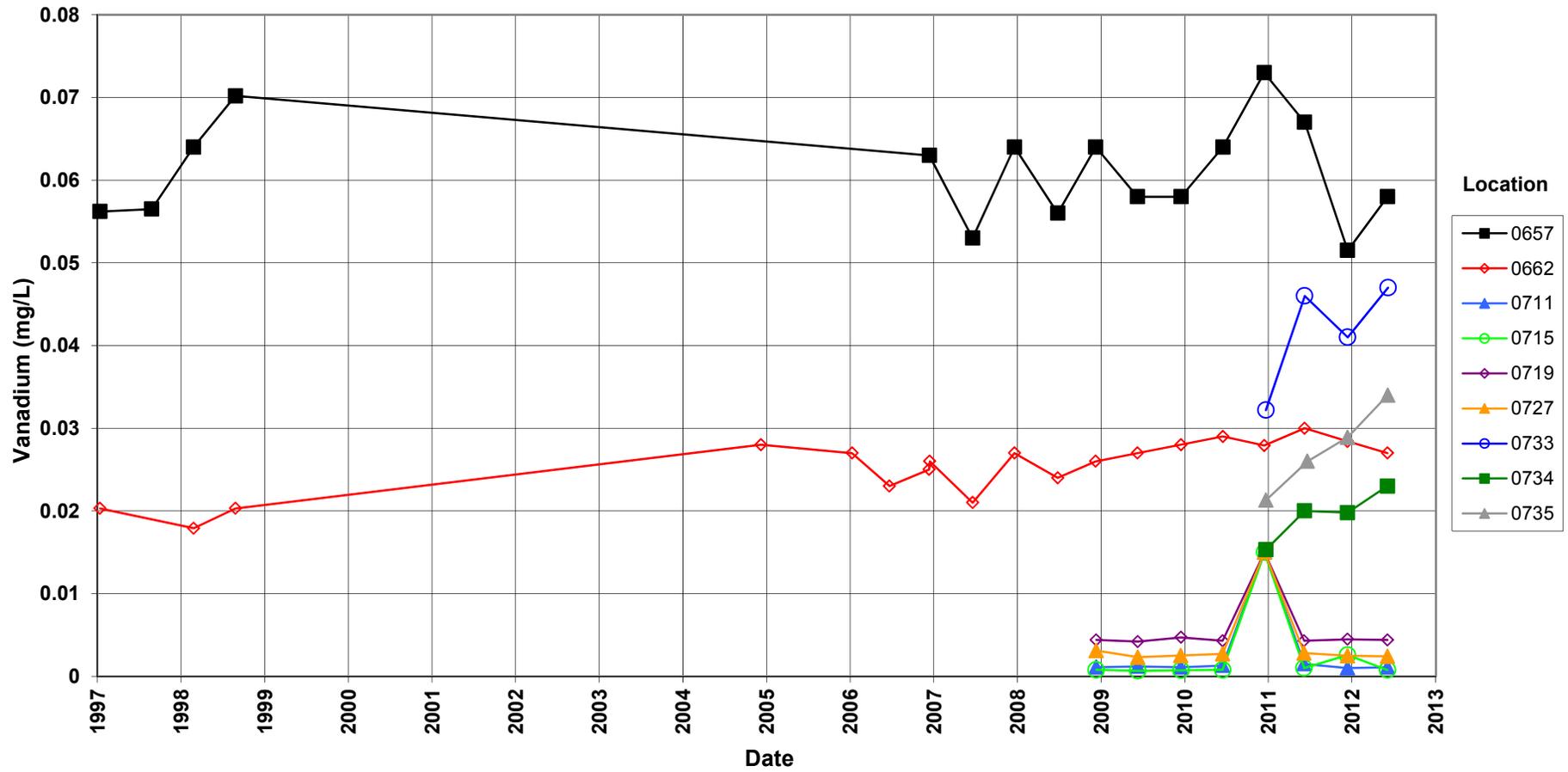
Monument Valley Processing Site Vanadium Concentration



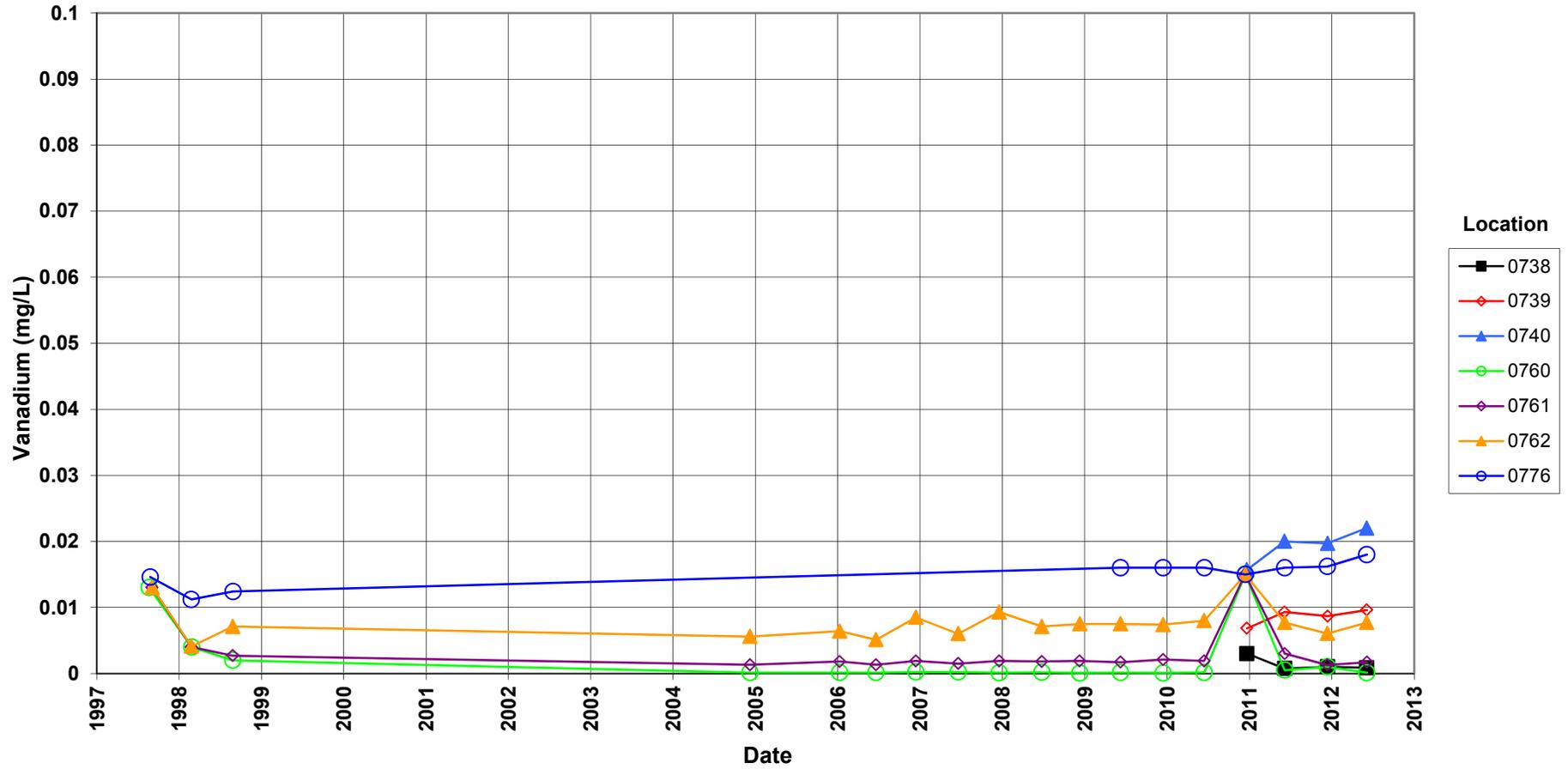
Monument Valley Processing Site Vanadium Concentration



Monument Valley Processing Site Vanadium Concentration



Monument Valley Processing Site Vanadium Concentration



Attachment 3
Sampling and Analysis Work Order

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established 1959

Task Order LM00-501
Control Number 12-0607

May 9, 2012

U.S. Department of Energy
Office of Legacy Management
ATTN: Richard Bush
Site Manager
2597 Legacy Way
Grand Junction, CO 81503

SUBJECT: Contract No. DE-AM01-07LM00060, S.M. Stoller Corporation (Stoller)
June 2012 Environmental Sampling at the Monument Valley, Arizona
Processing Site

REFERENCE: Task Order LM-501-02-114-402, Monument Valley, AZ, Processing Site

Dear Mr. Bush:

The purpose of this letter is to inform you of the upcoming sampling event at Monument Valley, Arizona. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Monument Valley processing site. Water quality data will be collected from monitoring wells and surface locations at this site as part of the routine environmental sampling currently scheduled to begin the week of June 4, 2012.

The following lists show the monitoring wells (with zone of completion) and surface location scheduled to be sampled during this event. Samples also will be collected for isotopic uranium, H-2, O-18, and enriched H-3 (in addition to the normal analyte set) from a select set of wells.

Monitoring Wells*

402 Al	619 Dc	656 Al	727 Nr	741 Al	762 Al	770 Al
602 Al	648 Al	657 Dc	733 Al	742 Al	764 Al	771 Al
603 Al	650 Al	662 Al	734 Al	743 Al	765 Al	772 Al
604 Al	651 Al	669 Al	735 Al	744 Al	766 Al	774 Al
605 Al	652 Al	711 Nr	738 Al	760 Al	767 Al	775 Dc
606 Al	653 Al	715 Nr	739 Al	761 Al	768 Al	776 Dc
618 Al	655 Al	719 Nr	740 Al			

*NOTE: Al = Alluvium; Dc = Dechelley Member of the Cutler Formation; Nr = no recovery of data for classifying

Surface Location

623

The S.M. Stoller Corporation 2597 Legacy Way Grand Junction, CO 81503 (970) 248-6000 Fax (970) 248-6040

Richard Bush
Control Number 12-0607
Page 2

All samples will be collected as directed in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites*. Access agreements are covered under the cooperative agreement.

Please contact me at (970) 248-6652 if you have any questions or concerns.

Sincerely,



David Miller
Site Lead

DM/lcg/lb

Enclosures (3)

cc: (electronic)
Karl Stoeckle, DOE
Steve Donovan, Stoller
Lauren Goodknight, Stoller
Dave Miller, Stoller
EDD Delivery
rc-grand.junction
File: MON 410.02 (A)

Constituent Sampling Breakdown

Site	Monument Valley		Required Detection Limit (mg/L)	Analytical Method	Line Item Code
	Groundwater	Surface Water			
Approx. No. Samples/yr	68	1			
Field Measurements					
Alkalinity	0603, 0611, 0615, 0618, and 0772 only				
Dissolved Oxygen					
Redox Potential	X				
pH	X				
Specific Conductance	X				
Turbidity	X				
Temperature	X				
Laboratory Measurements					
Ammonia as N (NH3-N)	X	X	0.1	EPA 350.1	WCH-A-005
Arsenic	0603, 0611, 0615, 0618, and 0772 only		0.0001	SW-846 6020	LMM-02
Calcium	0603, 0611, 0615, 0618, and 0772 only		5	SW-846 6010	LMM-01
Chloride	X	X	0.5	SW-846 9056	MIS-A_039
Deuterium	0602, 0603, 0604, 0606, 0618, 0619, 0653, 0656, 0657, 0662, 0669, 0733, 0734, 0735, 0760, 0761, 0764, 0774, 0775, 0776 only		TBD	TBD	LMM-08
Iron	0603, 0611, 0615, 0618, and 0772 only		0.05	SW-846 6020	LMM-02
Magnesium	0603, 0611, 0615, 0618, and 0772 only		5	SW-846 6010	LMM-01
Manganese	0603, 0611, 0615, 0618, and 0772 only		0.005	SW-846 6010	LMM-01
Molybdenum	0603, 0611, 0615, 0618, and 0772 only		0.003	SW-846 6020	LMM-02
O-18	0602, 0603, 0604, 0606, 0618, 0619, 0653, 0656, 0657, 0662, 0669, 0733, 0734, 0735, 0760, 0761, 0764, 0774, 0775, 0776 only		TBD	TBD	LMM-08
Nitrate + Nitrite as N (NO3+NO2)-N	X	X	0.05	EPA 353.1	WCH-A-022
Potassium	0603, 0611, 0615, 0618, and 0772 only		1	SW-846 6010	LMM-01
Sodium	0603, 0611, 0615, 0618, and 0772 only		1	SW-846 6010	LMM-01
Sulfate	X	X	0.5	SW-846 9056	MIS-A-044
Tritium, enriched	0618, 0619, 0657, 0662, 0733, 0734, 0735, 0774, 0775, 0776 only		10 pCi/L	Liquid Scintillation	LMM-15
Uranium	X	X	0.0001	SW-846 6020	LMM-02
Uranium isotopes	0602, 0603, 0604, 0606, 0618, 0619, 0653, 0656, 0657, 0662, 0669, 0733, 0734, 0735, 0760, 0761, 0764, 0774, 0775, 0776 only		TBD	TBD	TBD
Vanadium	X	X	0.0003	SW-846 6020	IMM-02
Total No. of Analytes	18	6			

Note: All private well samples are to be unfiltered. The total number of analytes does not include field parameters.

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

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
Monitoring Wells						
402		X				
602		X				
603		X				
604		X				
605		X				
606		X				
618		X				Added by C. Gauthier 4/19/10
619		X				
648		X				
650		X				
651		X				
652		X				
653		X				
655		X				
656		X				
657		X				
662		X				
669		X				
711		X				
715		X				
719		X				
727		X				
733		X				
734		X				
735		X				
738		X				
739		X				
740		X				
741		X				
742		X				
743		X				
744		X				
760		X				
761		X				
762		X				
764		X				
765		X				
766		X				
767		X				
768		X				
770		X				
771		X				
772		X				
774		X				
775		X				
776		X				
Surface Locations						
623		X				

Sampling conducted in December and June

Attachment 4

Trip Report

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Memorandum

DATE: July 31, 2012
 TO: David Miller
 FROM: Dan Sellers
 SUBJECT: Sampling Trip Report

Site: Monument Valley, Arizona, Processing Site.

Dates of Sampling Event: June 4-7, 2012

Team Members: Dave Atkinson, Joe Trevino, Jeff Walters, and Dan Sellers.

Number of Locations Sampled: Water samples for metals, anions, nitrate + nitrite as N, and ammonia as N (normal analyte set), were collected from 46 monitoring wells and one surface location; samples were also collected for isotopic uranium, d-H2, d-O18, enriched H-3 and UIISO (in addition to the normal analyte set) from a select set of wells.

Locations Not Sampled/Reason: None.

Location Specific Information:

Location IDs	Comments
0619, 0776, 0733, 0734, 0760	Leaky check valves.
0648	The elevation was erroneously provided in FDCS as the 'Total Depth.'
0651, 0734, 0767	Significant erosion under well pads. Wells are solid.
0727, 0733, 0734, 0739, 0743, 0760, 0761, 0764, 0765	Turbidity criteria could not be met at these wells; samples were filtered. There was a black sheen on the water at 0765.
0774	Water level below top of pump.
0739	Air leak at the brass fitting needs fixing.

Field Variance: None. Samples were collected according to the *Sampling and Analysis Plan for the U. S. Department of Energy Office of Legacy Management Sites*.

Requisition Identification Number (RIN) Assigned: 12054584 for normal analyte set and isotopic uranium (ALS Laboratory Group), 12054586 for enriched tritium (GEL Laboratories), and 12054587 for d-O18 and d-H2 (Reston Stable Isotope Laboratories). Field data sheets can be found in the sample management system on Crow under requisition number 12054584 in the Field Data folder.

Quality Control Sample Cross Reference: The following are the false identifications assigned to the quality control samples.

RIN	False ID	True ID	Ticket Number	Sample Type	Associated Matrix
12054584	2079	0767	KGU 376	Duplicate	Groundwater
	2251	0619	KGU 398	Duplicate	Groundwater
	2711	0772	KGU 367	Duplicate	Groundwater
12054586	2349	0619	KGU 423	Duplicate	Groundwater
12054587	2350	0619	KGU 449	Duplicate	Groundwater

Sample Shipment: Samples were shipped from Grand Junction to their respective laboratories on June 7, 2012.

Water Level Measurements: Water levels were measured at all sampled wells.

Well Inspection Summary: Pump check valves are leaking in wells 0619, 0733, 0734, 0760 and 0776; however, not so severely that the wells could not be purged and sampled. Wind has undermined the pads at wells 0651, 0734, and 0767.

Equipment: Wells were sampled with a peristaltic pump/dedicated tubing or a dedicated bladder pump. The surface water location was sampled by immersing the sample containers. Because all equipment was dedicated, equipment blanks were not required. All equipment functioned properly.

Institutional Controls:

Fences, Gates, Locks: All were in good condition.

Signs: Not applicable.

Trespassing/Site Disturbances: None.

Site Issues: Cell phone service (Verizon) was weak but available at the site.

Disposal Cell/Drainage Structure Integrity: Not applicable.

Vegetation/Noxious Weed Concerns: None observed.

Maintenance Requirements:

- Well pads and check valves mentioned above. The pumps with leaky valves should be pulled and examined so that they can be cleaned or replaced.
- Routine well development should be completed, particularly at wells where turbidity requirements could not be met (listed in table above).

Access Issues: None.

Safety Issues: None.

Corrective Action Taken: None.

DLS/lcg

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