

# Data Validation Package

---

**December 2014  
Groundwater and Surface Water  
Sampling at the  
Monument Valley, Arizona,  
Processing Site**

**February 2015**



**U.S. DEPARTMENT OF  
ENERGY**

Legacy  
Management

---

This page intentionally left blank

# Contents

Sampling Event Summary .....	1
Monument Valley, Arizona, Disposal Site Sample Location Map.....	5
Data Assessment Summary.....	7
Water Sampling Field Activities Verification Checklist .....	9
Laboratory Performance Assessment .....	11
Sampling Quality Control Assessment.....	18
Certification .....	20

## **Attachment 1—Assessment of Anomalous Data**

Potential Outliers Report

## **Attachment 2—Data Presentation**

Groundwater Quality Data  
Surface Water Quality Data  
Static Water Level Data  
Time-Concentration Graphs

## **Attachment 3—Sampling and Analysis Work Order**

## **Attachment 4—Trip Report**

This page intentionally left blank

# Sampling Event Summary

**Site:** Monument Valley, Arizona, Processing Site

**Sampling Period:** December 9–11, 2014

Forty-seven 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 analyses were conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites (LMS/PRO/S04351, continually updated)*. Samples were collected for metals, anions, nitrate + nitrite as N, and ammonia as N analyses at all locations.

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 <sup>a</sup> (mg/L)	Site Code	Location	Concentration (mg/L)
Nitrate + Nitrite as Nitrogen	10	MON01	0606	350
			0648	69
			0653	48
			0655	140
			0656	13
			0669	17
			0740	27
			0741	110
			0742	120
			0743	91
			0744	140
			0761	35
			0762	100
			0764	41
			0765	55
0766	120			
0770	20			
0771	180			
Uranium	0.044	MON01	0662	0.26
			0734	0.14
			0735	0.17

<sup>a</sup> 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 Result*

<b>Location</b>	<b>Sulfate Concentration (mg/L)</b>	<b>Sulfate/Chloride Ratio</b>	<b>Treatment Goal Achieved?</b>
0402	15	1	Yes
0602	110	8	Yes
0603	110	8	Yes
0604	110	9	Yes
0605	140	7	Yes
0606	630	13	No
0618	14	4	Yes
0619	35	7	Yes
0623	27	2	Yes
0648	940	34	No
0650	430	19	No
0651	120	9	Yes
0652	67	4	Yes
0653	1100	41	No
0655	1500	13	No
0656	140	9	Yes
0657	55	8	Yes
0662	150	19	Yes
0669	130	14	Yes
0711	120	8	Yes
0715	68	7	Yes
0719	110	8	Yes
0727	78	8	Yes
0733	100	14	Yes
0734	75	13	Yes
0735	420	168	No
0738	160	11	Yes
0739	150	10	Yes
0740	1300	43	No
0741	470	18	No
0742	480	18	No
0743	480	21	No
0744	390	16	No
0760	84	9	Yes
0761	420	32	No
0762	1400	23	No
0764	220	22	Yes
0765	520	22	No
0766	350	18	No
0767	34	6	Yes
0768	66	5	Yes
0770	190	12	Yes

Table 2 (continued). Sulfate Result

Location	Sulfate Concentration (mg/L)	Sulfate/Chloride Ratio	Treatment Goal Achieved?
0771	1300	65	No
0772	170	9	Yes
0774	39	8	Yes
0775	26	4	Yes
0776	36	6	Yes

Time-concentration plots for ammonia as nitrogen, chloride, nitrate + nitrite as nitrogen, sulfate, uranium, and vanadium are included with the results data.

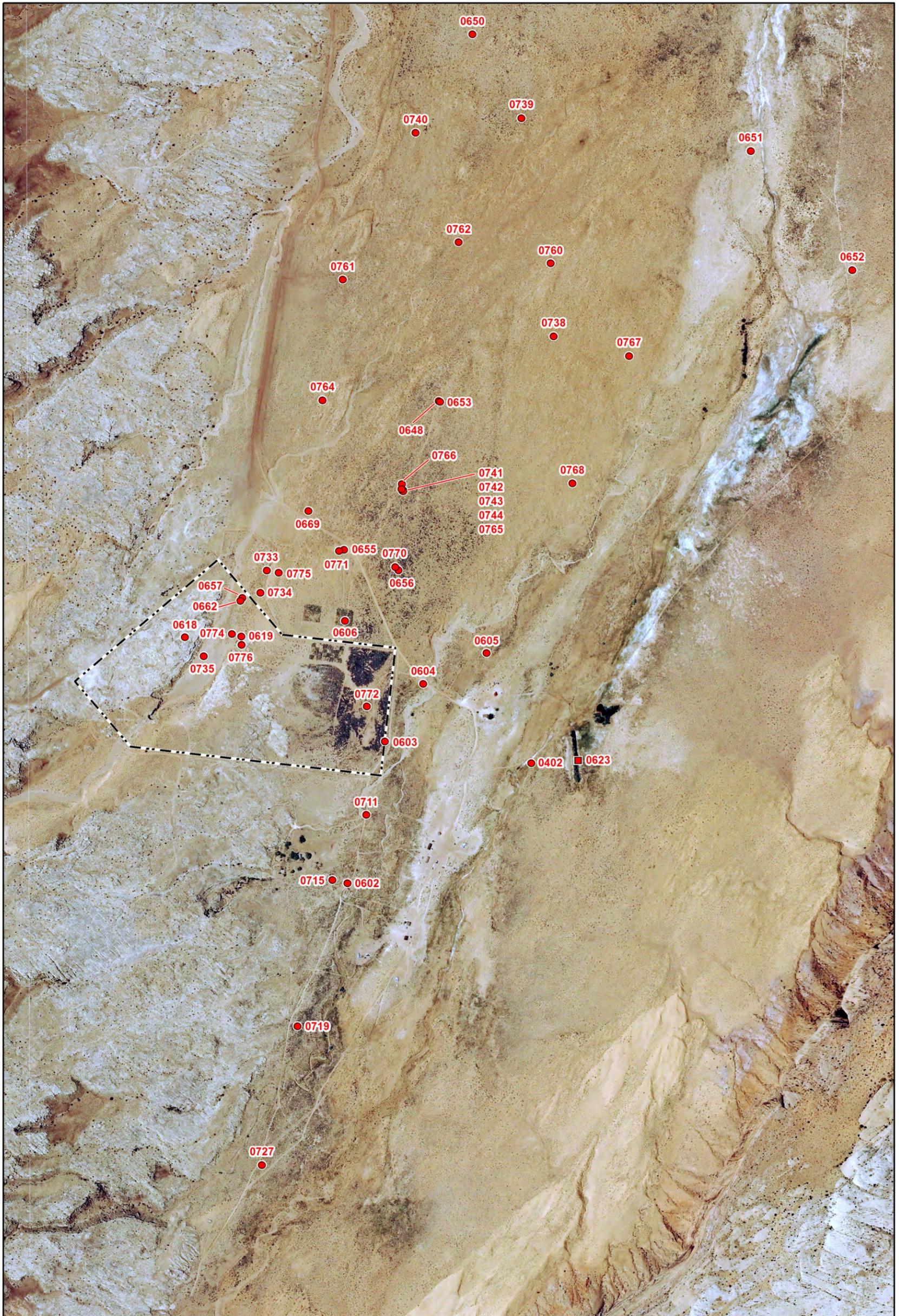


David Miller, Site Lead  
Stoller Newport News Nuclear, Inc., a wholly owned  
subsidiary of Huntington Ingalls Industries, Inc.

2/26/15

Date

This page intentionally left blank



<b>LEGEND</b> ● WELL TO BE SAMPLED ■ SURFACE LOCATION TO BE SAMPLED - - - SITE BOUNDARY		U.S. DEPARTMENT OF ENERGY <small>GRAND JUNCTION, COLORADO</small>	<small>Work Performed by</small> <b>S.M. Stoller Corporation</b> <small>Under DOE Contract          No. DE-AM01-07LM0060</small>
		<b>Planned Sampling Map</b> <b>Monument Valley, AZ, Processing Site</b> <b>December 2014</b>	
		<small>DATE PREPARED:</small> November 17, 2014	<small>FILENAME:</small> S1241100

M:\LTS\111\0001\16\001\S1241100-11x17.mxd smithw 11/17/2014 11:11:06 AM

*Monument Valley, Arizona, Disposal Site Sample Location Map*

This page intentionally left blank

# **Data Assessment Summary**

This page intentionally left blank

### Water Sampling Field Activities Verification Checklist

<b>Project</b>	<u>Monument Valley, Arizona</u>	<b>Date(s) of Water Sampling</b>	<u>December 9–11, 2014</u>
<b>Date(s) of Verification</b>	<u>January 26, 2015</u>	<b>Name of Verifier</b>	<u>Alison Kuhlman</u>

	<b>Response (Yes, No, NA)</b>	<b>Comments</b>
1. Is the SAP the primary document directing field procedures? List any Program Directives or other documents, SOPs, instructions.	<u>Yes</u>	<u>Work order letter dated November 17, 2014.</u>
2. Were the sampling locations specified in the planning documents sampled?	<u>Yes</u>	
3. Were calibrations 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>Yes</u>	
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	<u>Yes</u>	
6. Were wells categorized correctly?	<u>Yes</u>	
7. Were the following conditions met when purging a Category I well: Was one pump/tubing volume purged prior to sampling? Did the water level stabilize prior to sampling? Did pH, specific conductance, and turbidity measurements meet criteria prior to sampling? Was the flow rate less than 500 mL/min?	<u>Yes</u> <u>Yes</u> <u>Yes</u> <u>Yes</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 from locations 0604, 0618, and 0662.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with non-dedicated equipment?	NA	An equipment blank was not required.
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were the true identities of the QC samples documented?	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. Was all pertinent information documented on the field data sheets?	Yes	
18. Was the presence or absence of ice in the cooler documented at every sample location?	Yes	
19. Were water levels measured at the locations specified in the planning documents?	Yes	

## Laboratory Performance Assessment

### General Information

Requisition No. (RIN): 14126645  
Sample Event: December 9–11, 2014  
Site(s): Monument Valley, Arizona  
Laboratory: ALS Laboratory Group, Fort Collins, Colorado  
Work Order No.: 1412271  
Analysis: Metals and Wet Chemistry  
Validator: Alison Kuhlman  
Review Date: January 22, 2015

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

Table 1. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Ammonia as Nitrogen	WCH-A-005	EPA 350.1	EPA 350.1
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, Vanadium	LMM-02	SW-846 3005A	SW-846 6020A

### Data Qualifier Summary

Analytical results were qualified as listed in Table 2. Refer to the sections below for an explanation of the data qualifiers applied.

Table 2. Data Qualifiers

Sample Number	Location	Analyte	Flag	Reason
1412271-5	0605	Vanadium	U	Less than 5 times the calibration blank
1412271-6	0606	Vanadium	U	Less than 5 times the calibration blank
1412271-9	0623	Vanadium	U	Less than 5 times the calibration blank
1412271-40	0767	Vanadium	U	Less than 5 times the calibration blank

### Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received 50 water samples on December 16, 2014, 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.

### Preservation and Holding Times

The sample shipment was received intact with the temperature inside the iced coolers at 1.0 °C and 1.6 °C, with metals bottles in coolers 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.

### 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 November 14, 2014. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the method detection limit (MDL). Initial and continuing calibration verification checks were made at the required frequency with all calibration checks meeting the acceptance criteria.

#### *Method EPA 353.2, Nitrite + Nitrate as Nitrogen*

Calibrations were performed using seven calibration standards on December 30, 2014. 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 with all calibration checks meeting the acceptance criteria.

#### *Method SW-846 6020A, Uranium, Vanadium*

Calibrations were performed on December 19 and 22, 2014, 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 with all calibration checks meeting the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the practical quantitation limit (PQL) and all results were within the acceptance range, with the following exception. The vanadium reporting limit verification check from December 22, 2014, did not meet the acceptance criteria, failing low. All associated samples are greater than 5 times the PQL, requiring no further action. 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 November 24, 2014. 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 with all calibration checks meeting the acceptance criteria.

#### 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, initial calibration, and continuing calibration blank results associated with the samples were below the practical quantitation limits 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. In cases where a blank concentration is negative and the absolute value of it exceeds the MDL, the associated sample results are qualified with a “J” flag (not detected) when the sample result is less than 5 times MDL or non-detect.

#### Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) 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. The spike recoveries met the acceptance criteria for all analytes evaluated.

#### Laboratory Replicate Analysis

Laboratory replicate analyses are used to determine laboratory precision for each sample matrix. The relative percent difference for 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. All replicate results met these criteria demonstrating 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.

### Detection Limits/Dilutions

The MDL was reported for all 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 PQL for these analytes is the lowest concentration that can be reliably measured, and is defined as 5 times the MDL. The reported MDLs for all analytes demonstrate compliance with contractual requirements.

### 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

The EDD file was originally submitted with the sample results for chloride and sulfate for sample 1412271-37 entered multiple times. A revised EDD arrived on January 2, 2015. 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: 14126645    Lab Code: PAR    Validator: Alison Kuhlman    Validation Date: 1/22/2015  
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: 14126645      Lab Code: PAR      Date Due: 1/13/2015  
 Matrix: Water      Site Code: MON01      Date Completed: 1/2/2015

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	CCV	CCB								
Uranium	ICP/MS	12/19/2014	0.0000	1.0000	OK	OK	OK	98.0	96.0	96.0	2.0	108.0	2.0	80.0
Uranium	ICP/MS	12/19/2014					OK	99.0	101.0	97.0	2.0		1.0	
Uranium	ICP/MS	12/22/2014	0.0000	1.0000	OK	OK	OK	101.0	104.0	102.0	6.0	103.0	3.0	90.0
Vanadium	ICP/MS	12/19/2014	0.0000	1.0000	OK	0.115	-0.02	92.0	94.0	93.0	3.0	97.0	7.0	76.0
Vanadium	ICP/MS	12/19/2014					0.063	97.0	100.0	99.0	0.0		0.0	
Vanadium	ICP/MS	12/22/2014	0.0000	1.0000	OK	-0.03	-0.37	97.0	100.0	99.0	6.0	97.0	3.0	57.0

**SAMPLE MANAGEMENT SYSTEM**  
**Wet Chemistry Data Validation Worksheet**

RIN: 14126645      Lab Code: PAR      Date Due: 1/13/2015  
 Matrix: Water      Site Code: MON01      Date Completed: 1/2/2015

Analyte	Date Analyzed	CALIBRATION				Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R <sup>2</sup>	CCV	CCB						
AMMONIA AS N	12/27/2014	0.000	1.0000	OK	OK	OK	107.00	100.0	99.0	1.00	
AMMONIA AS N	12/29/2014	0.000	1.0000	OK	OK	OK	102.00	100.0	100.0	0	
AMMONIA AS N	12/30/2014	0.000	1.0000	OK	OK	OK	97.00	98.0	98.0	0	
CHLORIDE	12/17/2014	0.000	1.0000	OK	OK	OK	106.00	107.0	108.0	1.00	
CHLORIDE	12/19/2014	0.000	1.0000	OK	OK	OK	105.00	109.0	109.0	0	
CHLORIDE	12/23/2014	0.000	1.0000	OK	OK	OK	104.00	106.0	107.0	0	
Nitrate+Nitrite as N	12/30/2014	0.000	1.0000	OK	OK	OK	99.00	101.0	104.0	1.00	
Nitrate+Nitrite as N	12/30/2014					OK	99.00	101.0	98.0	2.00	
Nitrate+Nitrite as N	12/30/2014					OK	97.00	104.0	104.0	0	
SULFATE	12/17/2014	0.000	1.0000	OK	OK	OK	103.00	111.0	113.0	1.00	
SULFATE	12/19/2014	0.000	1.0000	OK	OK	OK	103.00	110.0	110.0	0	
SULFATE	12/23/2014	0.000	1.0000	OK	OK	OK	101.00	98.0	102.0	1.00	

## **Sampling Quality Control Assessment**

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

### Sampling Protocol

The surface water location, 0623, was collected using dedicated tubing and a peristaltic pump. All other wells were sampled with a peristaltic pump and dedicated tubing or a dedicated bladder pump. Sample results from these 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, 0764, and 0771 were further 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 0604, 0618, and 0662. The duplicate results met the criteria, demonstrating acceptable overall precision.

**SAMPLE MANAGEMENT SYSTEM**  
**Validation Report: Field Duplicates**

Page 1 of 1

RIN: 14126645    Lab Code: PAR    Project: Monument Valley    Validation Date: 1/22/2015

Duplicate: 2079

Sample: 0604

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	12			5	11			5	8.70		MG/L
Nitrate+Nitrite as N	0.012			1	0.011			1			MG/L
SULFATE	110			5	110			5	0		MG/L
Uranium	2.1			1	2.1			1	0		UG/L
Vanadium	2.3			1	2.2			1	4.44		UG/L

Duplicate: 2251

Sample: 0662

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	7.9			5	7.9			5	0		MG/L
Nitrate+Nitrite as N	4.5			5	4.6			5	2.20		MG/L
SULFATE	150			5	150			5	0		MG/L
Uranium	260			10	280			10	7.41		UG/L
Vanadium	32			10	32			10	0		UG/L

Duplicate: 2711

Sample: 0618

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	3.7			1	3.8			1	2.67		MG/L
Nitrate+Nitrite as N	0.98			1	0.97			1	1.03		MG/L
SULFATE	14			1	14			1	0		MG/L
Uranium	3.5			10	3.7			1	5.56		UG/L
Vanadium	50			10	52			1	3.92		UG/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:

Stephen Donovan  
Stephen Donovan

2-24-2015  
Date

Data Validation Lead:

Alison Kuhlman  
Alison Kuhlman

2/24/15  
Date

**Attachment 1**  
**Assessment of Anomalous Data**

This page intentionally left blank

# Potential Outliers Report

This page intentionally left blank

## 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 can result from transcription errors, data-coding errors, or measurement system problems. However, outliers can also represent true extreme values of a distribution and can 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.** Do this by generating the Outliers Report using the Sample Management System from data in the environmental database. The application compares the new data set (in standard environmental database units) with historical data and lists the new data that fall outside the historical data range. A determination is also made as to whether the data are normally distributed using the Shapiro-Wilk Test.
2. **Apply the appropriate statistical test.** Dixon's Test for extreme values 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.** The review should include an evaluation of any notable trends in the data that may indicate the outliers represent true extreme values.

Three laboratory results were identified as potentially anomalous. The uranium result from location 0772 had a concentration higher than previously observed. There is low variability in the historical data points collected after 2005 at this location, causing it to be an outlier. Additionally the chloride results from locations 0655 and 0744 were identified as outliers. All data associated with these results were reviewed in detail with no errors noted. The laboratory results 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. No such patterns were found. High turbidity measurements indicate wells that may need to be re-developed. The trip report recommends re-development at multiple wells. All field data from this event are acceptable as qualified.

**Data Validation Outliers Report - No Field Parameters**

**Comparison: All historical Data Beginning 1/1/2005**

Laboratory: ALS Laboratory Group

RIN: 14126645

Report Date: 1/30/2015

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current	Qualifiers		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	Below Detect	
MON01	0603	N001	12/09/2014	Ammonia Total as N	0.370		F	0.350		F	0.140		F	11	0	No
MON01	0606	N001	12/09/2014	Nitrate + Nitrite as Nitrogen	350		FQ	330		FQ	160		F	17	0	No
MON01	0618	N001	12/11/2014	Uranium	0.00350		F	0.0460			0.00430		F	7	0	No
MON01	0618	N002	12/11/2014	Uranium	0.00370		F	0.0460			0.00430		F	7	0	No
MON01	0623	0001	12/09/2014	Sulfate	27.0			51.0			33.0			12	0	No
MON01	0650	N001	12/09/2014	Chloride	23.0		F	20.0		F	9.00		F	14	0	No
MON01	0650	N001	12/09/2014	Nitrate + Nitrite as Nitrogen	5.90		F	4.60		F	0.530		F	14	0	No
MON01	0650	N001	12/09/2014	Sulfate	430		F	390		F	41.0		F	14	0	No
MON01	0651	N001	12/09/2014	Nitrate + Nitrite as Nitrogen	0.170		F	0.160		F	0.110		F	11	0	No
MON01	0652	N001	12/09/2014	Uranium	0.00380		F	0.00460		F	0.00390		F	11	0	No
MON01	0655	N001	12/10/2014	Ammonia Total as N	200		F	180		F	37.0		F	18	0	No
MON01	0655	N001	12/10/2014	Chloride	120		F	32.0		F	16.0		F	16	0	Yes
MON01	0656	N001	12/10/2014	Nitrate + Nitrite as Nitrogen	13.0		F	22.0		F	15.0		F	17	0	NA
MON01	0662	N001	12/10/2014	Chloride	7.90		F	18.4		F	8.90		F	18	0	No
MON01	0662	N002	12/10/2014	Chloride	7.90		F	18.4		F	8.90		F	18	0	No
MON01	0662	N001	12/10/2014	Nitrate + Nitrite as Nitrogen	4.50		F	26.0		F	5.30		F	20	0	No
MON01	0662	N002	12/10/2014	Nitrate + Nitrite as Nitrogen	4.60		F	26.0		F	5.30		F	20	0	No

**Data Validation Outliers Report - No Field Parameters**

**Comparison: All historical Data Beginning 1/1/2005**

Laboratory: ALS Laboratory Group

RIN: 14126645

Report Date: 1/30/2015

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current	Qualifiers		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	Below Detect	
MON01	0662	N002	12/10/2014	Sulfate	150		F	630		F	160		F	20	0	NA
MON01	0662	N001	12/10/2014	Sulfate	150		F	630		F	160		F	20	0	NA
MON01	0719	N001	12/09/2014	Nitrate + Nitrite as Nitrogen	0.760		F	0.840		FQ	0.770		F	12	0	No
MON01	0727	N001	12/09/2014	Nitrate + Nitrite as Nitrogen	0.780		F	0.910		F	0.800		F	11	0	No
MON01	0733	0001	12/11/2014	Chloride	7.10		F	6.80		F	4.58		F	7	0	No
MON01	0733	0001	12/11/2014	Nitrate + Nitrite as Nitrogen	5.90		F	5.50		F	4.00		F	7	0	No
MON01	0733	0001	12/11/2014	Sulfate	100.0		F	89.0		F	56.4		F	7	0	No
MON01	0735	0001	12/10/2014	Uranium	0.170		F	0.210		F	0.180		FQ	6	0	No
MON01	0738	0001	12/10/2014	Uranium	0.00024		F	0.00035		F	0.00025		F	7	0	No
MON01	0738	0001	12/10/2014	Vanadium	0.00043		F	0.00300	U	F	0.00058		F	7	2	NA
MON01	0739	N001	12/09/2014	Ammonia Total as N	0.830		F	0.730		F	0.102		UF	7	1	No
MON01	0739	N001	12/09/2014	Nitrate + Nitrite as Nitrogen	0.830		F	2.20		F	0.870		F	7	0	No
MON01	0740	N001	12/09/2014	Chloride	30.0		F	44.0		F	31.0		F	8	0	No
MON01	0740	N001	12/09/2014	Nitrate + Nitrite as Nitrogen	27.0		F	24.0		F	12.0		F	8	0	No
MON01	0741	0001	12/11/2014	Chloride	26.0		F	22.0		F	14.6		F	7	0	No
MON01	0742	N001	12/10/2014	Chloride	26.0		F	22.0		F	14.5		F	8	0	No
MON01	0743	N001	12/11/2014	Chloride	23.0		F	20.0		F	14.0		F	7	0	No

**Data Validation Outliers Report - No Field Parameters**

**Comparison: All historical Data Beginning 1/1/2005**

Laboratory: ALS Laboratory Group

RIN: 14126645

Report Date: 1/30/2015

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current	Qualifiers		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	Below Detect	
MON01	0743	N001	12/11/2014	Nitrate + Nitrite as Nitrogen	91.0		F	71.0		F	0.0120		F	7	0	No
MON01	0744	0001	12/10/2014	Chloride	24.0		F	19.0		F	13.8		F	7	0	Yes
MON01	0744	0001	12/10/2014	Uranium	0.00860		F	0.0102		F	0.00905		F	7	0	No
MON01	0764	N001	12/09/2014	Uranium	0.00990		FQ	0.0150		FQ	0.0109		FQ	17	0	No
MON01	0765	N001	12/10/2014	Chloride	24.0		F	22.0		F	13.0		FQ	15	0	No
MON01	0772	N001	12/09/2014	Nitrate + Nitrite as Nitrogen	7.30		F	2.70		F	0.990		F	21	0	NA
MON01	0772	N001	12/09/2014	Sulfate	170		F	140		F	109		F	21	0	NA
MON01	0772	N001	12/09/2014	Uranium	0.0130		F	0.00940		F	0.00580		F	21	0	Yes
MON01	0775	N001	12/11/2014	Chloride	6.00		F	5.90		F	4.62		F	10	0	No
MON01	0776	N001	12/09/2014	Chloride	6.10		F	6.00		F	4.80		F	11	0	No

**Data Validation Outliers Report - Field Parameters Only**

**Comparison: All historical Data Beginning 1/1/2005**

Laboratory: Field Measurements

RIN: 14126645

Report Date: 2/11/2015

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	
MON01	0602	N001	12/09/2014	Oxidation Reduction Potential	217		FQ	166			18.5		FQ	10	0	No
MON01	0602	N001	12/09/2014	pH	7.98		FQ	7.93		F	7.44		FQ	10	0	No
MON01	0602	N001	12/09/2014	Temperature	12.0		FQ	18.6			12.8			10	0	No
MON01	0602	N001	12/09/2014	Turbidity	4.89		FQ	4.49		FQ	2.26		F	10	0	No
MON01	0603	N001	12/09/2014	Temperature	14.2		F	18.8			14.3			11	0	No
MON01	0605	N001	12/10/2014	Temperature	14.4		F	18.6			15.1			11	0	No
MON01	0605	N001	12/10/2014	Turbidity	17.5		F	7.68		F	1.15		F	11	0	Yes
MON01	0606	N001	12/09/2014	Specific Conductance	3927		FQ	3918		FQ	2542		F	17	0	NA
MON01	0618	N001	12/11/2014	Specific Conductance	310		F	645			317		F	8	0	No
MON01	0623	N001	12/09/2014	Turbidity	32.3			15.3			3.88			11	0	Yes
MON01	0648	N001	12/10/2014	Oxidation Reduction Potential	23.4		F	230			57.0		F	12	0	No
MON01	0648	N001	12/10/2014	pH	7.61		F	7.58		F	7.17		F	12	0	No
MON01	0650	N001	12/09/2014	Specific Conductance	1181		F	1135		F	501		F	12	0	No
MON01	0651	N001	12/09/2014	Temperature	14.6		F	17.2			14.6			11	0	No
MON01	0653	N001	12/10/2014	Oxidation Reduction Potential	25.1		F	228			25.4		F	11	0	No
MON01	0655	N001	12/10/2014	Specific Conductance	4166		F	3810		F	3244		F	17	0	No

**Data Validation Outliers Report - Field Parameters Only**

**Comparison: All historical Data Beginning 1/1/2005**

Laboratory: Field Measurements

RIN: 14126645

Report Date: 2/11/2015

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	Below Detect	
						Lab	Data		Lab	Data		Lab	Data			
MON01	0656	N001	12/10/2014	Specific Conductance	906		F	1146		F	915		F	17	0	No
MON01	0662	N001	12/10/2014	Specific Conductance	674		F	1398		F	721		F	17	0	No
MON01	0662	N001	12/10/2014	Turbidity	8.29		F	4.63		F	0.640		F	17	0	NA
MON01	0711	N001	12/09/2014	Oxidation Reduction Potential	-72.9		F	210			-30.5		JF	11	0	No
MON01	0711	N001	12/09/2014	Specific Conductance	663		F	729		F	670		F	11	0	No
MON01	0711	N001	12/09/2014	Turbidity	7.35		F	7.07		F	2.10		F	11	0	No
MON01	0715	N001	12/09/2014	Temperature	14.3		F	18.1			14.5			11	0	No
MON01	0719	N001	12/09/2014	Specific Conductance	687		F	761		F	696		F	11	0	No
MON01	0727	N001	12/09/2014	pH	8.02		F	7.96		F	7.47		F	11	0	No
MON01	0727	N001	12/09/2014	Specific Conductance	534		F	622		F	544		F	11	0	No
MON01	0733	N001	12/11/2014	Specific Conductance	607		F	588		FQ	540		F	7	0	No
MON01	0734	N001	12/11/2014	Temperature	14.0		F	21.0		F	14.3			7	0	No
MON01	0738	N001	12/10/2014	Specific Conductance	728		F	875		F	737		F	7	0	No
MON01	0739	N001	12/09/2014	Specific Conductance	742		F	950		F	766		F	7	0	No
MON01	0740	N001	12/09/2014	Turbidity	1.000		F	8.88		F	2.78		F	7	0	No
MON01	0741	N001	12/11/2014	Specific Conductance	2279		F	2560		F	2336		F	7	0	No
MON01	0741	N001	12/11/2014	Turbidity	998		F	631		F	7.12		F	7	0	NA

**Data Validation Outliers Report - Field Parameters Only**

**Comparison: All historical Data Beginning 1/1/2005**

Laboratory: Field Measurements

RIN: 14126645

Report Date: 2/11/2015

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	0742	N001	12/10/2014	Specific Conductance	2320		F	2595		F	2366		F	7	0	No
MON01	0742	N001	12/10/2014	Temperature	13.1		F	21.1			13.4			7	0	No
MON01	0743	N001	12/11/2014	Temperature	12.9		F	22.2			13.6			7	0	No
MON01	0744	N001	12/10/2014	Oxidation Reduction Potential	78.2		F	61.9		F	-205.2		F	7	0	No
MON01	0744	N001	12/10/2014	Specific Conductance	2370		F	2739		F	2465		F	7	0	No
MON01	0744	N001	12/10/2014	Temperature	13.9		F	20.2			14.0			7	0	No
MON01	0761	N001	12/09/2014	Specific Conductance	1315		F	1467		F	1340		F	17	0	No
MON01	0761	N001	12/09/2014	Turbidity	1.43		F	48.2		F	1.93		F	17	0	No
MON01	0764	N001	12/09/2014	Specific Conductance	547		FQ	1350		F	1122		FQ	17	0	Yes
MON01	0766	N001	12/10/2014	Turbidity	1.72		F	26.3		FQ	2.60		F	11	0	No
MON01	0772	N001	12/09/2014	Specific Conductance	949		F	806		F	694		F	17	0	Yes
MON01	0775	N001	12/11/2014	Temperature	14.0		F	20.0			14.4		F	10	0	No

This page intentionally left blank

# **Attachment 2**

## **Data Presentation**

This page intentionally left blank

## **Groundwater Quality Data**

This page intentionally left blank

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

REPORT DATE: 1/30/2015

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	12/09/2014	0001	5.17	- 9.63	0.1	U	FQ	#	0.1	
Chloride	mg/L	12/09/2014	0001	5.17	- 9.63	13		FQ	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	0001	5.17	- 9.63	0.031		FQ	#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	5.17	- 9.63	113.9		FQ	#		
pH	s.u.	12/09/2014	N001	5.17	- 9.63	8.23		FQ	#		
Specific Conductance	umhos/cm	12/09/2014	N001	5.17	- 9.63	534		FQ	#		
Sulfate	mg/L	12/09/2014	0001	5.17	- 9.63	15		FQ	#	2.5	
Temperature	C	12/09/2014	N001	5.17	- 9.63	13.86		FQ	#		
Turbidity	NTU	12/09/2014	N001	5.17	- 9.63	18.1		FQ	#		
Uranium	mg/L	12/09/2014	0001	5.17	- 9.63	0.000005	B	FQ	#	0.000029	
Vanadium	mg/L	12/09/2014	0001	5.17	- 9.63	0.000089	B	FQ	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0602 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	19.5 - 29.5	0.1	U	FQ	#	0.1	
Chloride	mg/L	12/09/2014	N001	19.5 - 29.5	13		FQ	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	19.5 - 29.5	0.74		FQ	#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	19.5 - 29.5	216.6		FQ	#		
pH	s.u.	12/09/2014	N001	19.5 - 29.5	7.98		FQ	#		
Specific Conductance	umhos/cm	12/09/2014	N001	19.5 - 29.5	684		FQ	#		
Sulfate	mg/L	12/09/2014	N001	19.5 - 29.5	110		FQ	#	2.5	
Temperature	C	12/09/2014	N001	19.5 - 29.5	12.02		FQ	#		
Turbidity	NTU	12/09/2014	N001	19.5 - 29.5	4.89		FQ	#		
Uranium	mg/L	12/09/2014	N001	19.5 - 29.5	0.0034		FQ	#	0.000029	
Vanadium	mg/L	12/09/2014	N001	19.5 - 29.5	0.00085		FQ	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0603 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	12/09/2014	N001	43	-	53		F	#	0.1	
Chloride	mg/L	12/09/2014	N001	43	-	53		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	43	-	53		F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	43	-	53		F	#		
pH	s.u.	12/09/2014	N001	43	-	53		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	43	-	53		F	#		
Sulfate	mg/L	12/09/2014	N001	43	-	53		F	#	2.5	
Temperature	C	12/09/2014	N001	43	-	53		F	#		
Turbidity	NTU	12/09/2014	N001	43	-	53		F	#		
Uranium	mg/L	12/09/2014	N001	43	-	53		F	#	0.000029	
Vanadium	mg/L	12/09/2014	N001	43	-	53		F	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0604 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	13 - 28	0.1	U	F	#	0.1	
Ammonia Total as N	mg/L	12/09/2014	N002	13 - 28	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	13 - 28	12		F	#	1	
Chloride	mg/L	12/09/2014	N002	13 - 28	11		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	13 - 28	0.012		F	#	0.01	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N002	13 - 28	0.011		F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	13 - 28	-12.7		F	#		
pH	s.u.	12/09/2014	N001	13 - 28	8.06		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	13 - 28	590		F	#		
Sulfate	mg/L	12/09/2014	N001	13 - 28	110		F	#	2.5	
Sulfate	mg/L	12/09/2014	N002	13 - 28	110		F	#	2.5	
Temperature	C	12/09/2014	N001	13 - 28	14.71		F	#		
Turbidity	NTU	12/09/2014	N001	13 - 28	4.14		F	#		
Uranium	mg/L	12/09/2014	N001	13 - 28	0.0021		F	#	0.000029	
Uranium	mg/L	12/09/2014	N002	13 - 28	0.0021		F	#	0.000029	
Vanadium	mg/L	12/09/2014	N001	13 - 28	0.0023		F	#	0.000015	
Vanadium	mg/L	12/09/2014	N002	13 - 28	0.0022		F	#	0.000015	

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

REPORT DATE: 1/30/2015

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	12/10/2014	0001	14	-	29	0.42		F	#	0.1	
Chloride	mg/L	12/10/2014	0001	14	-	29	21		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	0001	14	-	29	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2014	N001	14	-	29	-100.4		F	#		
pH	s.u.	12/10/2014	N001	14	-	29	8.28		F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	14	-	29	595		F	#		
Sulfate	mg/L	12/10/2014	0001	14	-	29	140		F	#	2.5	
Temperature	C	12/10/2014	N001	14	-	29	14.38		F	#		
Turbidity	NTU	12/10/2014	N001	14	-	29	17.5		F	#		
Uranium	mg/L	12/10/2014	0001	14	-	29	0.00014		F	#	0.000029	
Vanadium	mg/L	12/10/2014	0001	14	-	29	0.00021	B	UF	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0606 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	32 - 42	110		FQ	#	10	
Chloride	mg/L	12/09/2014	N001	32 - 42	48		FQ	#	10	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	32 - 42	350		FQ	#	2.5	
Oxidation Reduction Potential	mV	12/09/2014	N001	32 - 42	58.9		FQ	#		
pH	s.u.	12/09/2014	N001	32 - 42	6.96		FQ	#		
Specific Conductance	umhos/cm	12/09/2014	N001	32 - 42	3927		FQ	#		
Sulfate	mg/L	12/09/2014	N001	32 - 42	630		FQ	#	25	
Temperature	C	12/09/2014	N001	32 - 42	14.93		FQ	#		
Turbidity	NTU	12/09/2014	N001	32 - 42	7.17		FQ	#		
Uranium	mg/L	12/09/2014	N001	32 - 42	0.0099		FQ	#	0.0000029	
Vanadium	mg/L	12/09/2014	N001	32 - 42	0.00042		UFQ	#	0.000015	

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

REPORT DATE: 1/30/2015

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		
Ammonia Total as N	mg/L	12/11/2014	N001	-	0.1	U	F	#	0.1	
Ammonia Total as N	mg/L	12/11/2014	N002	-	0.1	U	F	#	0.1	
Chloride	mg/L	12/11/2014	N001	-	3.7		F	#	0.2	
Chloride	mg/L	12/11/2014	N002	-	3.8		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2014	N001	-	0.98		F	#	0.01	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2014	N002	-	0.97		F	#	0.01	
Oxidation Reduction Potential	mV	12/11/2014	N001	-	40.1		F	#		
pH	s.u.	12/11/2014	N001	-	7.9		F	#		
Specific Conductance	umhos/cm	12/11/2014	N001	-	310		F	#		
Sulfate	mg/L	12/11/2014	N001	-	14		F	#	0.5	
Sulfate	mg/L	12/11/2014	N002	-	14		F	#	0.5	
Temperature	C	12/11/2014	N001	-	15.47		F	#		
Turbidity	NTU	12/11/2014	N001	-	1.87		F	#		
Uranium	mg/L	12/11/2014	N001	-	0.0035		F	#	0.000029	
Uranium	mg/L	12/11/2014	N002	-	0.0037		F	#	0.000029	
Vanadium	mg/L	12/11/2014	N001	-	0.05		F	#	0.00015	
Vanadium	mg/L	12/11/2014	N002	-	0.052		F	#	0.000015	

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

REPORT DATE: 1/30/2015

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	12/09/2014	N001	103.9	-	153.9	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	103.9	-	153.9	5.3		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	103.9	-	153.9	1.3		F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	103.9	-	153.9	73.4		F	#		
pH	s.u.	12/09/2014	N001	103.9	-	153.9	7.87		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	103.9	-	153.9	375		F	#		
Sulfate	mg/L	12/09/2014	N001	103.9	-	153.9	35		F	#	0.5	
Temperature	C	12/09/2014	N001	103.9	-	153.9	15.5		F	#		
Turbidity	NTU	12/09/2014	N001	103.9	-	153.9	1.24		F	#		
Uranium	mg/L	12/09/2014	N001	103.9	-	153.9	0.019		F	#	0.000015	
Vanadium	mg/L	12/09/2014	N001	103.9	-	153.9	0.02		F	#	0.000076	

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

REPORT DATE: 1/30/2015

Location: 0648 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Ammonia Total as N	mg/L	12/10/2014	N001	38.5	-	88.5	6.9	F	#	2.5	
Chloride	mg/L	12/10/2014	N001	38.5	-	88.5	28	F	#	5	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	38.5	-	88.5	69	F	#	0.5	
Oxidation Reduction Potential	mV	12/10/2014	N001	38.5	-	88.5	23.4	F	#		
pH	s.u.	12/10/2014	N001	38.5	-	88.5	7.61	F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	38.5	-	88.5	2400	F	#		
Sulfate	mg/L	12/10/2014	N001	38.5	-	88.5	940	F	#	12	
Temperature	C	12/10/2014	N001	38.5	-	88.5	14.44	F	#		
Turbidity	NTU	12/10/2014	N001	38.5	-	88.5	0.78	F	#		
Uranium	mg/L	12/10/2014	N001	38.5	-	88.5	0.0097	F	#	0.000015	
Vanadium	mg/L	12/10/2014	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: 1/30/2015

Location: 0650 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	77.5	-	97.5	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	77.5	-	97.5	23		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	77.5	-	97.5	5.9		F	#	0.1	
Oxidation Reduction Potential	mV	12/09/2014	N001	77.5	-	97.5	96.9		F	#		
pH	s.u.	12/09/2014	N001	77.5	-	97.5	8.05		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	77.5	-	97.5	1181		F	#		
Sulfate	mg/L	12/09/2014	N001	77.5	-	97.5	430		F	#	5	
Temperature	C	12/09/2014	N001	77.5	-	97.5	15.04		F	#		
Turbidity	NTU	12/09/2014	N001	77.5	-	97.5	0.85		F	#		
Uranium	mg/L	12/09/2014	N001	77.5	-	97.5	0.0022		F	#	0.000029	
Vanadium	mg/L	12/09/2014	N001	77.5	-	97.5	0.0028		F	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0651 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	20	-	80	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	20	-	80	13		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	20	-	80	0.17		F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	20	-	80	129.4		F	#		
pH	s.u.	12/09/2014	N001	20	-	80	8.23		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	20	-	80	631		F	#		
Sulfate	mg/L	12/09/2014	N001	20	-	80	120		F	#	2.5	
Temperature	C	12/09/2014	N001	20	-	80	14.56		F	#		
Turbidity	NTU	12/09/2014	N001	20	-	80	2.05		F	#		
Uranium	mg/L	12/09/2014	N001	20	-	80	0.0022		F	#	0.000015	
Vanadium	mg/L	12/09/2014	N001	20	-	80	0.011		F	#	0.000076	

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

REPORT DATE: 1/30/2015

Location: 0652 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	34	-	54	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	34	-	54	16		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	34	-	54	4.7		F	#	0.05	
Oxidation Reduction Potential	mV	12/09/2014	N001	34	-	54	114.7		F	#		
pH	s.u.	12/09/2014	N001	34	-	54	7.91		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	34	-	54	561		F	#		
Sulfate	mg/L	12/09/2014	N001	34	-	54	67		F	#	2.5	
Temperature	C	12/09/2014	N001	34	-	54	14.64		F	#		
Turbidity	NTU	12/09/2014	N001	34	-	54	0.3		F	#		
Uranium	mg/L	12/09/2014	N001	34	-	54	0.0038		F	#	0.000015	
Vanadium	mg/L	12/09/2014	N001	34	-	54	0.0087		F	#	0.000076	

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

REPORT DATE: 1/30/2015

Location: 0653 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/10/2014	N001	56	-	76	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2014	N001	56	-	76	27		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	56	-	76	48		F	#	0.5	
Oxidation Reduction Potential	mV	12/10/2014	N001	56	-	76	25.1		F	#		
pH	s.u.	12/10/2014	N001	56	-	76	7.52		F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	56	-	76	2382		F	#		
Sulfate	mg/L	12/10/2014	N001	56	-	76	1100		F	#	10	
Temperature	C	12/10/2014	N001	56	-	76	15.2		F	#		
Turbidity	NTU	12/10/2014	N001	56	-	76	1.23		F	#		
Uranium	mg/L	12/10/2014	N001	56	-	76	0.0097		F	#	0.000015	
Vanadium	mg/L	12/10/2014	N001	56	-	76	0.0077		F	#	0.000076	

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

REPORT DATE: 1/30/2015

Location: 0655 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Ammonia Total as N	mg/L	12/10/2014	N001	38	-	58	200	F	#	10	
Chloride	mg/L	12/10/2014	N001	38	-	58	120	F	#	10	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	38	-	58	140	F	#	2	
Oxidation Reduction Potential	mV	12/10/2014	N001	38	-	58	154	F	#		
pH	s.u.	12/10/2014	N001	38	-	58	7.25	F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	38	-	58	4166	F	#		
Sulfate	mg/L	12/10/2014	N001	38	-	58	1500	F	#	25	
Temperature	C	12/10/2014	N001	38	-	58	13.97	F	#		
Turbidity	NTU	12/10/2014	N001	38	-	58	1.19	F	#		
Uranium	mg/L	12/10/2014	N001	38	-	58	0.015	F	#	0.000015	
Vanadium	mg/L	12/10/2014	N001	38	-	58	0.0067	F	#	0.000076	

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

REPORT DATE: 1/30/2015

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	12/10/2014	N001	38	-	58	44	F	#	2	
Chloride	mg/L	12/10/2014	N001	38	-	58	15	F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	38	-	58	13	F	#	0.1	
Oxidation Reduction Potential	mV	12/10/2014	N001	38	-	58	35	F	#		
pH	s.u.	12/10/2014	N001	38	-	58	7.84	F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	38	-	58	906	F	#		
Sulfate	mg/L	12/10/2014	N001	38	-	58	140	F	#	5	
Temperature	C	12/10/2014	N001	38	-	58	15.14	F	#		
Turbidity	NTU	12/10/2014	N001	38	-	58	0.81	F	#		
Uranium	mg/L	12/10/2014	N001	38	-	58	0.0051	F	#	0.000029	
Vanadium	mg/L	12/10/2014	N001	38	-	58	0.00063	F	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0657 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/10/2014	N001	121	-	136	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2014	N001	121	-	136	7.1		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	121	-	136	3.2		F	#	0.05	
Oxidation Reduction Potential	mV	12/10/2014	N001	121	-	136	57.5		F	#		
pH	s.u.	12/10/2014	N001	121	-	136	7.73		F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	121	-	136	423		F	#		
Sulfate	mg/L	12/10/2014	N001	121	-	136	55		F	#	0.5	
Temperature	C	12/10/2014	N001	121	-	136	15.22		F	#		
Turbidity	NTU	12/10/2014	N001	121	-	136	0.53		F	#		
Uranium	mg/L	12/10/2014	N001	121	-	136	0.03		F	#	0.000029	
Vanadium	mg/L	12/10/2014	N001	121	-	136	0.063		F	#	0.00015	

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

REPORT DATE: 1/30/2015

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	12/10/2014	N001	37.5	-	67.5	0.1	U	F	#	0.1	
Ammonia Total as N	mg/L	12/10/2014	N002	37.5	-	67.5	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2014	N001	37.5	-	67.5	7.9		F	#	1	
Chloride	mg/L	12/10/2014	N002	37.5	-	67.5	7.9		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	37.5	-	67.5	4.5		F	#	0.05	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N002	37.5	-	67.5	4.6		F	#	0.05	
Oxidation Reduction Potential	mV	12/10/2014	N001	37.5	-	67.5	130.8		F	#		
pH	s.u.	12/10/2014	N001	37.5	-	67.5	7.53		F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	37.5	-	67.5	674		F	#		
Sulfate	mg/L	12/10/2014	N001	37.5	-	67.5	150		F	#	2.5	
Sulfate	mg/L	12/10/2014	N002	37.5	-	67.5	150		F	#	2.5	
Temperature	C	12/10/2014	N001	37.5	-	67.5	15.06		F	#		
Turbidity	NTU	12/10/2014	N001	37.5	-	67.5	8.29		F	#		
Uranium	mg/L	12/10/2014	N001	37.5	-	67.5	0.26		F	#	0.000029	
Uranium	mg/L	12/10/2014	N002	37.5	-	67.5	0.28		F	#	0.000029	
Vanadium	mg/L	12/10/2014	N001	37.5	-	67.5	0.032		F	#	0.00015	
Vanadium	mg/L	12/10/2014	N002	37.5	-	67.5	0.032		F	#	0.00015	

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

REPORT DATE: 1/30/2015

Location: 0669 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Ammonia Total as N	mg/L	12/10/2014	N001	34	-	54	4	F	#	0.1	
Chloride	mg/L	12/10/2014	N001	34	-	54	9	F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	34	-	54	17	F	#	0.2	
Oxidation Reduction Potential	mV	12/10/2014	N001	34	-	54	151.7	F	#		
pH	s.u.	12/10/2014	N001	34	-	54	7.57	F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	34	-	54	743	F	#		
Sulfate	mg/L	12/10/2014	N001	34	-	54	130	F	#	2.5	
Temperature	C	12/10/2014	N001	34	-	54	14.46	F	#		
Turbidity	NTU	12/10/2014	N001	34	-	54	0.66	F	#		
Uranium	mg/L	12/10/2014	N001	34	-	54	0.0065	F	#	0.000029	
Vanadium	mg/L	12/10/2014	N001	34	-	54	0.05	F	#	0.00015	

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

REPORT DATE: 1/30/2015

Location: 0711 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	25.5	-	30.5	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	25.5	-	30.5	15		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	25.5	-	30.5	0.55		F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	25.5	-	30.5	-72.9		F	#		
pH	s.u.	12/09/2014	N001	25.5	-	30.5	7.91		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	25.5	-	30.5	663		F	#		
Sulfate	mg/L	12/09/2014	N001	25.5	-	30.5	120		F	#	2.5	
Temperature	C	12/09/2014	N001	25.5	-	30.5	14.18		F	#		
Turbidity	NTU	12/09/2014	N001	25.5	-	30.5	7.35		F	#		
Uranium	mg/L	12/09/2014	N001	25.5	-	30.5	0.0037		F	#	0.000029	
Vanadium	mg/L	12/09/2014	N001	25.5	-	30.5	0.0013		F	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0715 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	16	-	21	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	16	-	21	9.7		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	16	-	21	0.73		F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	16	-	21	171.3		F	#		
pH	s.u.	12/09/2014	N001	16	-	21	7.85		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	16	-	21	527		F	#		
Sulfate	mg/L	12/09/2014	N001	16	-	21	68		F	#	2.5	
Temperature	C	12/09/2014	N001	16	-	21	14.32		F	#		
Turbidity	NTU	12/09/2014	N001	16	-	21	3.67		F	#		
Uranium	mg/L	12/09/2014	N001	16	-	21	0.0028		F	#	0.000029	
Vanadium	mg/L	12/09/2014	N001	16	-	21	0.00085		F	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0719 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	19.35 - 24.35	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	19.35 - 24.35	14		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	19.35 - 24.35	0.76		F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	19.35 - 24.35	-8.3		F	#		
pH	s.u.	12/09/2014	N001	19.35 - 24.35	7.89		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	19.35 - 24.35	687		F	#		
Sulfate	mg/L	12/09/2014	N001	19.35 - 24.35	110		F	#	2.5	
Temperature	C	12/09/2014	N001	19.35 - 24.35	14.88		F	#		
Turbidity	NTU	12/09/2014	N001	19.35 - 24.35	2.83		F	#		
Uranium	mg/L	12/09/2014	N001	19.35 - 24.35	0.0035		F	#	0.000029	
Vanadium	mg/L	12/09/2014	N001	19.35 - 24.35	0.0045		F	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0727 WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	23.73 - 28.78	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	23.73 - 28.78	9.6		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	23.73 - 28.78	0.78		F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	23.73 - 28.78	8.2		F	#		
pH	s.u.	12/09/2014	N001	23.73 - 28.78	8.02		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	23.73 - 28.78	534		F	#		
Sulfate	mg/L	12/09/2014	N001	23.73 - 28.78	78		F	#	2.5	
Temperature	C	12/09/2014	N001	23.73 - 28.78	15.06		F	#		
Turbidity	NTU	12/09/2014	N001	23.73 - 28.78	9.5		F	#		
Uranium	mg/L	12/09/2014	N001	23.73 - 28.78	0.0018		F	#	0.000029	
Vanadium	mg/L	12/09/2014	N001	23.73 - 28.78	0.0044		F	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0733 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/11/2014	0001	49	-	54	0.1	U	F	#	0.1	
Chloride	mg/L	12/11/2014	0001	49	-	54	7.1		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2014	0001	49	-	54	5.9		F	#	0.05	
Oxidation Reduction Potential	mV	12/11/2014	N001	49	-	54	76.2		F	#		
pH	s.u.	12/11/2014	N001	49	-	54	7.63		F	#		
Specific Conductance	umhos/cm	12/11/2014	N001	49	-	54	607		F	#		
Sulfate	mg/L	12/11/2014	0001	49	-	54	100		F	#	2.5	
Temperature	C	12/11/2014	N001	49	-	54	13.26		F	#		
Turbidity	NTU	12/11/2014	N001	49	-	54	22.7		F	#		
Uranium	mg/L	12/11/2014	0001	49	-	54	0.0055		F	#	0.000029	
Vanadium	mg/L	12/11/2014	0001	49	-	54	0.048		F	#	0.00015	

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

REPORT DATE: 1/30/2015

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	12/11/2014	0001	50	-	80	0.1	U	F	#	0.1	
Chloride	mg/L	12/11/2014	0001	50	-	80	5.8		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2014	0001	50	-	80	2.7		F	#	0.05	
Oxidation Reduction Potential	mV	12/11/2014	N001	50	-	80	51.5		F	#		
pH	s.u.	12/11/2014	N001	50	-	80	7.73		F	#		
Specific Conductance	umhos/cm	12/11/2014	N001	50	-	80	512		F	#		
Sulfate	mg/L	12/11/2014	0001	50	-	80	75		F	#	0.5	
Temperature	C	12/11/2014	N001	50	-	80	14.01		F	#		
Turbidity	NTU	12/11/2014	N001	50	-	80	80.3		F	#		
Uranium	mg/L	12/11/2014	0001	50	-	80	0.14		F	#	0.000029	
Vanadium	mg/L	12/11/2014	0001	50	-	80	0.021		F	#	0.00015	

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

REPORT DATE: 1/30/2015

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	12/10/2014	0001	53.5	-	58.5	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2014	0001	53.5	-	58.5	2.5		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	0001	53.5	-	58.5	5.9		F	#	0.1	
Oxidation Reduction Potential	mV	12/10/2014	N001	53.5	-	58.5	35.2		F	#		
pH	s.u.	12/10/2014	N001	53.5	-	58.5	7.56		F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	53.5	-	58.5	975		F	#		
Sulfate	mg/L	12/10/2014	0001	53.5	-	58.5	420		F	#	5	
Temperature	C	12/10/2014	N001	53.5	-	58.5	14.49		F	#		
Turbidity	NTU	12/10/2014	N001	53.5	-	58.5	32.5		F	#		
Uranium	mg/L	12/10/2014	0001	53.5	-	58.5	0.17		F	#	0.000029	
Vanadium	mg/L	12/10/2014	0001	53.5	-	58.5	0.026		F	#	0.00015	

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

REPORT DATE: 1/30/2015

Location: 0738 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/10/2014	0001	26	-	31	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2014	0001	26	-	31	15		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	0001	26	-	31	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2014	N001	26	-	31	-20.8		F	#		
pH	s.u.	12/10/2014	N001	26	-	31	8.12		F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	26	-	31	728		F	#		
Sulfate	mg/L	12/10/2014	0001	26	-	31	160		F	#	2.5	
Temperature	C	12/10/2014	N001	26	-	31	15.28		F	#		
Turbidity	NTU	12/10/2014	N001	26	-	31	20.8		F	#		
Uranium	mg/L	12/10/2014	0001	26	-	31	0.00024		F	#	0.000029	
Vanadium	mg/L	12/10/2014	0001	26	-	31	0.00043		F	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0739 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Ammonia Total as N	mg/L	12/09/2014	N001	33	-	38	0.83	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	33	-	38	15	F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	33	-	38	0.83	F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	33	-	38	68.9	F	#		
pH	s.u.	12/09/2014	N001	33	-	38	8.06	F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	33	-	38	742	F	#		
Sulfate	mg/L	12/09/2014	N001	33	-	38	150	F	#	2.5	
Temperature	C	12/09/2014	N001	33	-	38	14.53	F	#		
Turbidity	NTU	12/09/2014	N001	33	-	38	7.91	F	#		
Uranium	mg/L	12/09/2014	N001	33	-	38	0.0037	F	#	0.000015	
Vanadium	mg/L	12/09/2014	N001	33	-	38	0.01	F	#	0.000076	

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

REPORT DATE: 1/30/2015

Location: 0740 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	30	-	35	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	30	-	35	30		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	30	-	35	27		F	#	0.2	
Oxidation Reduction Potential	mV	12/09/2014	N001	30	-	35	81.4		F	#		
pH	s.u.	12/09/2014	N001	30	-	35	7.63		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	30	-	35	2531		F	#		
Sulfate	mg/L	12/09/2014	N001	30	-	35	1300		F	#	10	
Temperature	C	12/09/2014	N001	30	-	35	14.39		F	#		
Turbidity	NTU	12/09/2014	N001	30	-	35	1		F	#		
Uranium	mg/L	12/09/2014	N001	30	-	35	0.02		F	#	0.000029	
Vanadium	mg/L	12/09/2014	N001	30	-	35	0.02		F	#	0.00015	

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

REPORT DATE: 1/30/2015

Location: 0741 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Ammonia Total as N	mg/L	12/11/2014	0001	50	-	80	120	F	#	10	
Chloride	mg/L	12/11/2014	0001	50	-	80	26	F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2014	0001	50	-	80	110	F	#	1	
Oxidation Reduction Potential	mV	12/11/2014	N001	50	-	80	121.2	F	#		
pH	s.u.	12/11/2014	N001	50	-	80	7.52	F	#		
Specific Conductance	umhos/cm	12/11/2014	N001	50	-	80	2279	F	#		
Sulfate	mg/L	12/11/2014	0001	50	-	80	470	F	#	10	
Temperature	C	12/11/2014	N001	50	-	80	14.12	F	#		
Turbidity	NTU	12/11/2014	N001	50	-	80	998	F	#		
Uranium	mg/L	12/11/2014	0001	50	-	80	0.0093	F	#	0.000015	
Vanadium	mg/L	12/11/2014	0001	50	-	80	0.0069	F	#	0.000076	

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

REPORT DATE: 1/30/2015

Location: 0742 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Ammonia Total as N	mg/L	12/10/2014	N001	50	-	80	130	F	#	10	
Chloride	mg/L	12/10/2014	N001	50	-	80	26	F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	50	-	80	120	F	#	1	
Oxidation Reduction Potential	mV	12/10/2014	N001	50	-	80	109.4	F	#		
pH	s.u.	12/10/2014	N001	50	-	80	7.48	F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	50	-	80	2320	F	#		
Sulfate	mg/L	12/10/2014	N001	50	-	80	480	F	#	10	
Temperature	C	12/10/2014	N001	50	-	80	13.12	F	#		
Turbidity	NTU	12/10/2014	N001	50	-	80	7.82	F	#		
Uranium	mg/L	12/10/2014	N001	50	-	80	0.0083	F	#	0.000015	
Vanadium	mg/L	12/10/2014	N001	50	-	80	0.0089	F	#	0.000076	

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

REPORT DATE: 1/30/2015

Location: 0743 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Ammonia Total as N	mg/L	12/11/2014	N001	45	-	75	100	F	#	10	
Chloride	mg/L	12/11/2014	N001	45	-	75	23	F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2014	N001	45	-	75	91	F	#	1	
Oxidation Reduction Potential	mV	12/11/2014	N001	45	-	75	8.6	F	#		
pH	s.u.	12/11/2014	N001	45	-	75	7.6	F	#		
Specific Conductance	umhos/cm	12/11/2014	N001	45	-	75	2107	F	#		
Sulfate	mg/L	12/11/2014	N001	45	-	75	480	F	#	10	
Temperature	C	12/11/2014	N001	45	-	75	12.86	F	#		
Turbidity	NTU	12/11/2014	N001	45	-	75	9.69	F	#		
Uranium	mg/L	12/11/2014	N001	45	-	75	0.015	F	#	0.000015	
Vanadium	mg/L	12/11/2014	N001	45	-	75	0.002	F	#	0.000076	

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

REPORT DATE: 1/30/2015

Location: 0744 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Ammonia Total as N	mg/L	12/10/2014	0001	31	-	61	130	F	#	10	
Chloride	mg/L	12/10/2014	0001	31	-	61	24	F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	0001	31	-	61	140	F	#	1	
Oxidation Reduction Potential	mV	12/10/2014	N001	31	-	61	78.2	F	#		
pH	s.u.	12/10/2014	N001	31	-	61	7.41	F	#		
Specific Conductance	umhos /cm	12/10/2014	N001	31	-	61	2370	F	#		
Sulfate	mg/L	12/10/2014	0001	31	-	61	390	F	#	10	
Temperature	C	12/10/2014	N001	31	-	61	13.91	F	#		
Turbidity	NTU	12/10/2014	N001	31	-	61	22.3	F	#		
Uranium	mg/L	12/10/2014	0001	31	-	61	0.0086	F	#	0.000015	
Vanadium	mg/L	12/10/2014	0001	31	-	61	0.0074	F	#	0.000076	

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

REPORT DATE: 1/30/2015

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	12/10/2014	0001	55	-	75	0.12		F #	0.1	
Chloride	mg/L	12/10/2014	0001	55	-	75	9.8		F #	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	0001	55	-	75	0.01	U	F #	0.01	
Oxidation Reduction Potential	mV	12/10/2014	N001	55	-	75	-39.9		F #		
pH	s.u.	12/10/2014	N001	55	-	75	8.19		F #		
Specific Conductance	umhos/cm	12/10/2014	N001	55	-	75	522		F #		
Sulfate	mg/L	12/10/2014	0001	55	-	75	84		F #	2.5	
Temperature	C	12/10/2014	N001	55	-	75	14.53		F #		
Turbidity	NTU	12/10/2014	N001	55	-	75	25.7		F #		
Uranium	mg/L	12/10/2014	0001	55	-	75	0.00027		F #	0.000029	
Vanadium	mg/L	12/10/2014	0001	55	-	75	0.00061		F #	0.000015	

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

REPORT DATE: 1/30/2015

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	12/09/2014	N001	39	-	49	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	39	-	49	13		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	39	-	49	35		F	#	0.25	
Oxidation Reduction Potential	mV	12/09/2014	N001	39	-	49	68.7		F	#		
pH	s.u.	12/09/2014	N001	39	-	49	7.41		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	39	-	49	1315		F	#		
Sulfate	mg/L	12/09/2014	N001	39	-	49	420		F	#	2.5	
Temperature	C	12/09/2014	N001	39	-	49	15.42		F	#		
Turbidity	NTU	12/09/2014	N001	39	-	49	1.43		F	#		
Uranium	mg/L	12/09/2014	N001	39	-	49	0.028		F	#	0.000029	
Vanadium	mg/L	12/09/2014	N001	39	-	49	0.0017		F	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0762 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/10/2014	0001	29	-	49	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2014	0001	29	-	49	62		F	#	10	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	0001	29	-	49	100		F	#	1	
Oxidation Reduction Potential	mV	12/10/2014	N001	29	-	49	-6.9		F	#		
pH	s.u.	12/10/2014	N001	29	-	49	7.52		F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	29	-	49	3605		F	#		
Sulfate	mg/L	12/10/2014	0001	29	-	49	1400		F	#	25	
Temperature	C	12/10/2014	N001	29	-	49	14.72		F	#		
Turbidity	NTU	12/10/2014	N001	29	-	49	13.3		F	#		
Uranium	mg/L	12/10/2014	0001	29	-	49	0.012		F	#	0.000015	
Vanadium	mg/L	12/10/2014	0001	29	-	49	0.0073		F	#	0.000076	

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

REPORT DATE: 1/30/2015

Location: 0764 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	47	-	52	0.1	U	FQ	#	0.1	
Chloride	mg/L	12/09/2014	N001	47	-	52	10		FQ	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	47	-	52	41		FQ	#	0.5	
Oxidation Reduction Potential	mV	12/09/2014	N001	47	-	52	169.8		FQ	#		
pH	s.u.	12/09/2014	N001	47	-	52	7.68		FQ	#		
Specific Conductance	umhos/cm	12/09/2014	N001	47	-	52	547		FQ	#		
Sulfate	mg/L	12/09/2014	N001	47	-	52	220		FQ	#	5	
Temperature	C	12/09/2014	N001	47	-	52	13.5		FQ	#		
Turbidity	NTU	12/09/2014	N001	47	-	52	5.07		FQ	#		
Uranium	mg/L	12/09/2014	N001	47	-	52	0.0099		FQ	#	0.000015	
Vanadium	mg/L	12/09/2014	N001	47	-	52	0.014		FQ	#	0.000076	

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

REPORT DATE: 1/30/2015

Location: 0765 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Ammonia Total as N	mg/L	12/10/2014	N001	58.6	-	88.7	96	F	#	10	
Chloride	mg/L	12/10/2014	N001	58.6	-	88.7	24	F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	58.6	-	88.7	55	F	#	0.5	
Oxidation Reduction Potential	mV	12/10/2014	N001	58.6	-	88.7	-41.8	F	#		
pH	s.u.	12/10/2014	N001	58.6	-	88.7	7.34	F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	58.6	-	88.7	2034	F	#		
Sulfate	mg/L	12/10/2014	N001	58.6	-	88.7	520	F	#	10	
Temperature	C	12/10/2014	N001	58.6	-	88.7	13.09	F	#		
Turbidity	NTU	12/10/2014	N001	58.6	-	88.7	2.03	F	#		
Uranium	mg/L	12/10/2014	N001	58.6	-	88.7	0.0089	F	#	0.000029	
Vanadium	mg/L	12/10/2014	N001	58.6	-	88.7	0.0025	F	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0766 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Ammonia Total as N	mg/L	12/10/2014	N001	47.2	-	57.2	140	F	#	10	
Chloride	mg/L	12/10/2014	N001	47.2	-	57.2	19	F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	47.2	-	57.2	120	F	#	1	
Oxidation Reduction Potential	mV	12/10/2014	N001	47.2	-	57.2	55	F	#		
pH	s.u.	12/10/2014	N001	47.2	-	57.2	7.51	F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	47.2	-	57.2	2193	F	#		
Sulfate	mg/L	12/10/2014	N001	47.2	-	57.2	350	F	#	10	
Temperature	C	12/10/2014	N001	47.2	-	57.2	14.93	F	#		
Turbidity	NTU	12/10/2014	N001	47.2	-	57.2	1.72	F	#		
Uranium	mg/L	12/10/2014	N001	47.2	-	57.2	0.0082	F	#	0.000015	
Vanadium	mg/L	12/10/2014	N001	47.2	-	57.2	0.0044	F	#	0.000076	

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

REPORT DATE: 1/30/2015

Location: 0767 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/10/2014	N001	43.5	-	63.5	0.14		F	#	0.1	
Chloride	mg/L	12/10/2014	N001	43.5	-	63.5	5.8		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	43.5	-	63.5	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2014	N001	43.5	-	63.5	-11		F	#		
pH	s.u.	12/10/2014	N001	43.5	-	63.5	7.97		F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	43.5	-	63.5	405		F	#		
Sulfate	mg/L	12/10/2014	N001	43.5	-	63.5	34		F	#	0.5	
Temperature	C	12/10/2014	N001	43.5	-	63.5	13.91		F	#		
Turbidity	NTU	12/10/2014	N001	43.5	-	63.5	2.73		F	#		
Uranium	mg/L	12/10/2014	N001	43.5	-	63.5	0.00064		F	#	0.000029	
Vanadium	mg/L	12/10/2014	N001	43.5	-	63.5	0.00028	B	UF	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0768 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/10/2014	N001	24.4	-	44.4	0.58		F	#	0.1	
Chloride	mg/L	12/10/2014	N001	24.4	-	44.4	13		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	24.4	-	44.4	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2014	N001	24.4	-	44.4	-121.9		F	#		
pH	s.u.	12/10/2014	N001	24.4	-	44.4	8.17		F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	24.4	-	44.4	472		F	#		
Sulfate	mg/L	12/10/2014	N001	24.4	-	44.4	66		F	#	2.5	
Temperature	C	12/10/2014	N001	24.4	-	44.4	14.05		F	#		
Turbidity	NTU	12/10/2014	N001	24.4	-	44.4	7.14		F	#		
Uranium	mg/L	12/10/2014	N001	24.4	-	44.4	0.000085		F	#	0.000029	
Vanadium	mg/L	12/10/2014	N001	24.4	-	44.4	0.00045		F	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0770 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Ammonia Total as N	mg/L	12/10/2014	N001	54.9	-	64.9	29	F	#	2.5	
Chloride	mg/L	12/10/2014	N001	54.9	-	64.9	16	F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	54.9	-	64.9	20	F	#	0.2	
Oxidation Reduction Potential	mV	12/10/2014	N001	54.9	-	64.9	30.4	F	#		
pH	s.u.	12/10/2014	N001	54.9	-	64.9	7.6	F	#		
Specific Conductance	umhos/cm	12/10/2014	N001	54.9	-	64.9	989	F	#		
Sulfate	mg/L	12/10/2014	N001	54.9	-	64.9	190	F	#	5	
Temperature	C	12/10/2014	N001	54.9	-	64.9	15.33	F	#		
Turbidity	NTU	12/10/2014	N001	54.9	-	64.9	2.08	F	#		
Uranium	mg/L	12/10/2014	N001	54.9	-	64.9	0.0053	F	#	0.000029	
Vanadium	mg/L	12/10/2014	N001	54.9	-	64.9	0.00079	F	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0771 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data QA		
Ammonia Total as N	mg/L	12/10/2014	N001	57.4	-	77.4	250	FQ	#	10	
Chloride	mg/L	12/10/2014	N001	57.4	-	77.4	20	FQ	#	10	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2014	N001	57.4	-	77.4	180	FQ	#	2	
Oxidation Reduction Potential	mV	12/10/2014	N001	57.4	-	77.4	165.2	FQ	#		
pH	s.u.	12/10/2014	N001	57.4	-	77.4	7.26	FQ	#		
Specific Conductance	umhos/cm	12/10/2014	N001	57.4	-	77.4	4085	FQ	#		
Sulfate	mg/L	12/10/2014	N001	57.4	-	77.4	1300	FQ	#	25	
Temperature	C	12/10/2014	N001	57.4	-	77.4	14.18	FQ	#		
Turbidity	NTU	12/10/2014	N001	57.4	-	77.4	4.53	FQ	#		
Uranium	mg/L	12/10/2014	N001	57.4	-	77.4	0.014	FQ	#	0.000015	
Vanadium	mg/L	12/10/2014	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: 1/30/2015

Location: 0772 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	7.4	-	27.4	1.3		F	#	0.1	
Chloride	mg/L	12/09/2014	N001	7.4	-	27.4	19		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	7.4	-	27.4	7.3		F	#	0.1	
Oxidation Reduction Potential	mV	12/09/2014	N001	7.4	-	27.4	-3.6		F	#		
pH	s.u.	12/09/2014	N001	7.4	-	27.4	7.78		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	7.4	-	27.4	949		F	#		
Sulfate	mg/L	12/09/2014	N001	7.4	-	27.4	170		F	#	5	
Temperature	C	12/09/2014	N001	7.4	-	27.4	14.44		F	#		
Turbidity	NTU	12/09/2014	N001	7.4	-	27.4	2.8		F	#		
Uranium	mg/L	12/09/2014	N001	7.4	-	27.4	0.013		F	#	0.000029	
Vanadium	mg/L	12/09/2014	N001	7.4	-	27.4	0.043		F	#	0.00015	

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

REPORT DATE: 1/30/2015

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	12/09/2014	N001	45	-	55	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	45	-	55	5.1		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	45	-	55	1.7		F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	45	-	55	61.4		F	#		
pH	s.u.	12/09/2014	N001	45	-	55	7.84		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	45	-	55	384		F	#		
Sulfate	mg/L	12/09/2014	N001	45	-	55	39		F	#	0.5	
Temperature	C	12/09/2014	N001	45	-	55	15.02		F	#		
Turbidity	NTU	12/09/2014	N001	45	-	55	1.55		F	#		
Uranium	mg/L	12/09/2014	N001	45	-	55	0.029		F	#	0.000029	
Vanadium	mg/L	12/09/2014	N001	45	-	55	0.019		F	#	0.00015	

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

REPORT DATE: 1/30/2015

Location: 0775 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/11/2014	N001	142	-	167	0.1	U	F	#	0.1	
Chloride	mg/L	12/11/2014	N001	142	-	167	6		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2014	N001	142	-	167	0.61		F	#	0.01	
Oxidation Reduction Potential	mV	12/11/2014	N001	142	-	167	73.2		F	#		
pH	s.u.	12/11/2014	N001	142	-	167	7.75		F	#		
Specific Conductance	umhos/cm	12/11/2014	N001	142	-	167	385		F	#		
Sulfate	mg/L	12/11/2014	N001	142	-	167	26		F	#	0.5	
Temperature	C	12/11/2014	N001	142	-	167	13.95		F	#		
Turbidity	NTU	12/11/2014	N001	142	-	167	1.96		F	#		
Uranium	mg/L	12/11/2014	N001	142	-	167	0.0029		F	#	0.000029	
Vanadium	mg/L	12/11/2014	N001	142	-	167	0.00076		F	#	0.000015	

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

REPORT DATE: 1/30/2015

Location: 0776 WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Ammonia Total as N	mg/L	12/09/2014	N001	99.5	-	149.5	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2014	N001	99.5	-	149.5	6.1		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	N001	99.5	-	149.5	0.88		F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	99.5	-	149.5	43		F	#		
pH	s.u.	12/09/2014	N001	99.5	-	149.5	7.89		F	#		
Specific Conductance	umhos/cm	12/09/2014	N001	99.5	-	149.5	391		F	#		
Sulfate	mg/L	12/09/2014	N001	99.5	-	149.5	36		F	#	0.5	
Temperature	C	12/09/2014	N001	99.5	-	149.5	15.6		F	#		
Turbidity	NTU	12/09/2014	N001	99.5	-	149.5	1.53		F	#		
Uranium	mg/L	12/09/2014	N001	99.5	-	149.5	0.0079		F	#	0.000015	
Vanadium	mg/L	12/09/2014	N001	99.5	-	149.5	0.016		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.

This page intentionally left blank

## **Surface Water Quality Data**

This page intentionally left blank

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

REPORT DATE: 1/30/2015

Location: 0623 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Ammonia Total as N	mg/L	12/09/2014	0001	0.1	U	#	0.1	
Chloride	mg/L	12/09/2014	0001	15		#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2014	0001	0.028		#	0.01	
Oxidation Reduction Potential	mV	12/09/2014	N001	116.5		#		
pH	s.u.	12/09/2014	N001	7.23		#		
Specific Conductance	umhos/cm	12/09/2014	N001	606		#		
Sulfate	mg/L	12/09/2014	0001	27		#	2.5	
Temperature	C	12/09/2014	N001	5.8		#		
Turbidity	NTU	12/09/2014	N001	32.3		#		
Uranium	mg/L	12/09/2014	0001	0.001		#	0.0000029	
Vanadium	mg/L	12/09/2014	0001	0.00057	U	#	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

This page intentionally left blank

## **Static Water Level Data**

This page intentionally left blank

**STATIC WATER LEVELS (UUSEE700) FOR SITE MON01, Monument Valley Processing Site**  
**REPORT DATE: 1/26/2015**

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	12/09/2014	14:10:09	4.7	4835.6	
0602	U	4864.43	12/09/2014	09:30:18	9.73	4854.7	
0603	U	4849.41	12/09/2014	12:30:31	11.29	4838.12	
0604	C	4840.42	12/09/2014	13:40:48	9.3	4831.12	
0605	C	4835.07	12/10/2014	10:50:44	11.14	4823.93	
0606	D	4864.73	12/09/2014	14:25:07	35.5	4829.23	
0618	O	4924.81	12/11/2014	09:35:33	93.2	4831.61	
0619	O	4888.63	12/09/2014	16:45:15	58	4830.63	
0648	N	4835.14	12/10/2014	14:45:32	35.07	4800.07	
0650	D	4794.28	12/09/2014	14:55:25	20.54	4773.74	
0651	C	4787.88	12/09/2014	11:20:29	9.13	4778.75	
0652	C	4808.93	12/09/2014	12:05:05	19.28	4789.65	
0653	D	4837.08	12/10/2014	15:05:25	36.88	4800.2	
0655	D	4862.06	12/10/2014	12:45:29	40.55	4821.51	
0656	D	4856.33	12/10/2014	16:00:10	37.23	4819.1	
0657	O	4878.99	12/10/2014	10:30:37	50.4	4828.59	
0662	D	4878.56	12/10/2014	11:10:11	49.7	4828.86	
0669	D	4867.19	12/10/2014	13:20:09	50.45	4816.74	
0733		4875.16	12/11/2014	10:50:15	49.4	4825.76	
0734		4877.97	12/11/2014	09:55:18	50.77	4827.2	
0735		4881.85	12/10/2014	09:40:24	51.01	4830.84	
0738		4810.86	12/10/2014	13:20:01	16.97	4793.89	
0739		4823.58	12/09/2014	15:25:20	23.21	4800.37	
0740		4810.28	12/09/2014	15:55:58	27.68	4782.6	
0741		4846.98	12/11/2014	11:00:03	36.57	4810.41	
0742		4847.02	12/10/2014	16:40:50	36.7	4810.32	
0743		4846.92	12/11/2014	11:50:24	36.4	4810.52	
0744		4847.19	12/10/2014	16:00:13	36.92	4810.27	

**STATIC WATER LEVELS (USEE700) FOR SITE MON01, Monument Valley Processing Site**  
**REPORT DATE: 1/26/2015**

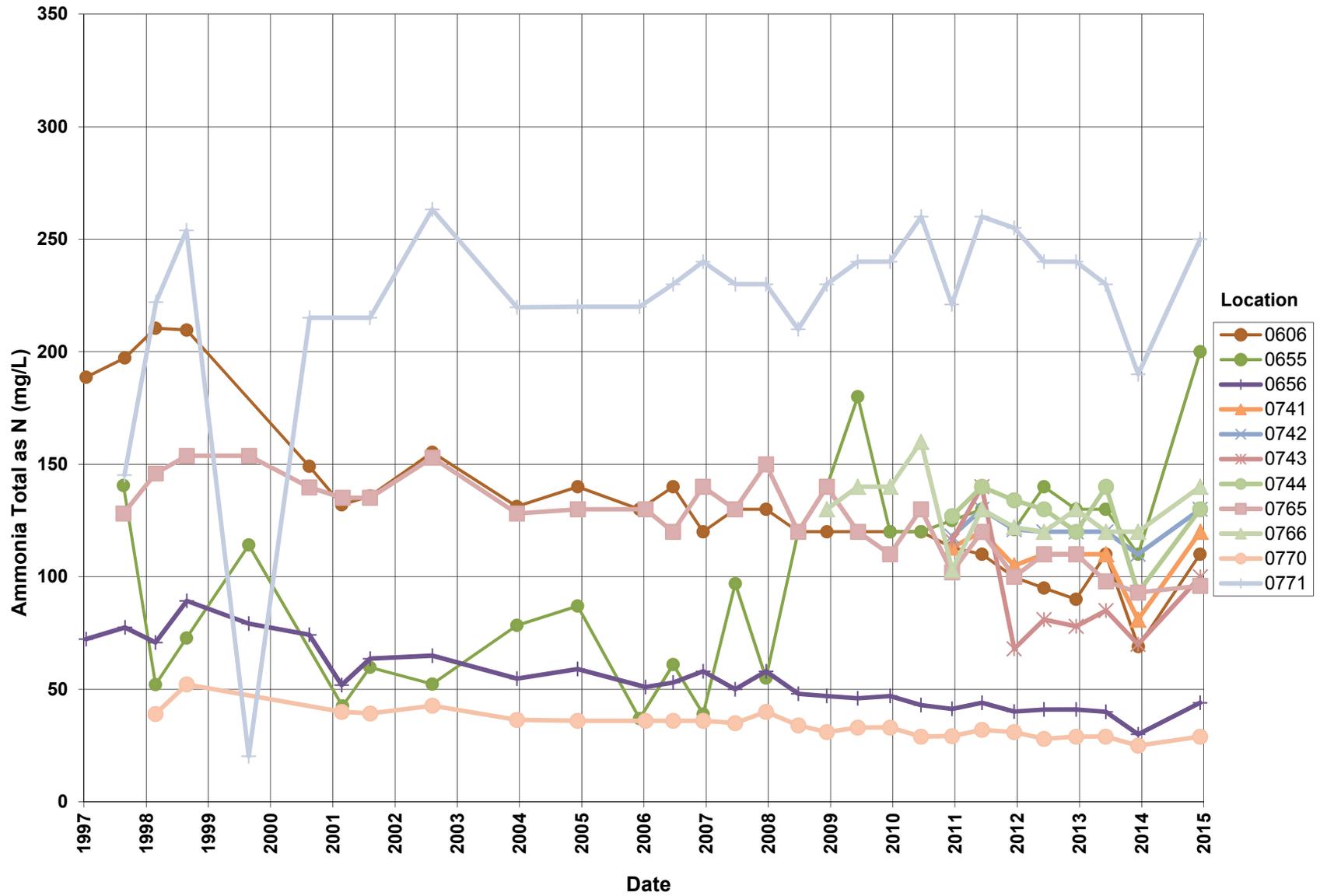
Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)	Water Level Flag
0760	D	4814.8	12/10/2014	12:35:57	26.4	4788.4	
0761	D	4835.02	12/09/2014	16:20:40	44.36	4790.66	
0762	D	4820.74	12/10/2014	11:55:24	33.29	4787.45	
0764	D	4851.53	12/09/2014	10:10:23	50.9	4800.63	
0765	D	4848.45	12/10/2014	14:50:40	36.3	4812.15	
0766	D	4847.97	12/10/2014	16:25:55	36.9	4811.07	
0767	D	4808.25	12/10/2014	09:35:24	7.38	4800.87	
0768	D	4820.73	12/10/2014	10:15:07	15.05	4805.68	
0770	D	4857.26	12/10/2014	15:40:26	33.7	4823.56	
0771	D	4863.26	12/10/2014	12:10:24	42.3	4820.96	
0772	O	4847.6	12/09/2014	15:05:12	12.06	4835.54	
0774	O	4880.14	12/09/2014	16:15:30	49.69	4830.45	
0775	D	4879.68	12/11/2014	11:30:27	49.99	4829.69	
0776	O	4883.33	12/09/2014	15:40:11	53.59	4829.74	

FLOW CODES: B BACKGROUND    C CROSS GRADIENT    D DOWNGRADIENT    F OFFSITE  
                   N UNKNOWN            O ONSITE            U UPGRADIENT

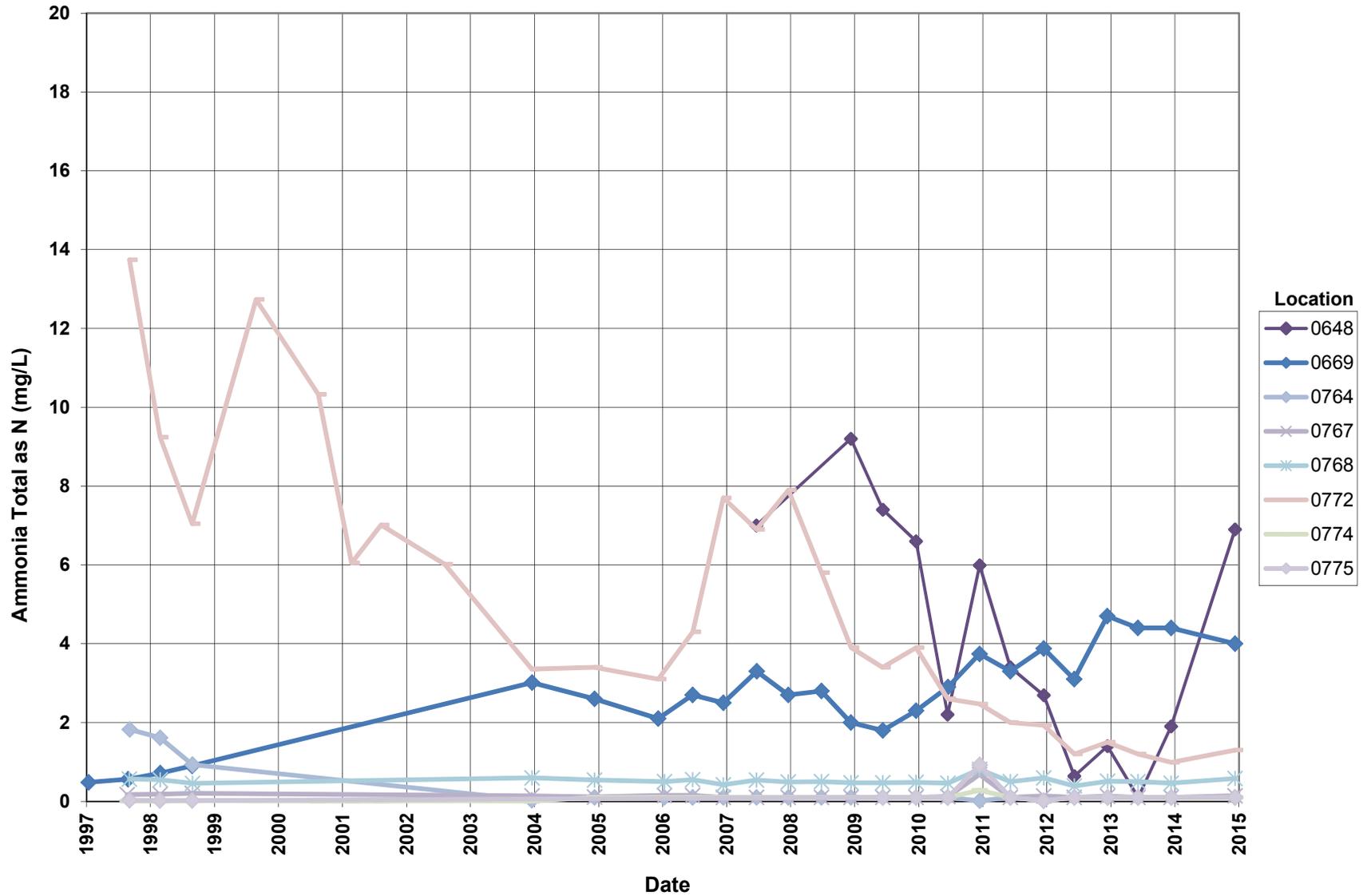
## **Time-Concentration Graphs**

This page intentionally left blank

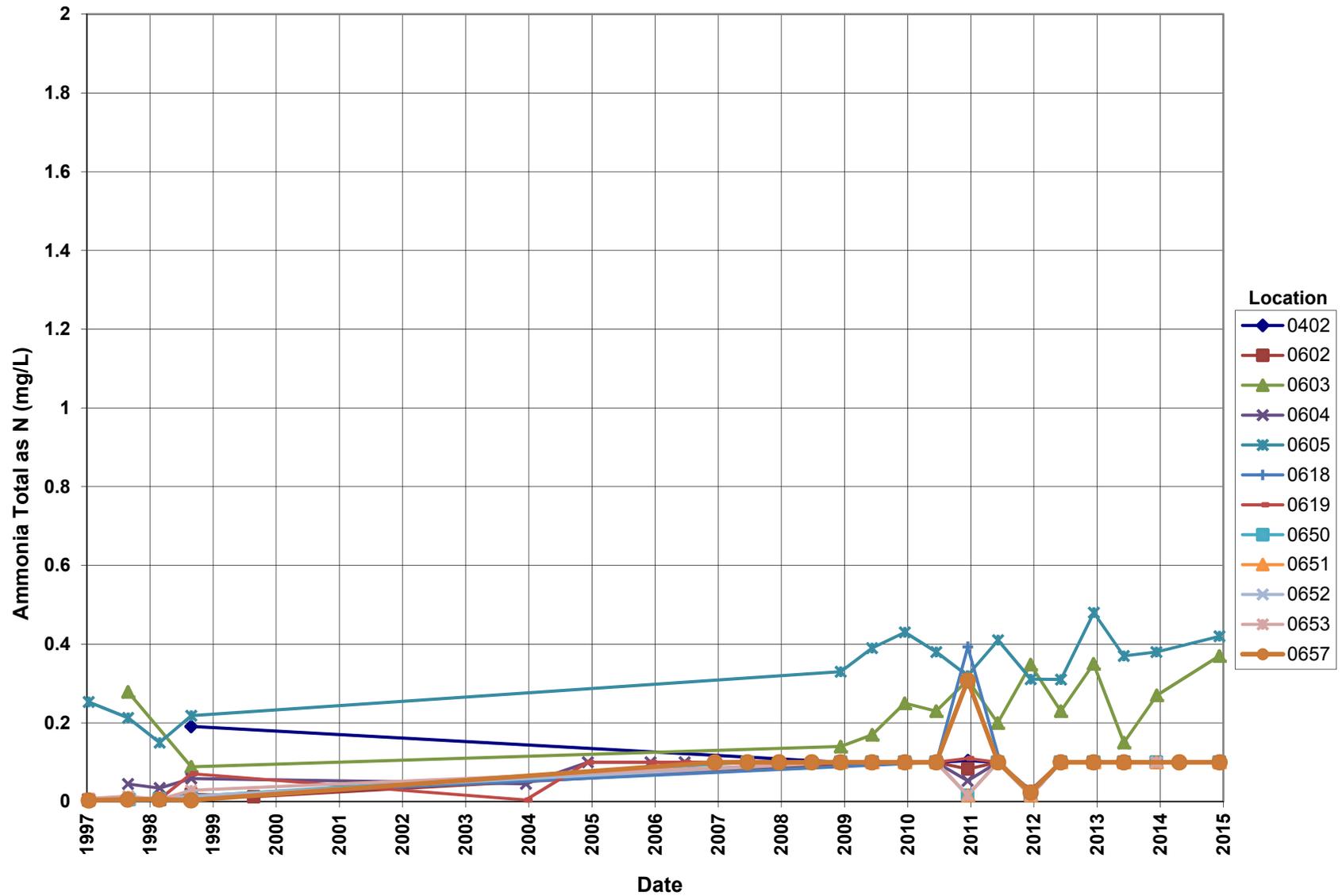
## Monument Valley Processing Site Ammonia Total as N Concentration



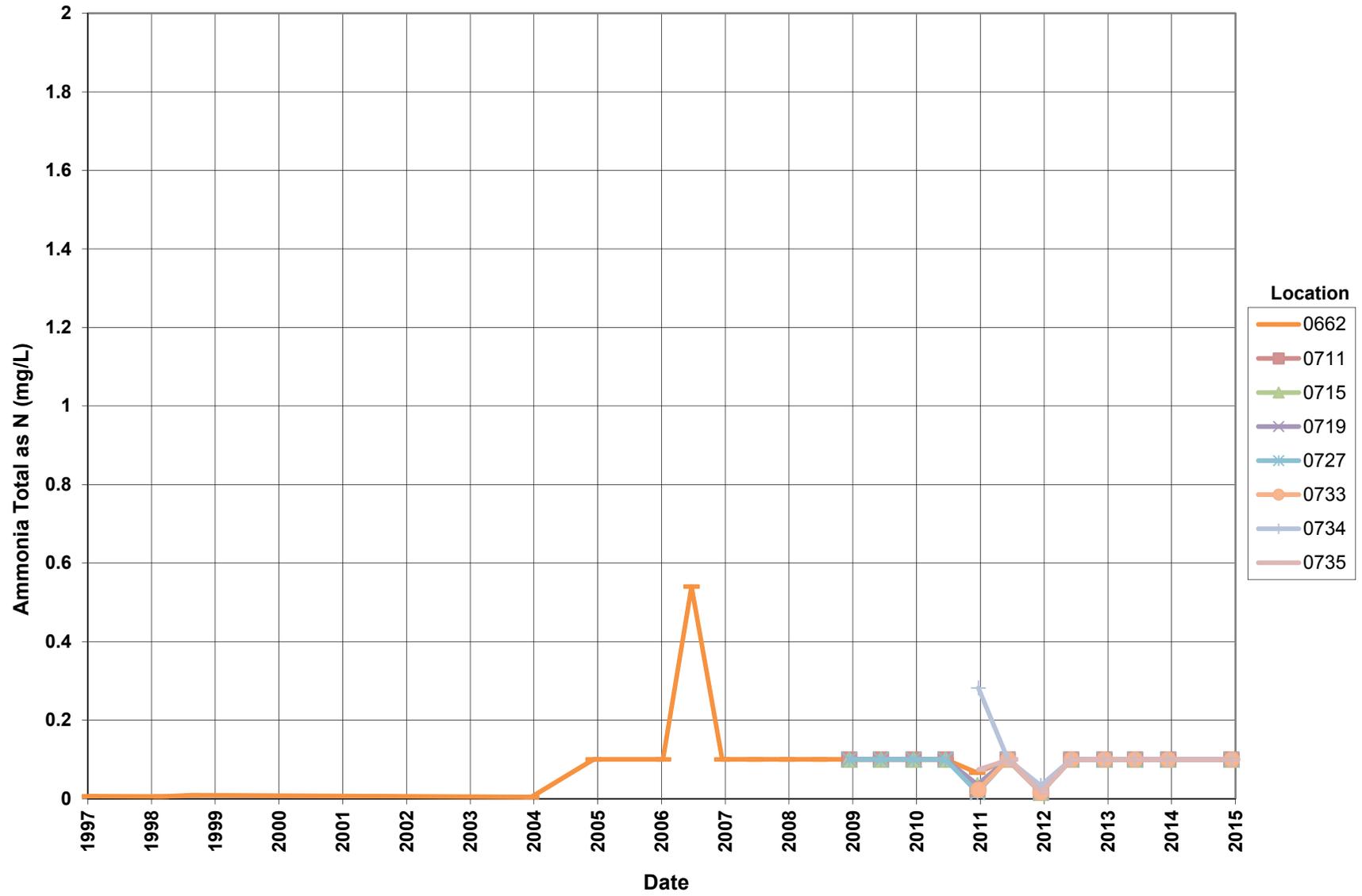
### Monument Valley Processing Site Ammonia Total as N Concentration



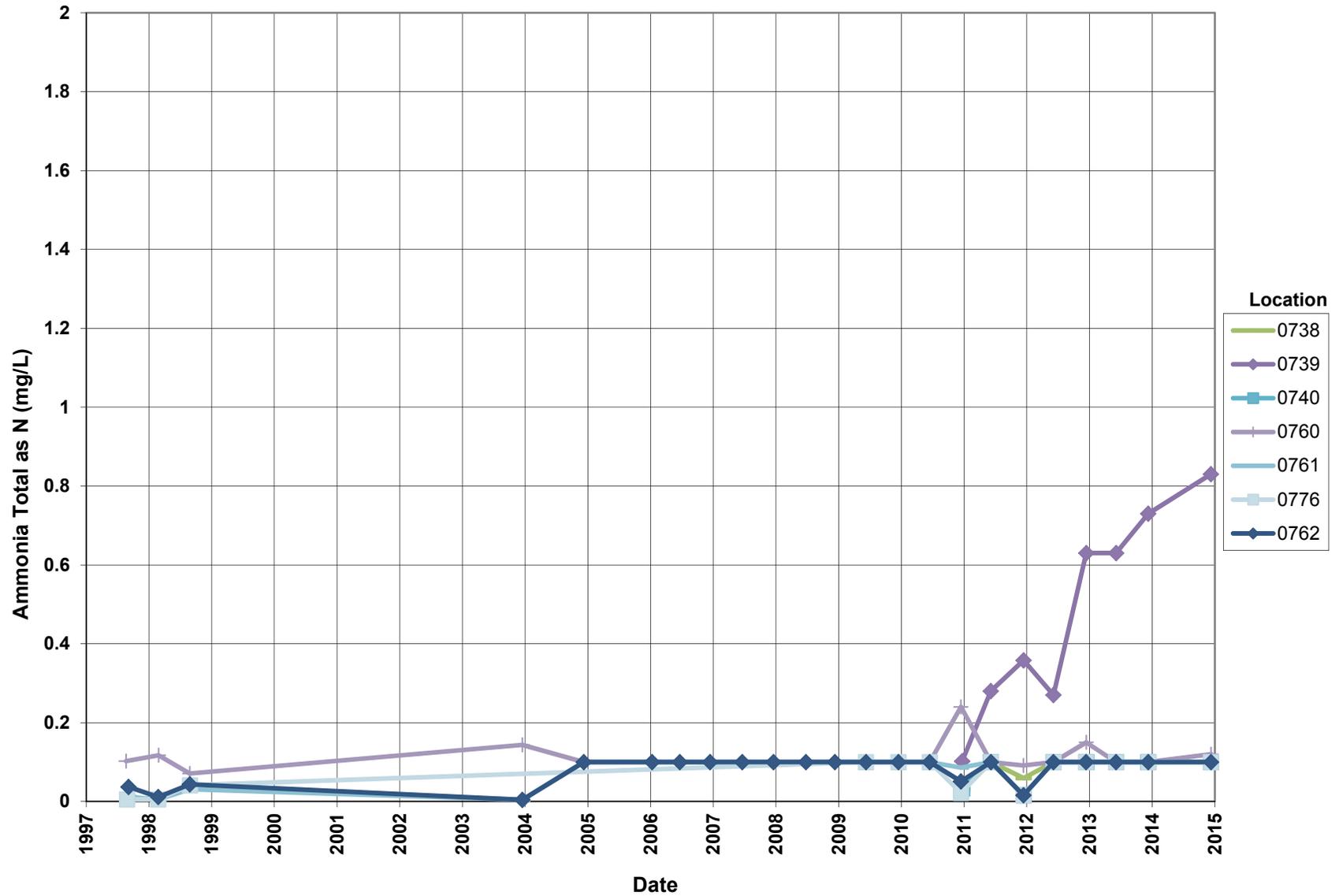
## Monument Valley Processing Site Ammonia Total as N Concentration



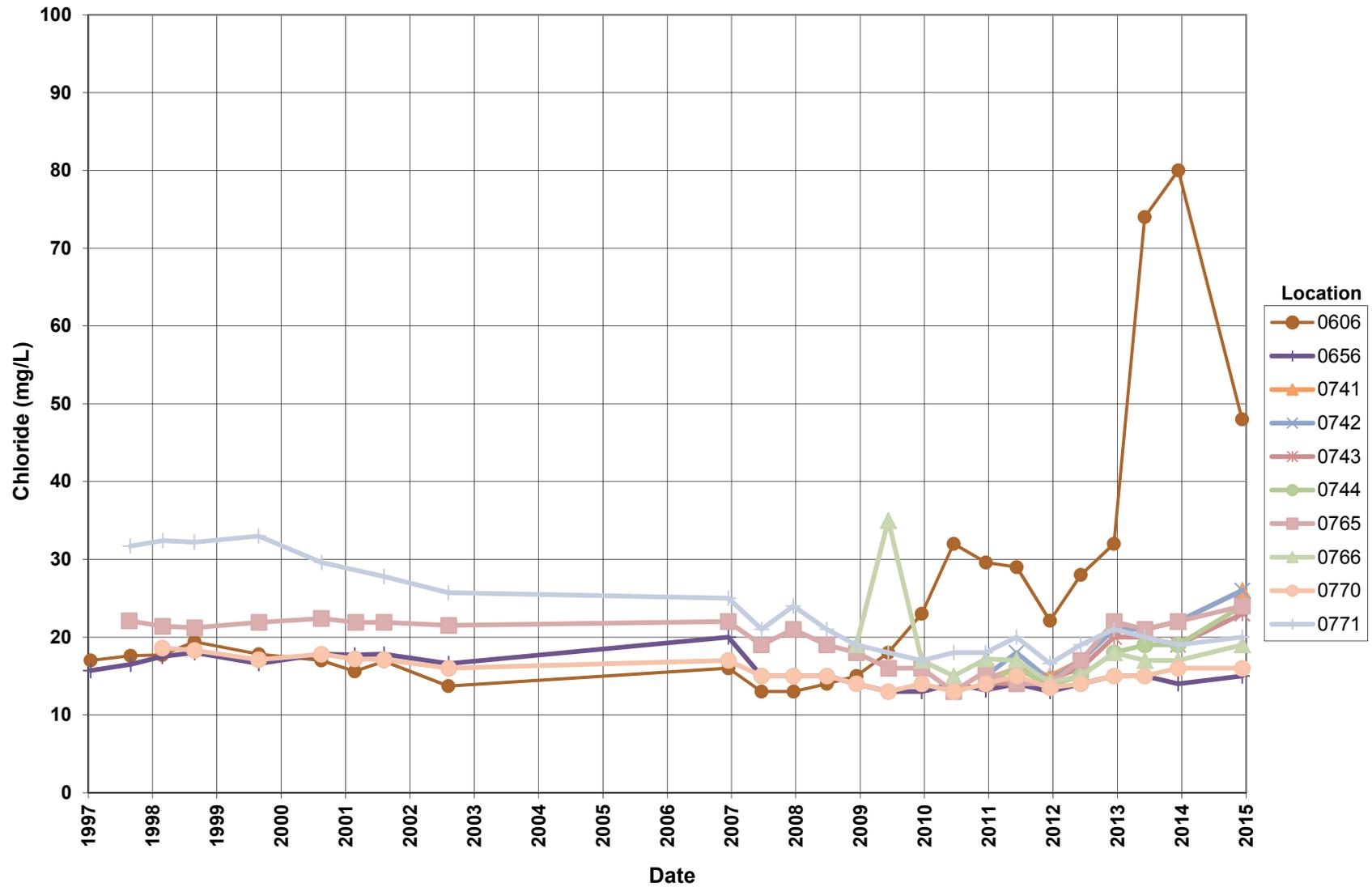
### Monument Valley Processing Site Ammonia Total as N Concentration



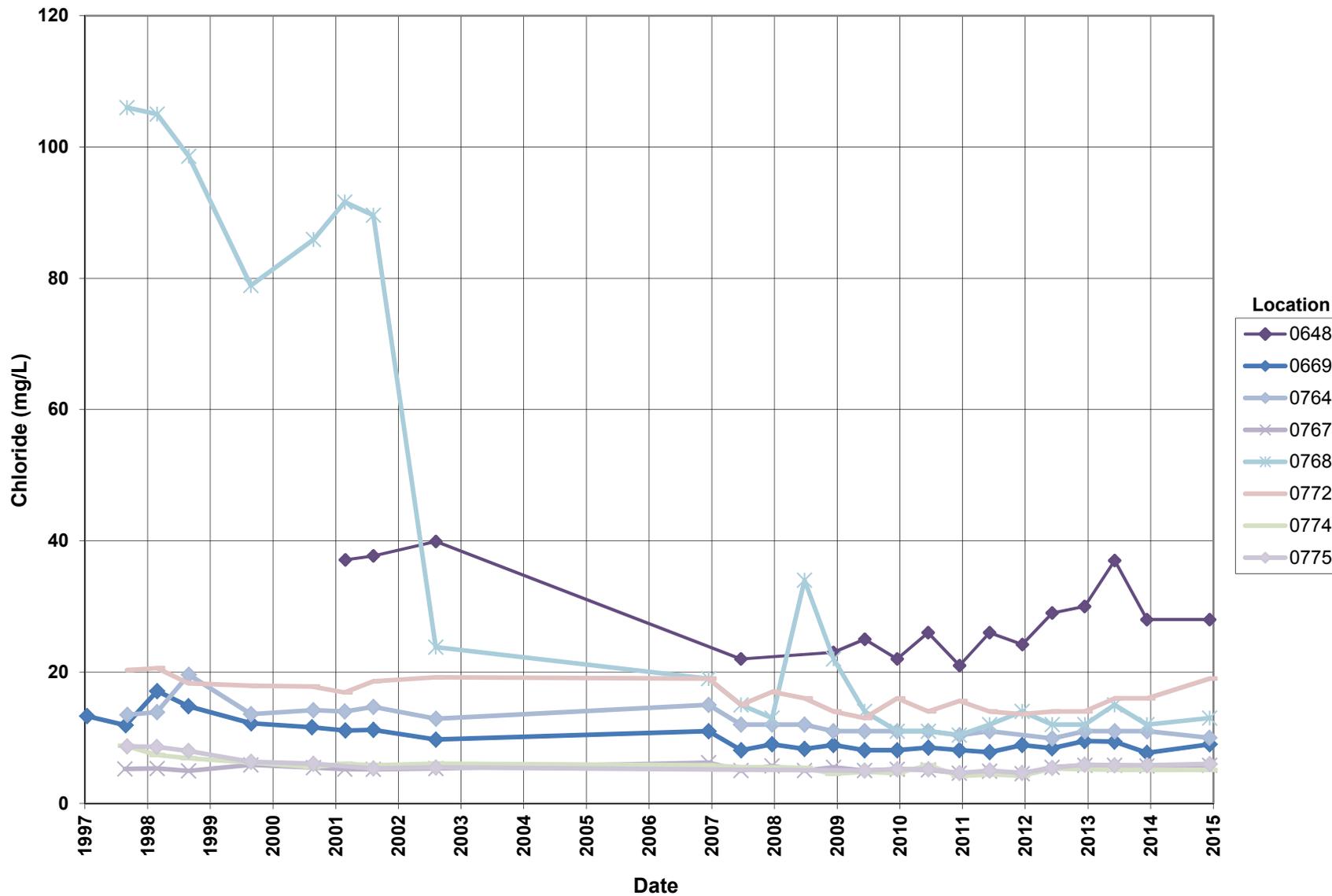
### Monument Valley Processing Site Ammonia Total as N Concentration



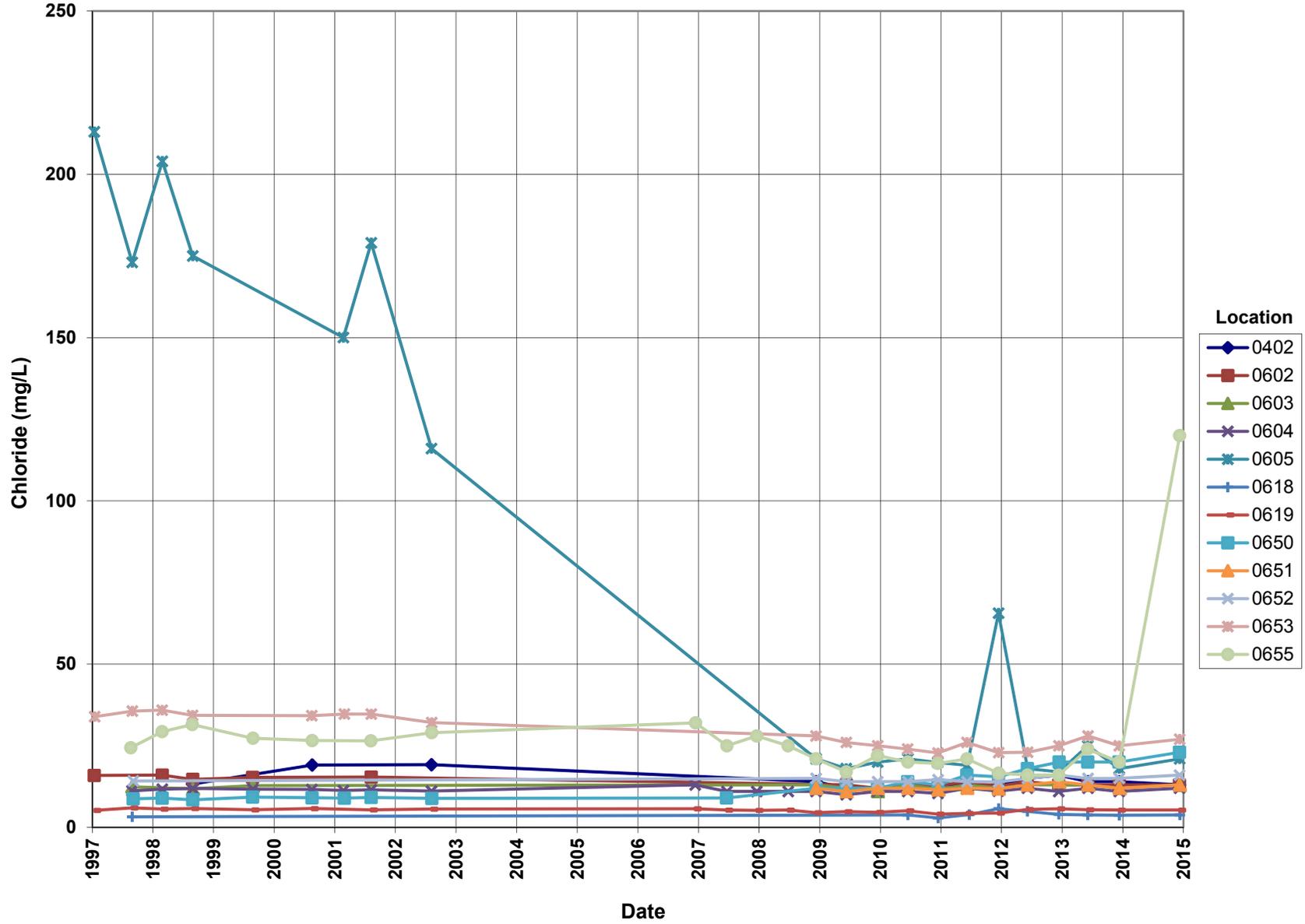
## Monument Valley Processing Site Chloride Concentration



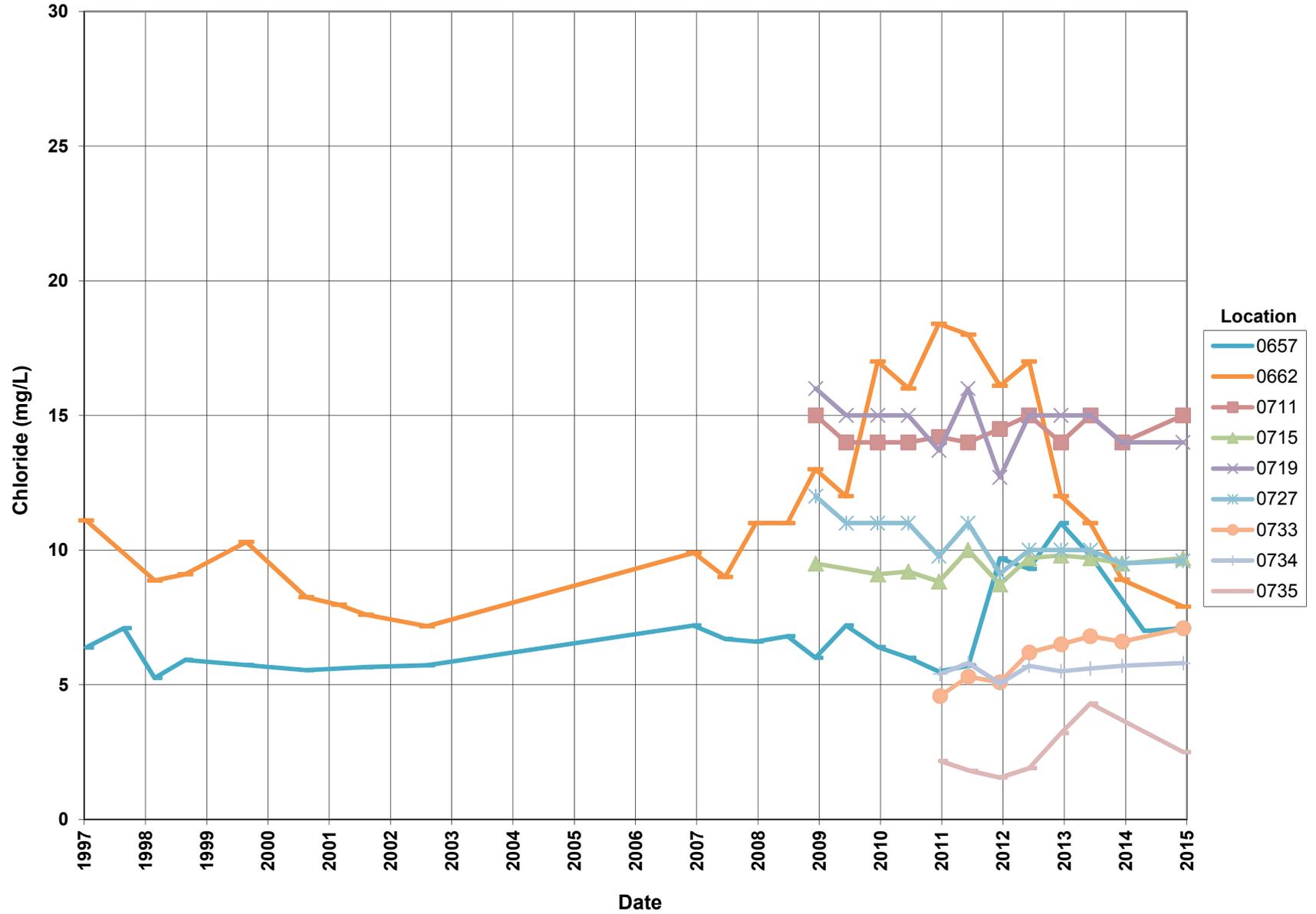
### Monument Valley Processing Site Chloride Concentration



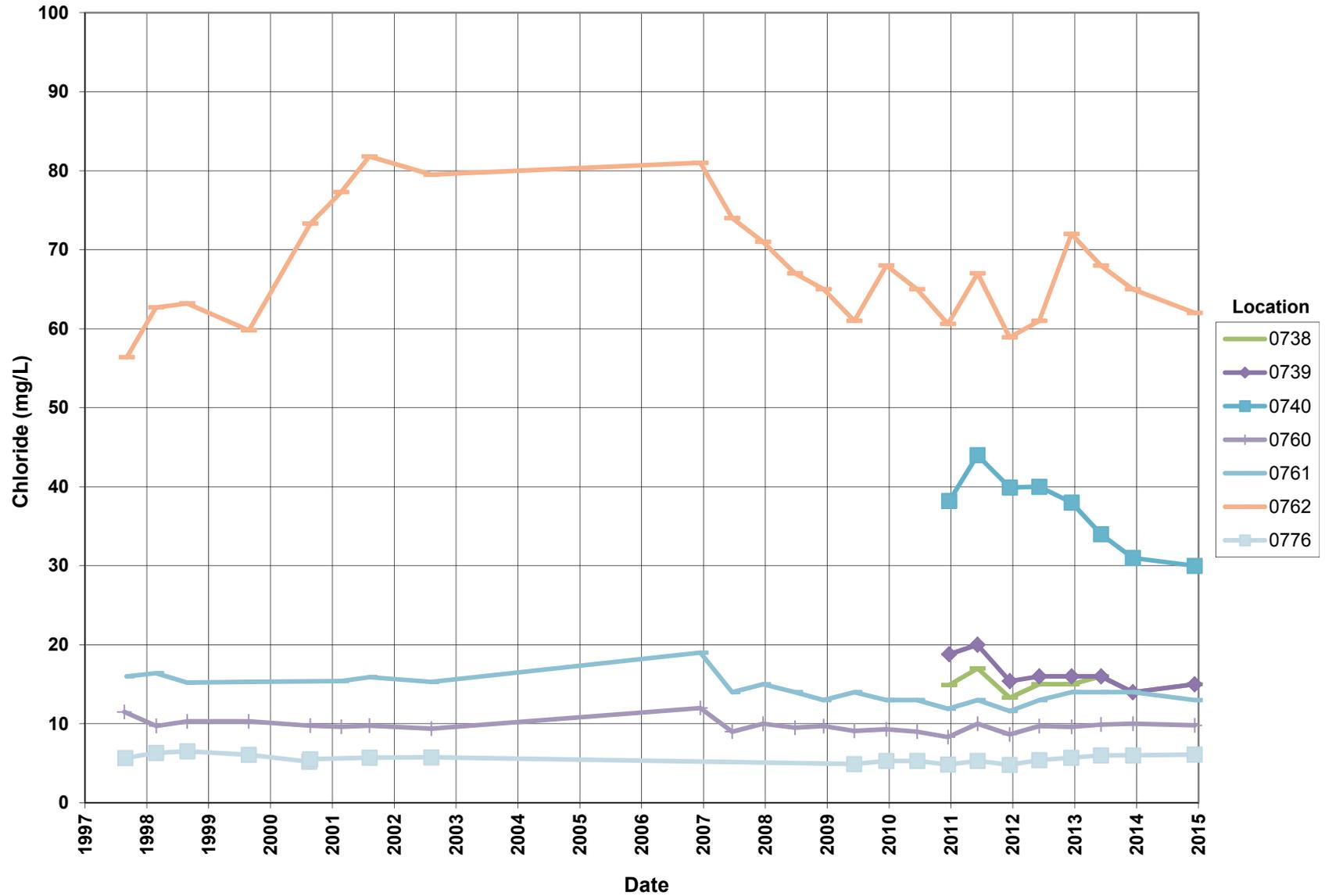
# Monument Valley Processing Site Chloride Concentration



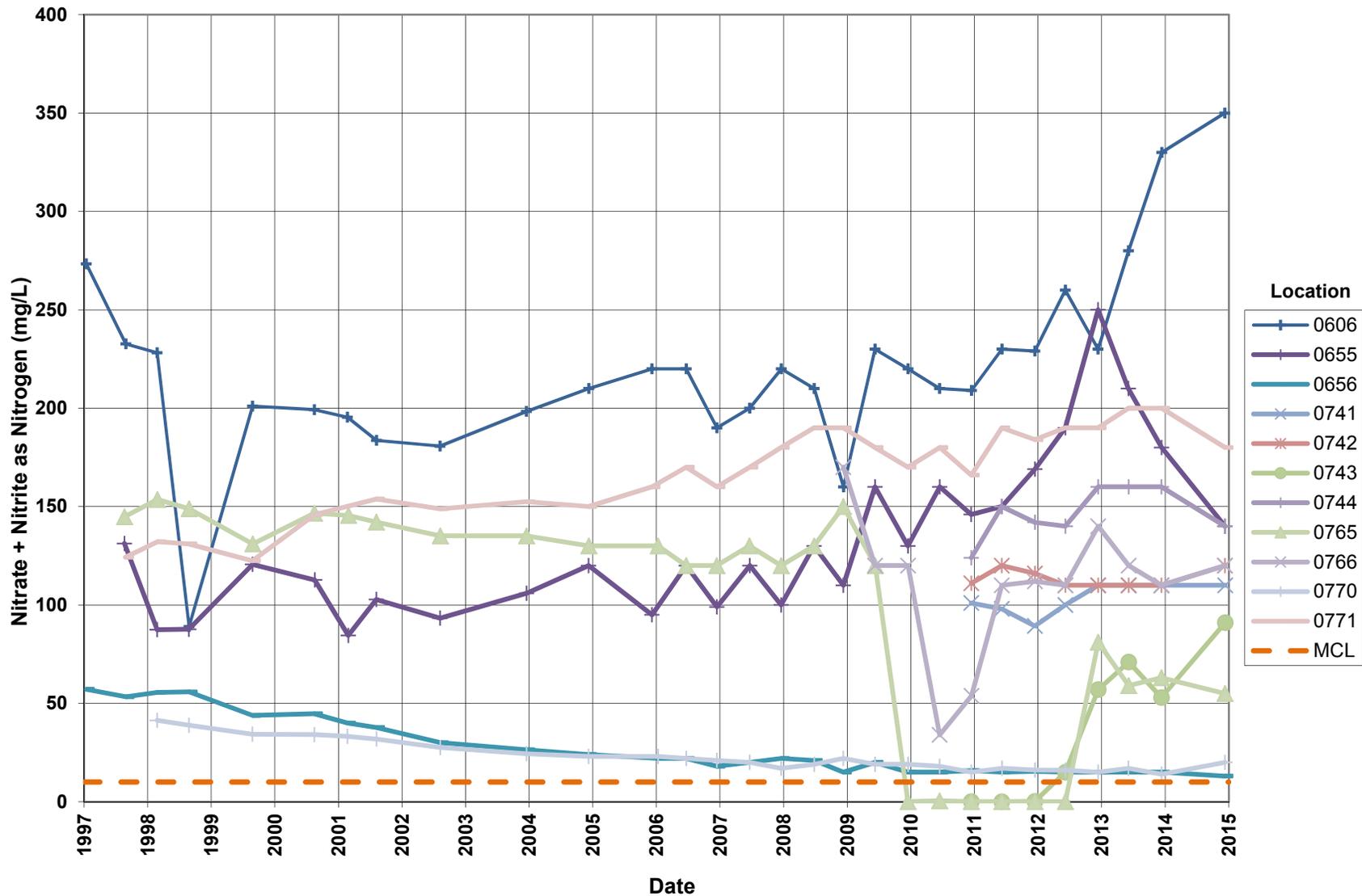
### Monument Valley Processing Site Chloride Concentration



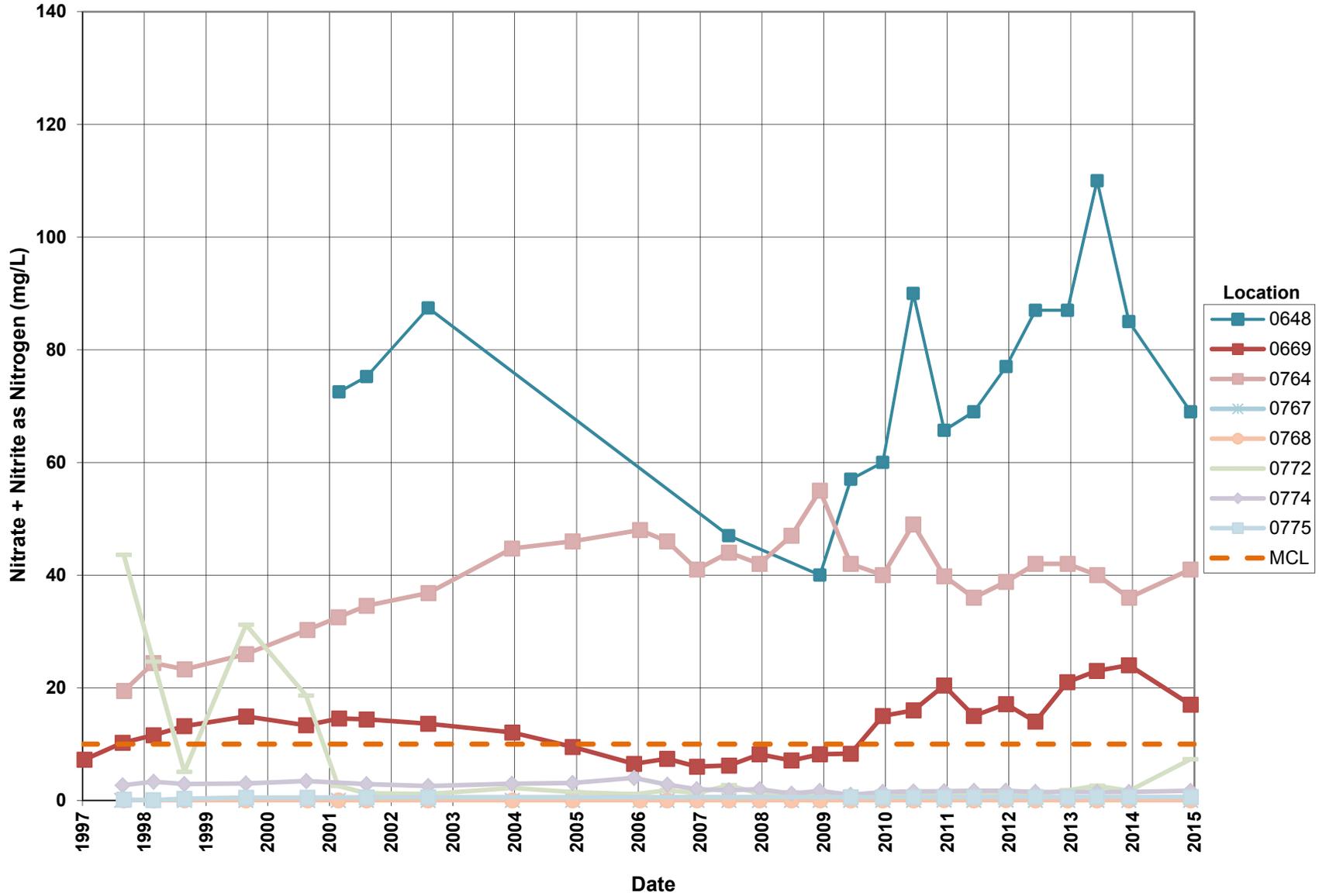
### Monument Valley Processing Site Chloride Concentration



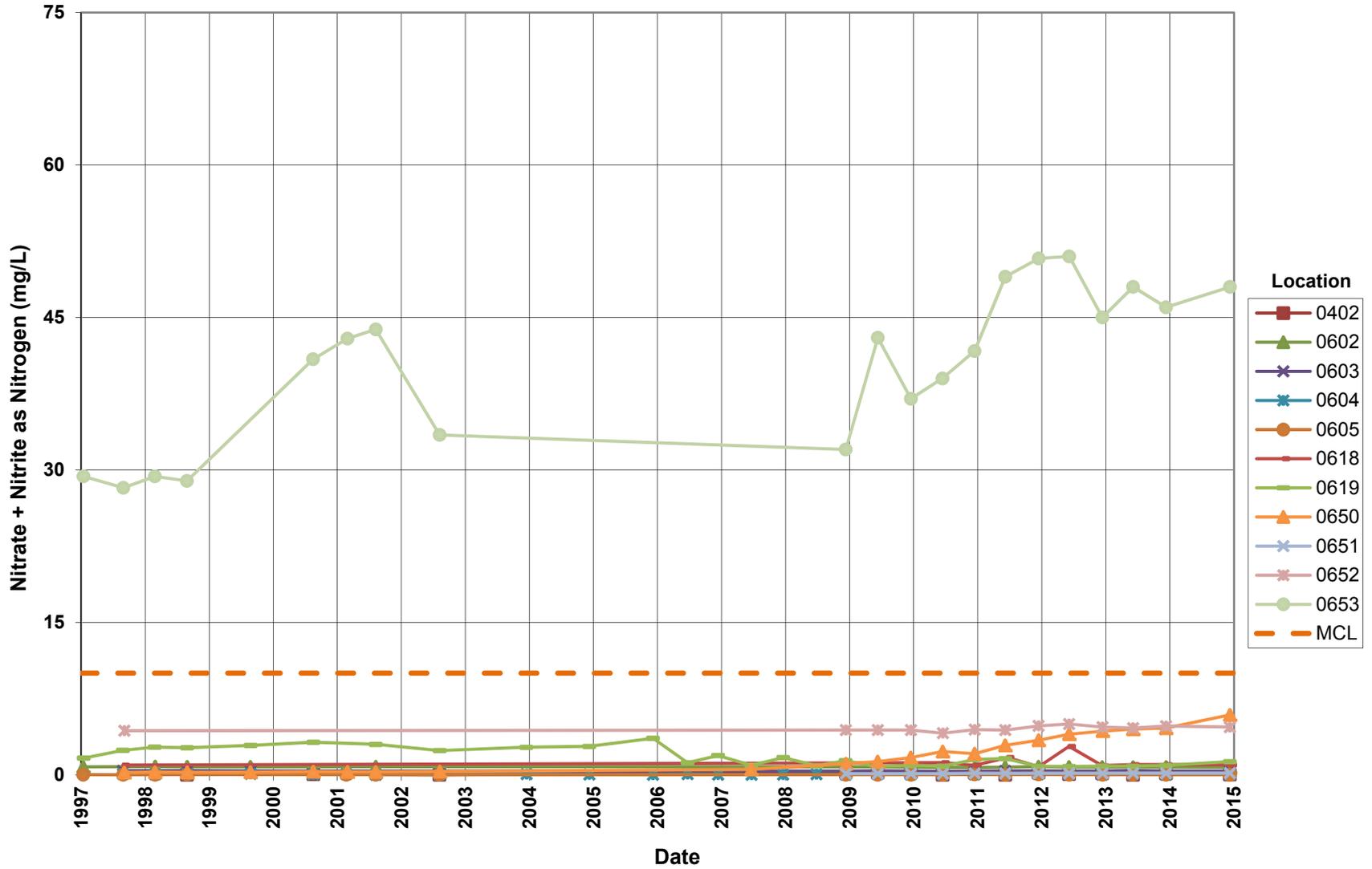
**Monument Valley Processing Site**  
**Nitrate + Nitrite as Nitrogen Concentration**  
 Maximum Concentration Limit (MCL) = 10 mg/L



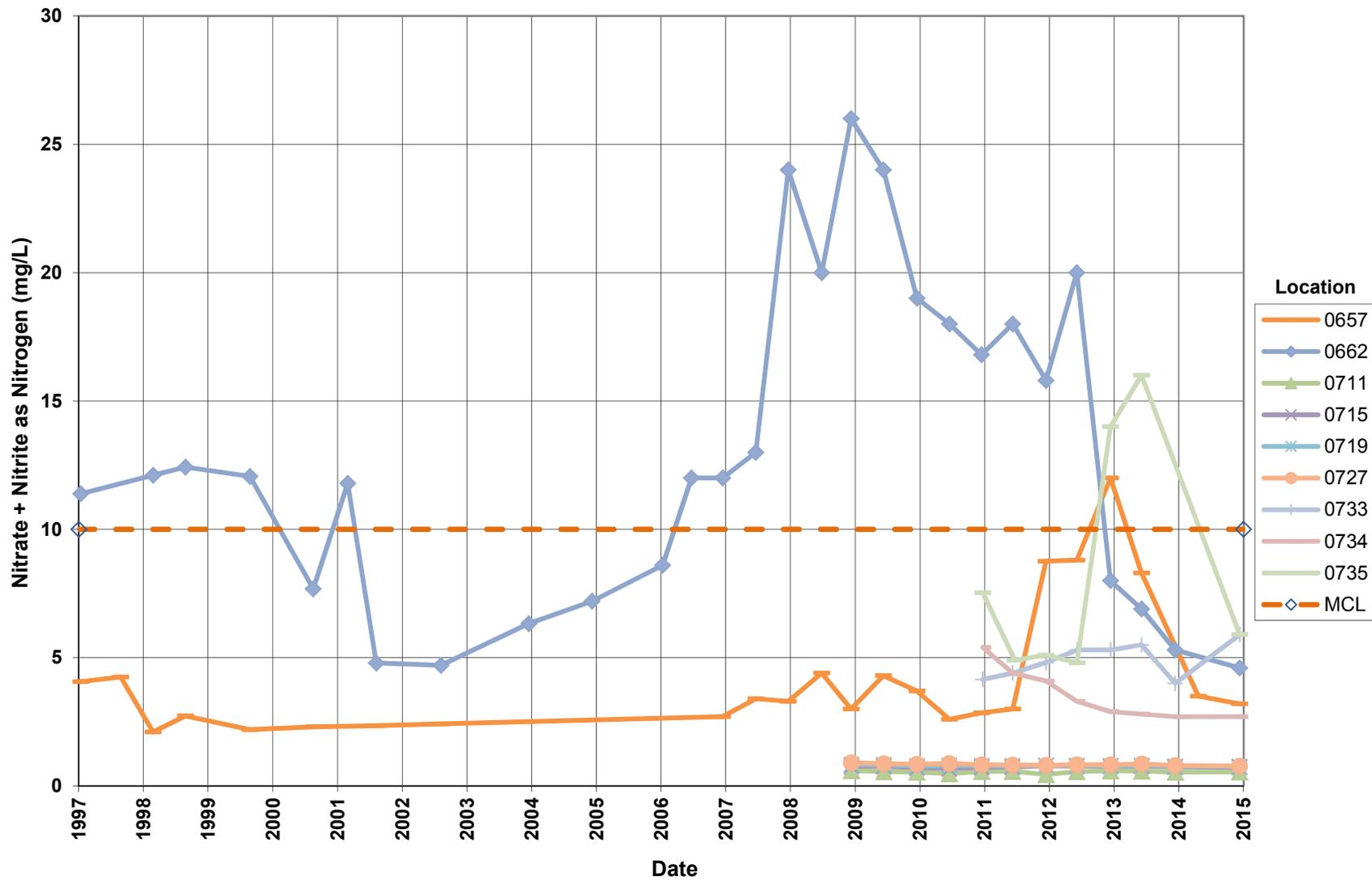
**Monument Valley Processing Site**  
**Nitrate + Nitrite as Nitrogen Concentration**  
 Maximum Concentration Limit (MCL) = 10 mg/L



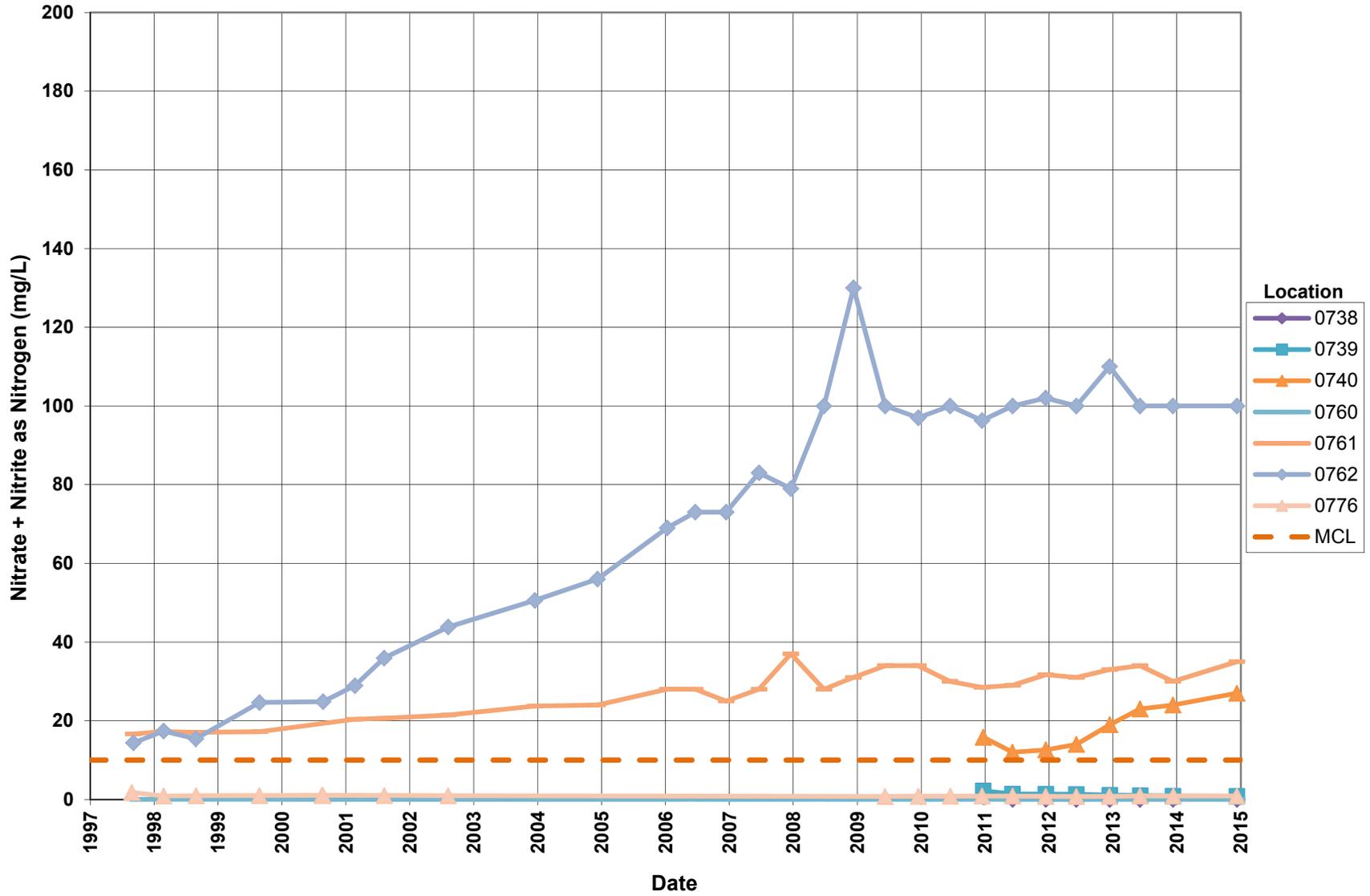
**Monument Valley Processing Site**  
**Nitrate + Nitrite as Nitrogen Concentration**  
 Maximum Concentration Limit (MCL) = 10 mg/L



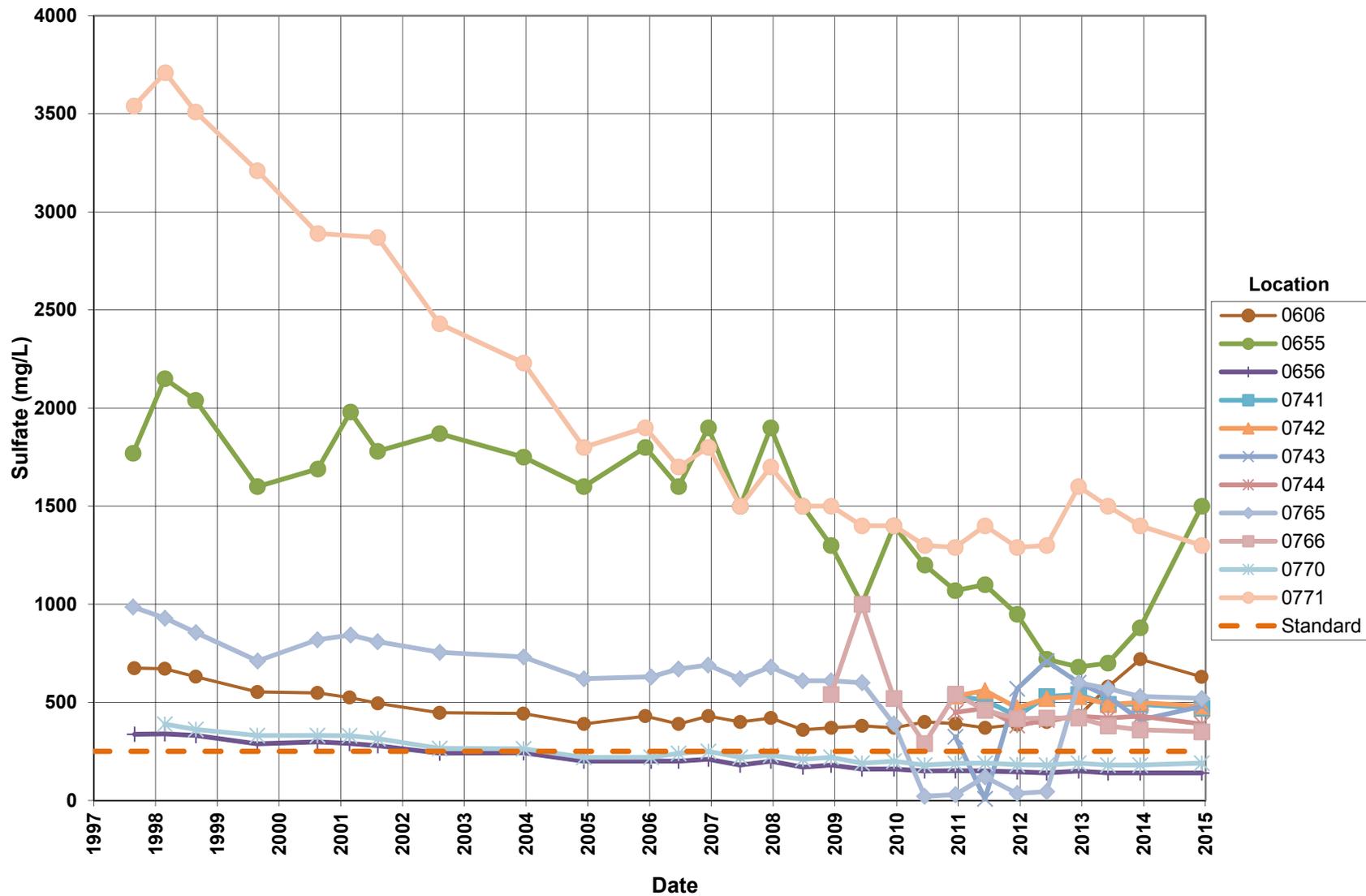
**Monument Valley Processing Site**  
**Nitrate + Nitrite as Nitrogen Concentration**  
 Maximum Concentration Limit (MCL) = 10 mg/L



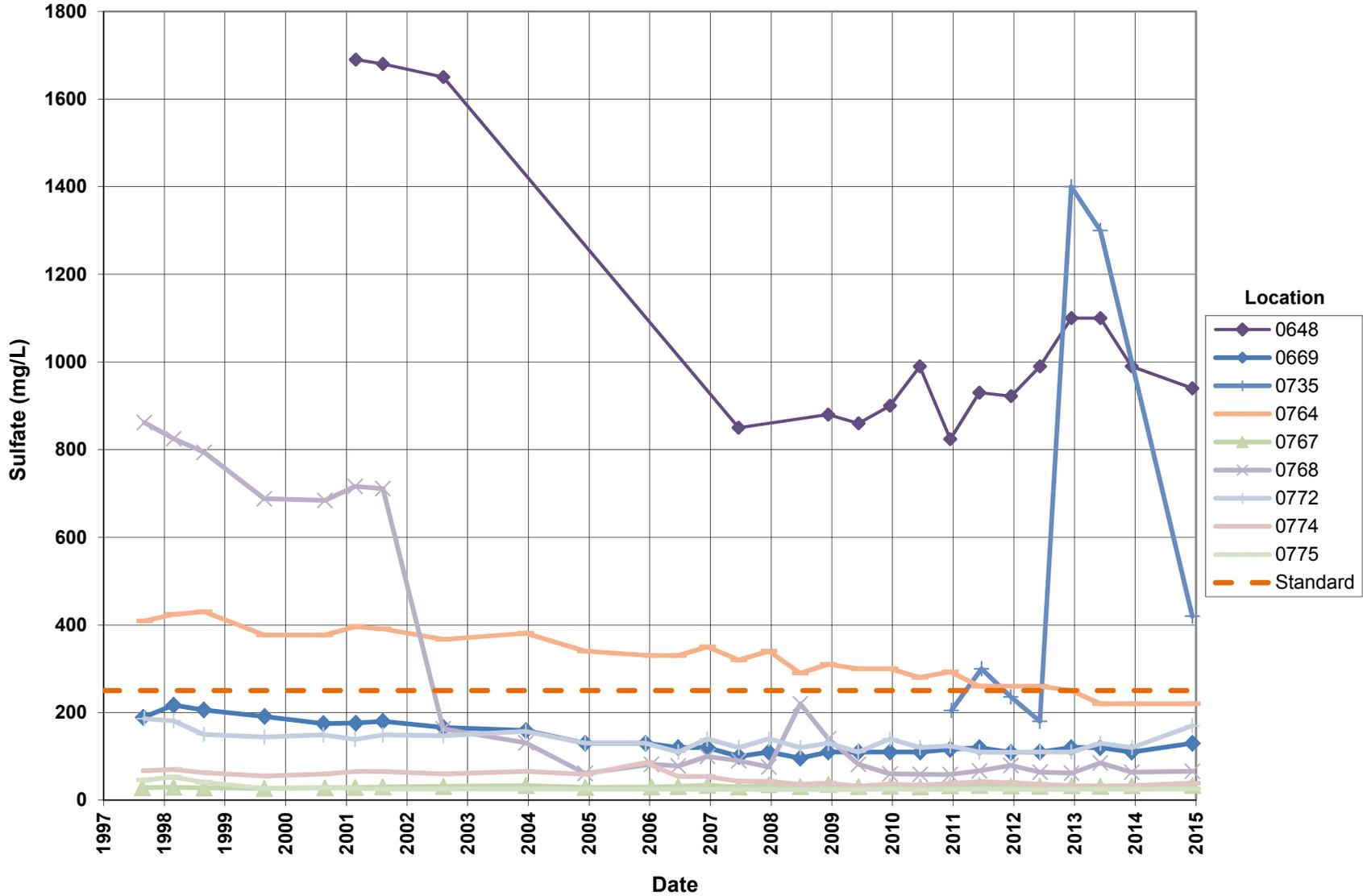
**Monument Valley Processing Site**  
**Nitrate + Nitrite as Nitrogen Concentration**  
 Maximum Concentration Limit (MCL) = 10 mg/L



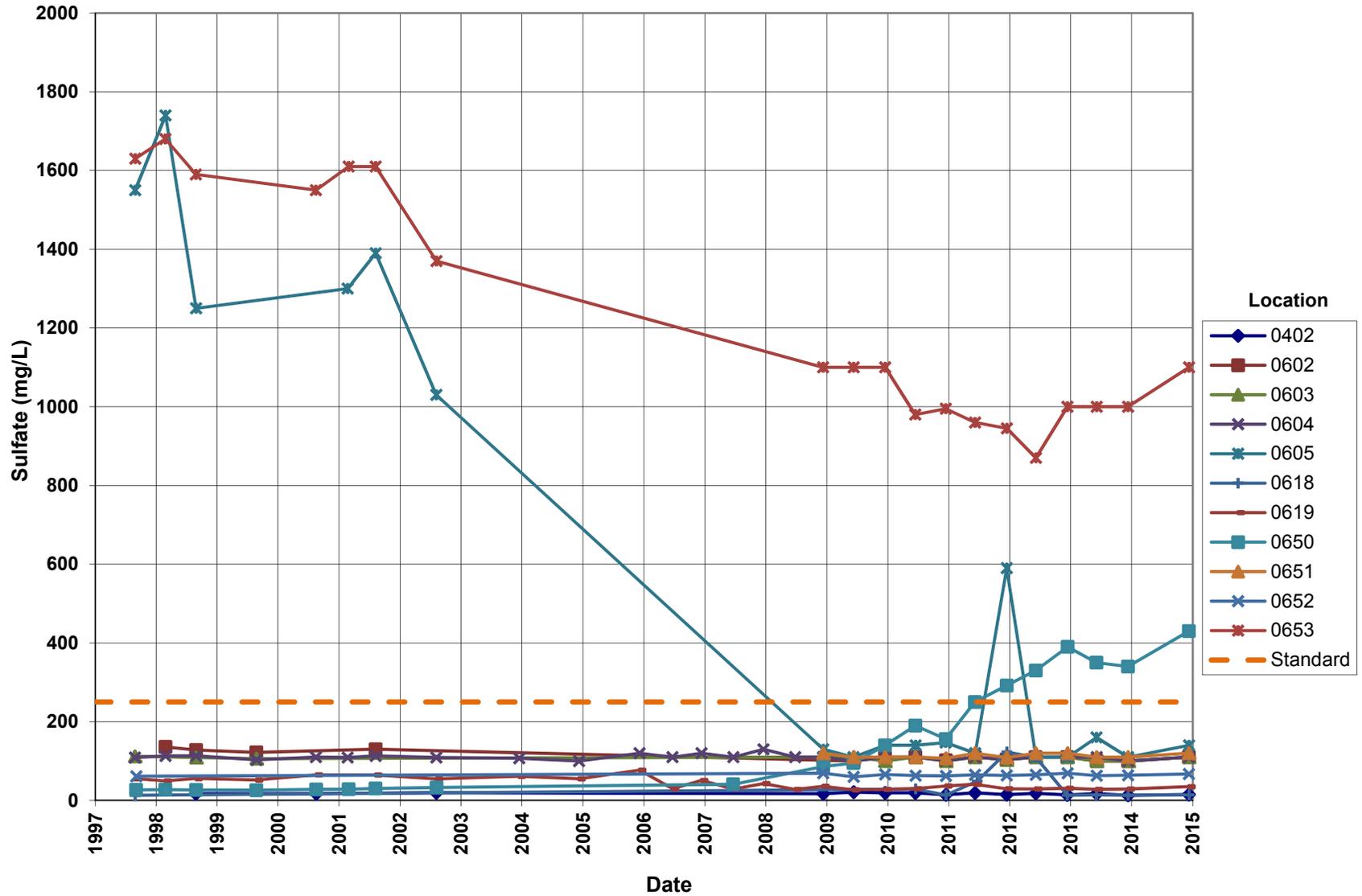
**Monument Valley Processing Site  
Sulfate Concentration**  
Proposed Cleanup Standard = 250 mg/L



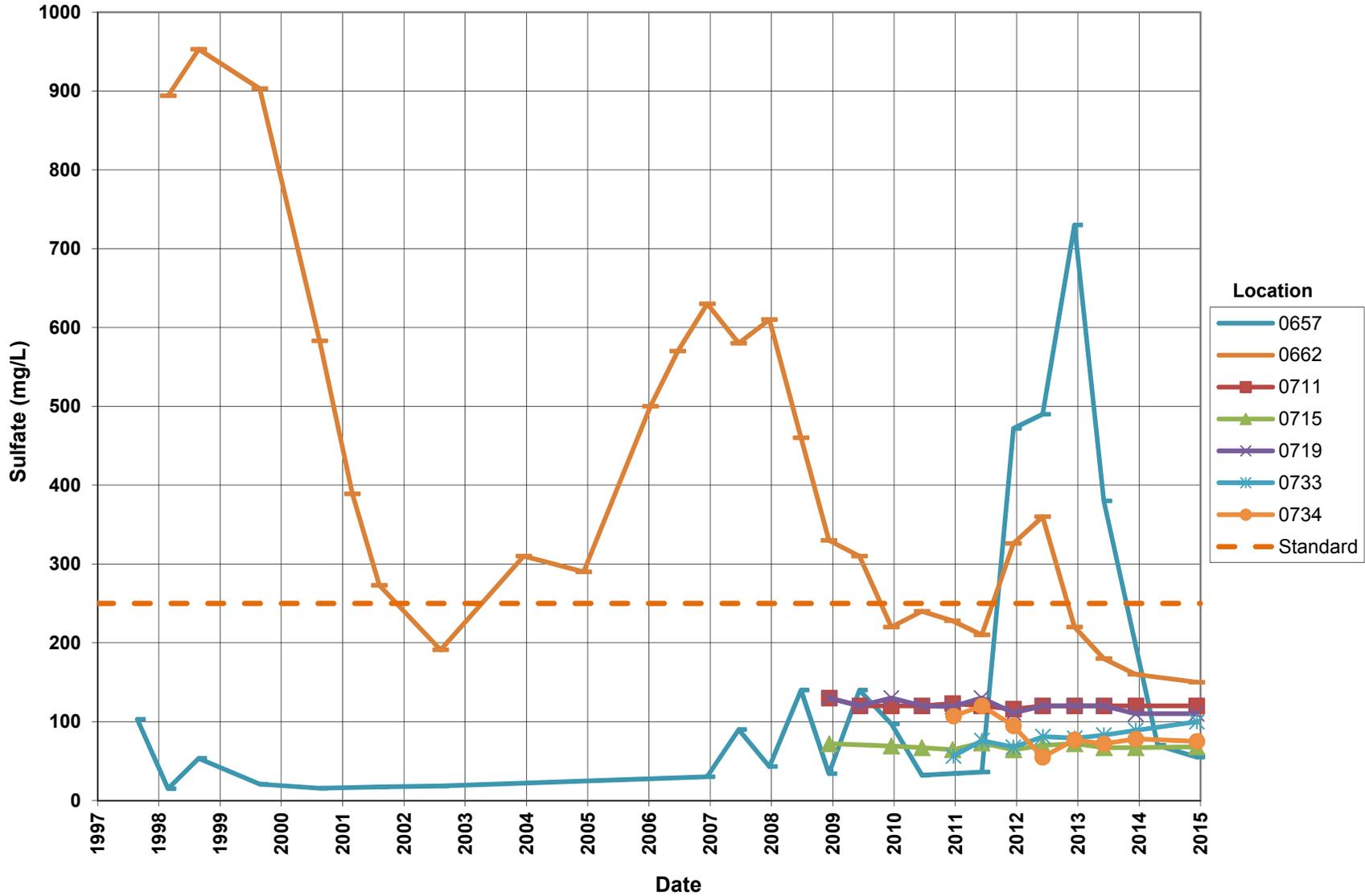
**Monument Valley Processing Site  
Sulfate Concentration**  
Proposed Cleanup Standard = 250 mg/L



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

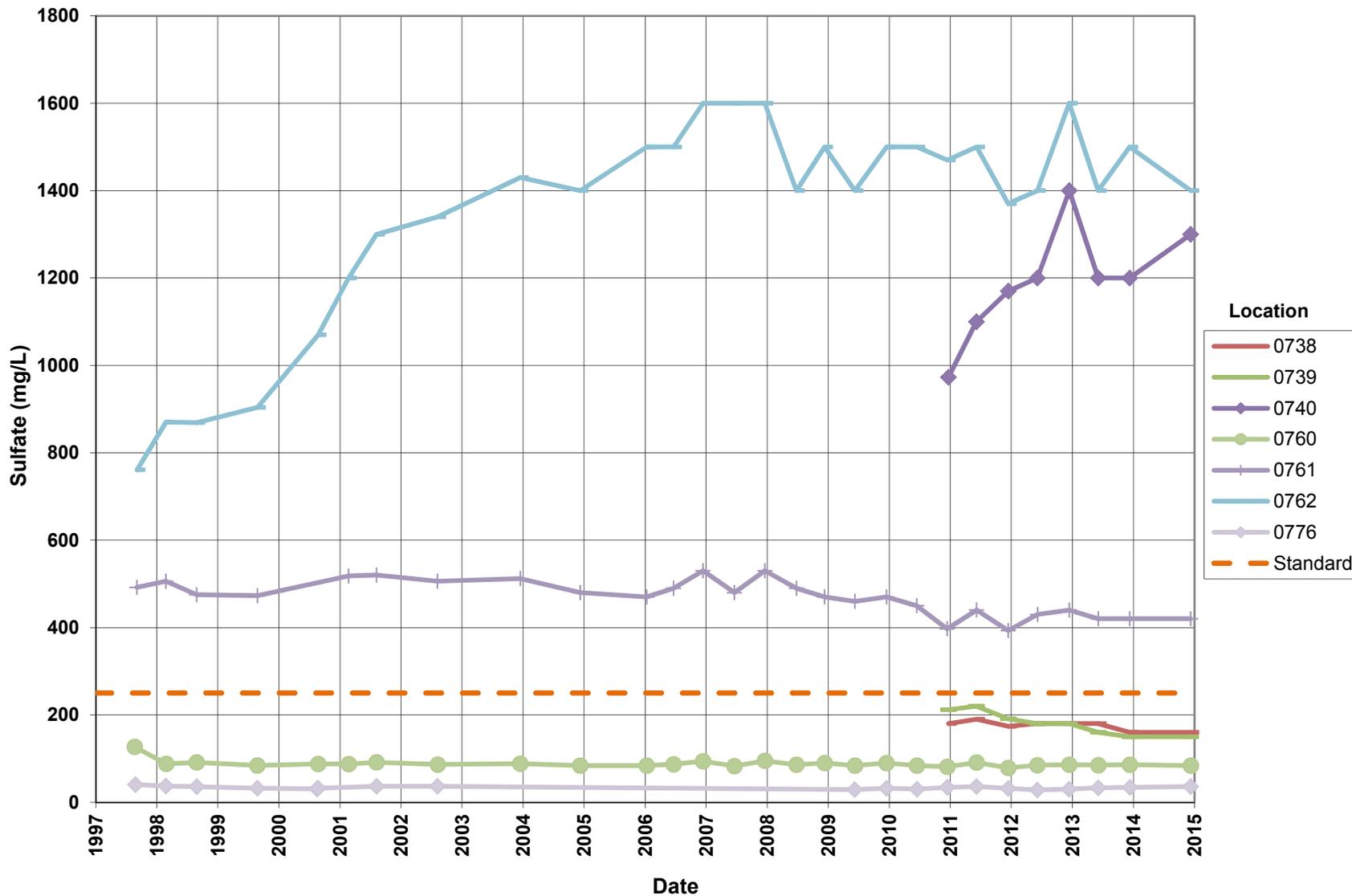


**Monument Valley Processing Site  
Sulfate Concentration**  
Proposed Cleanup Standard = 250 mg/L

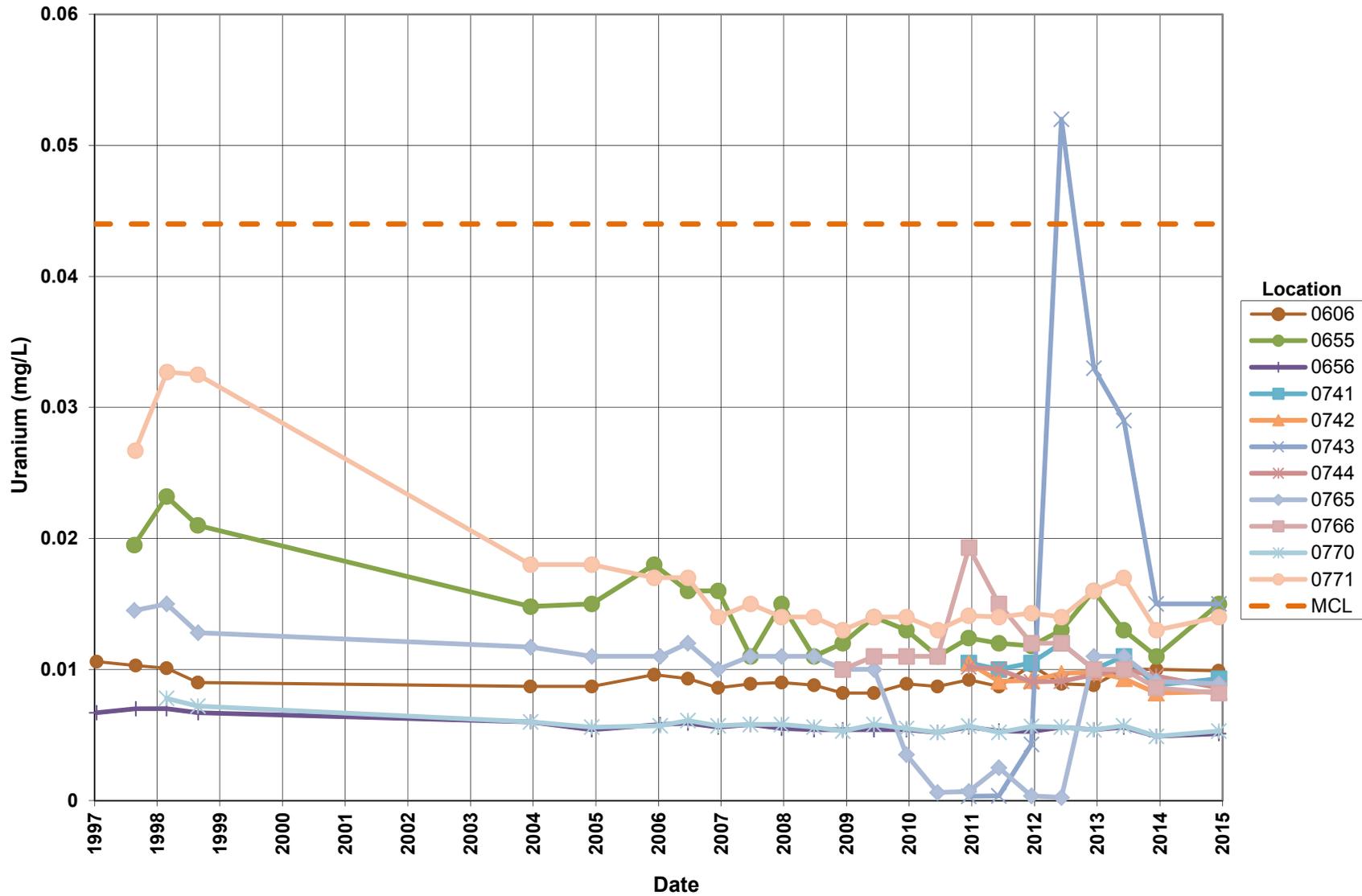


## Monument Valley Processing Site Sulfate Concentration

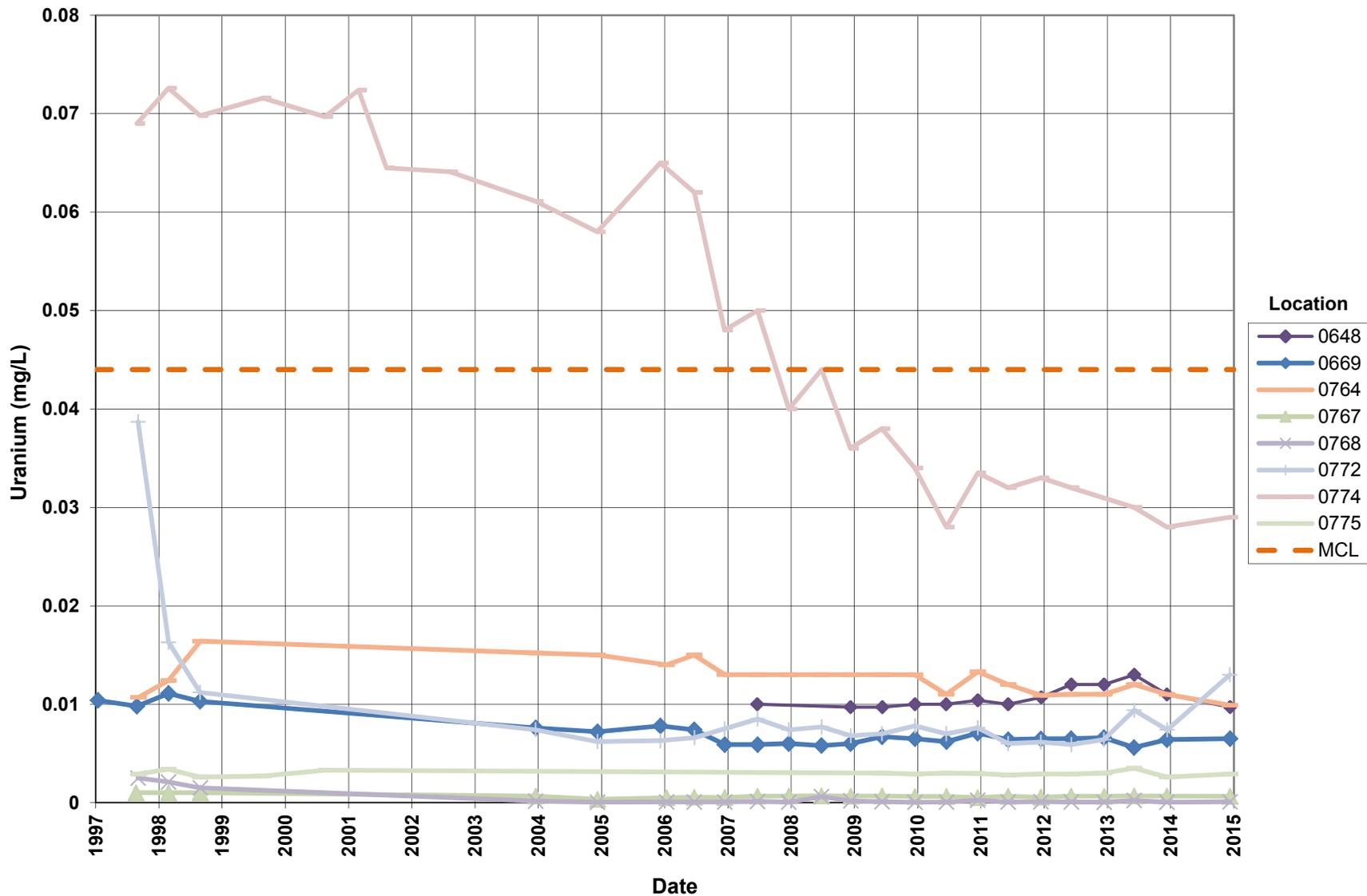
Proposed Cleanup Standard = 250 mg/L



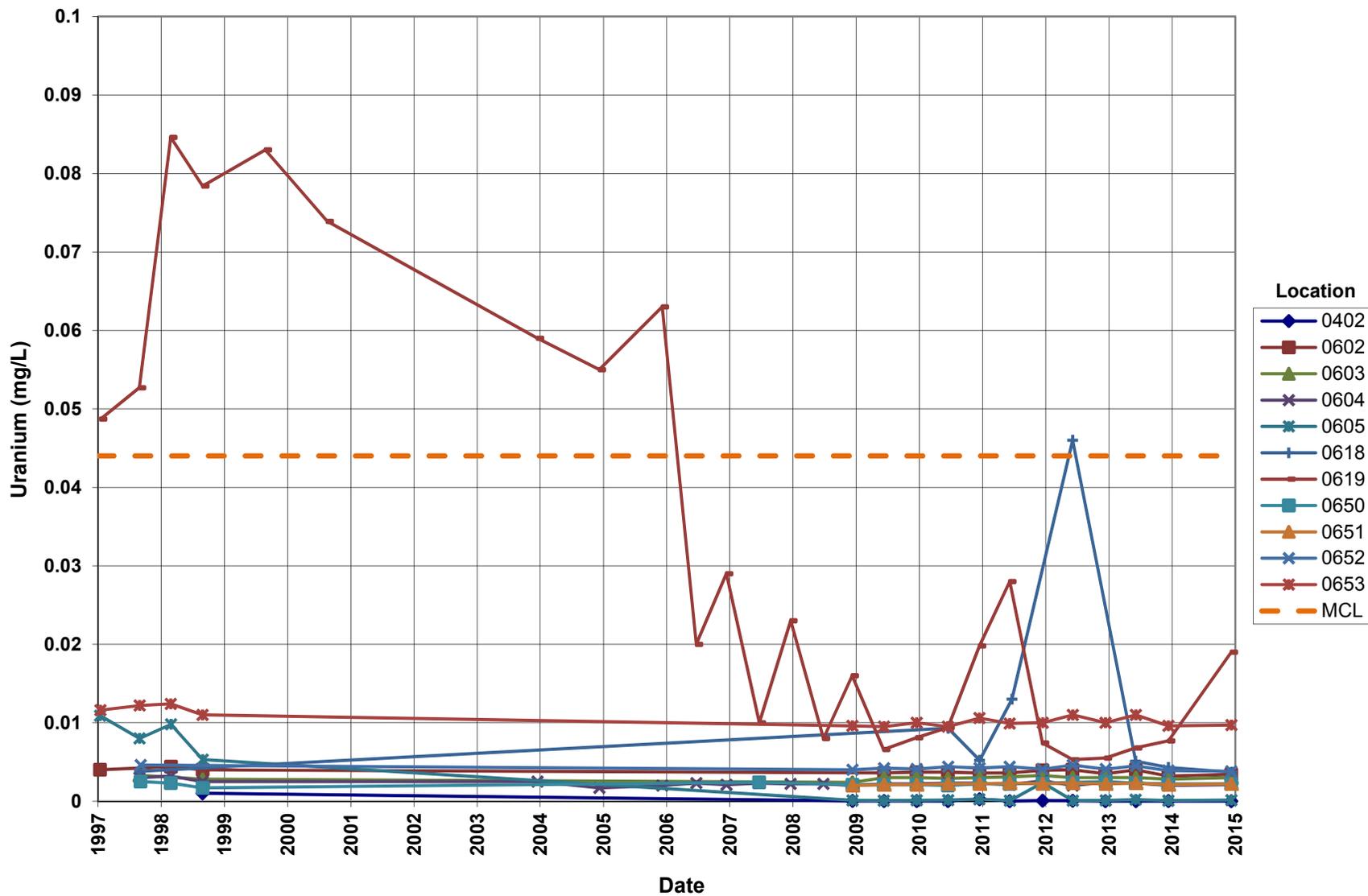
**Monument Valley Processing Site  
Uranium Concentration**  
Maximum Concentration Limit (MCL) = 0.044 mg/L



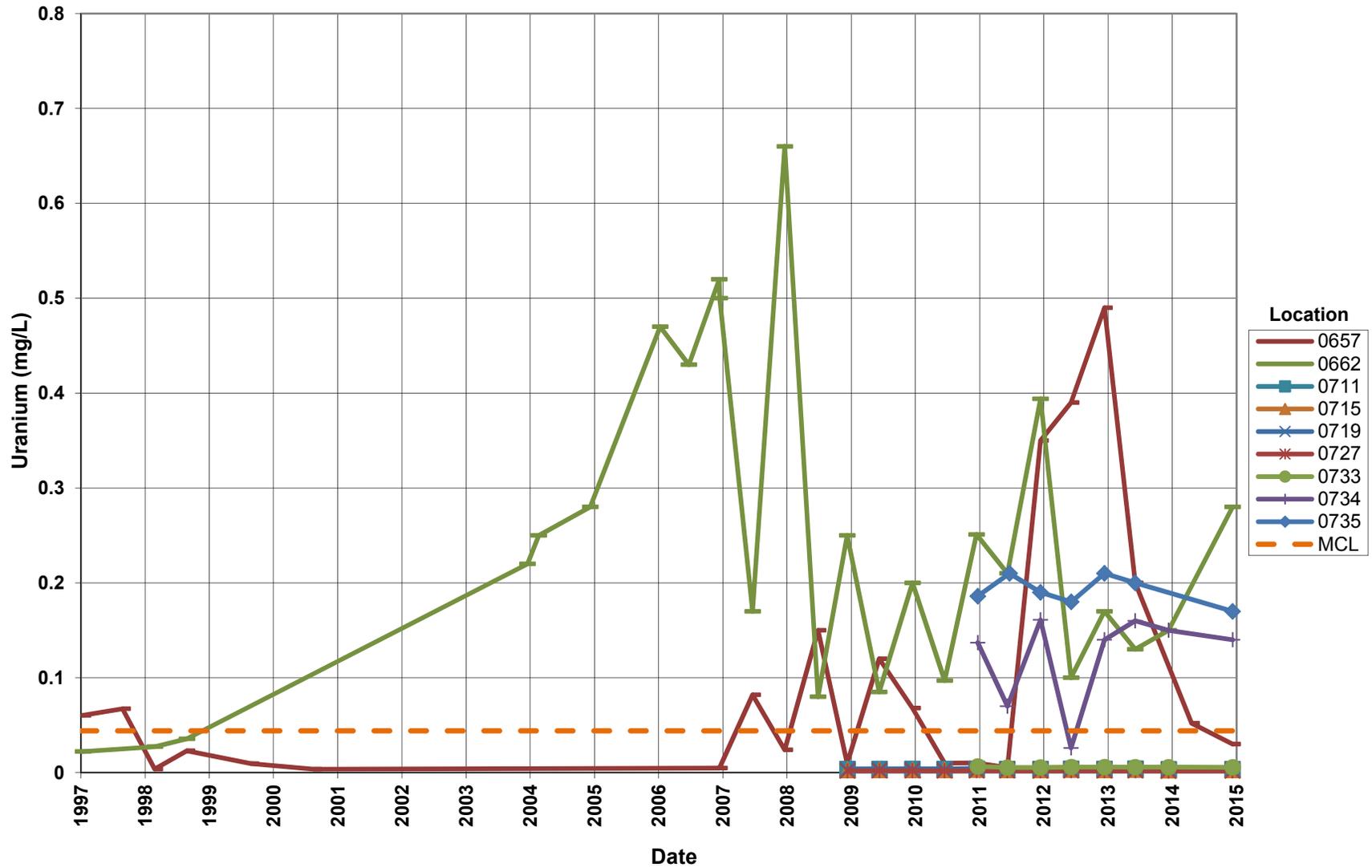
**Monument Valley Processing Site  
Uranium Concentration**  
Maximum Concentration Limit (MCL) = 0.044 mg/L



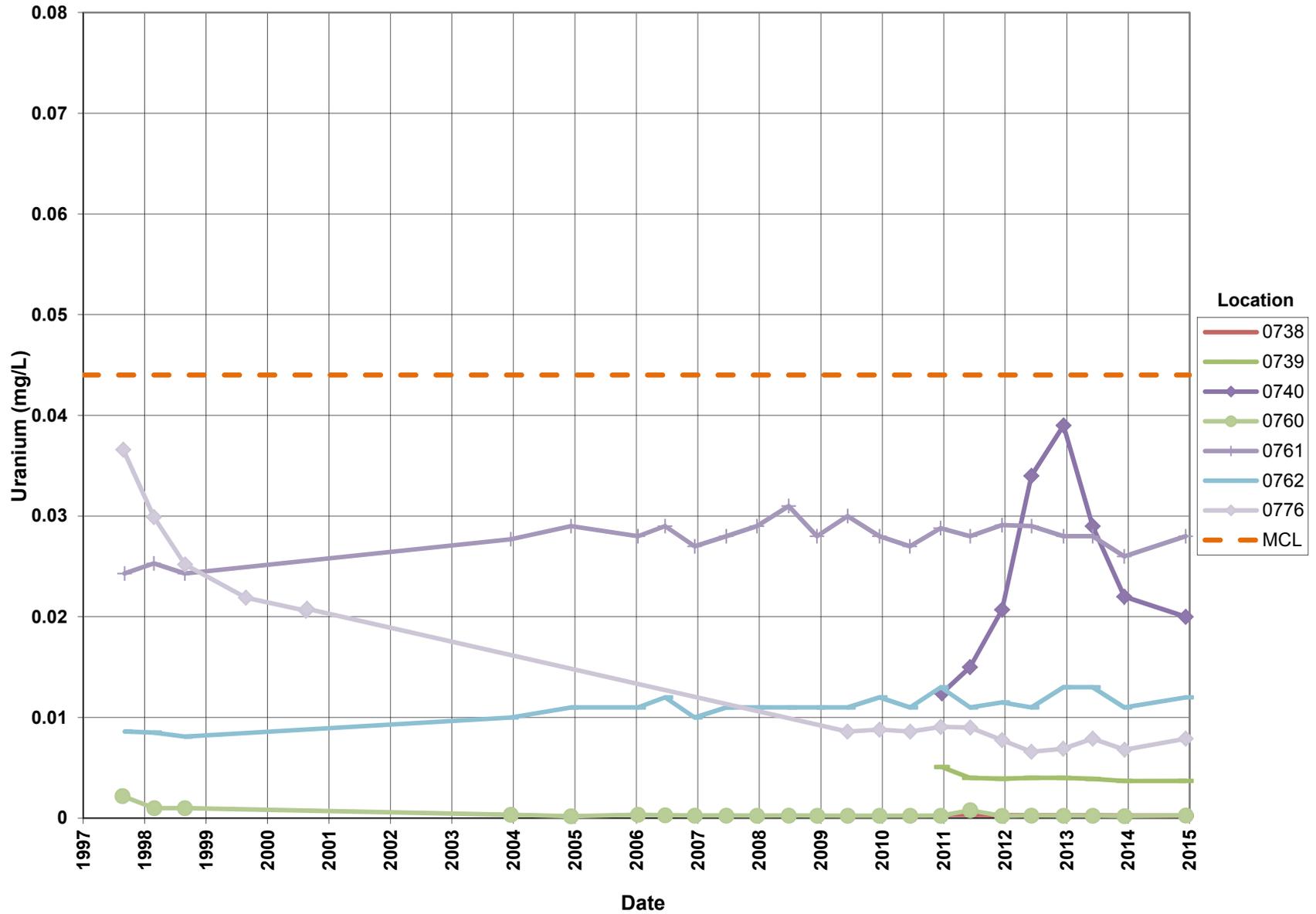
**Monument Valley Processing Site  
Uranium Concentration**  
Maximum Concentration Limit (MCL) = 0.044 mg/L



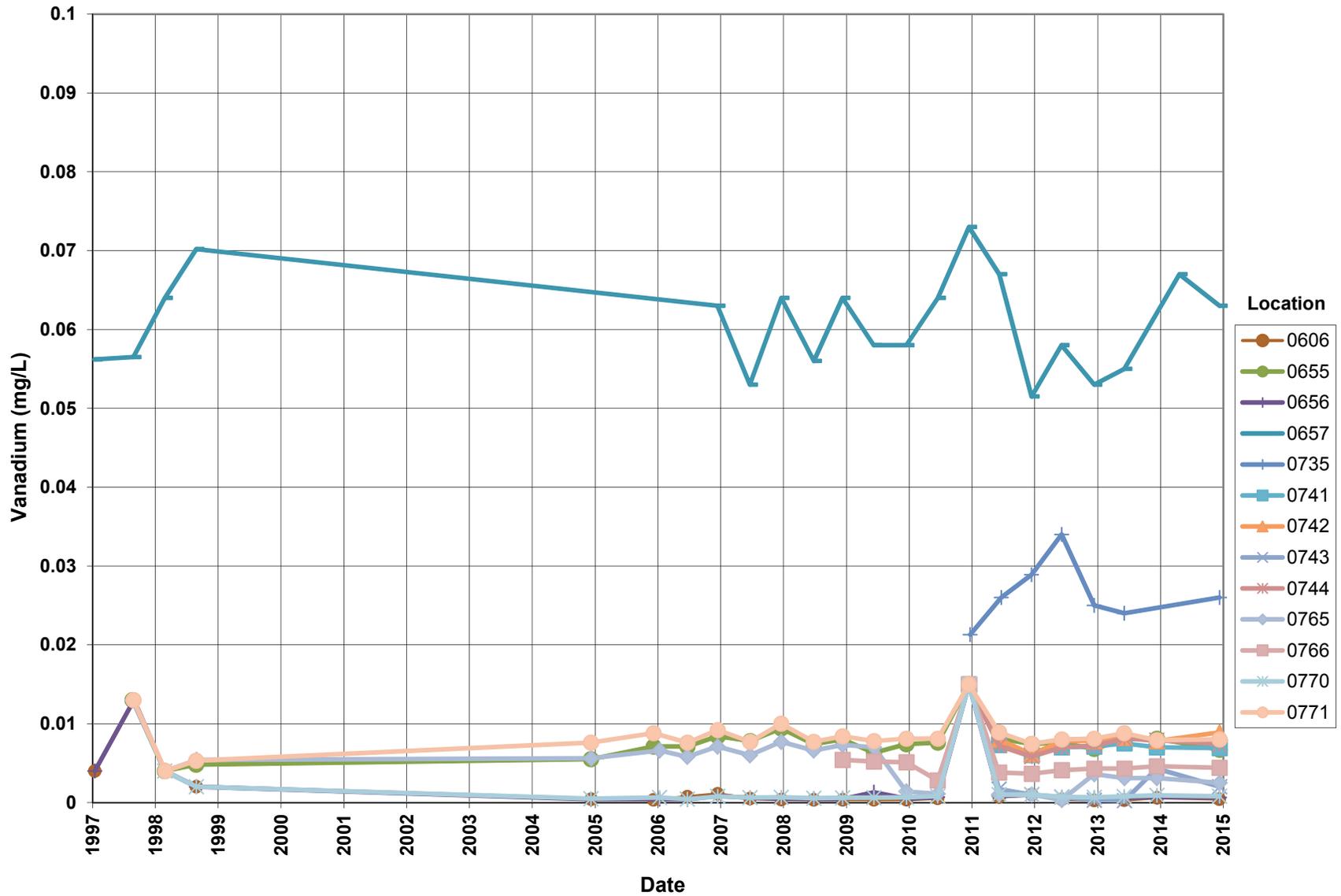
**Monument Valley Processing Site  
Uranium Concentration**  
Maximum Concentration Limit (MCL) = 0.044 mg/L



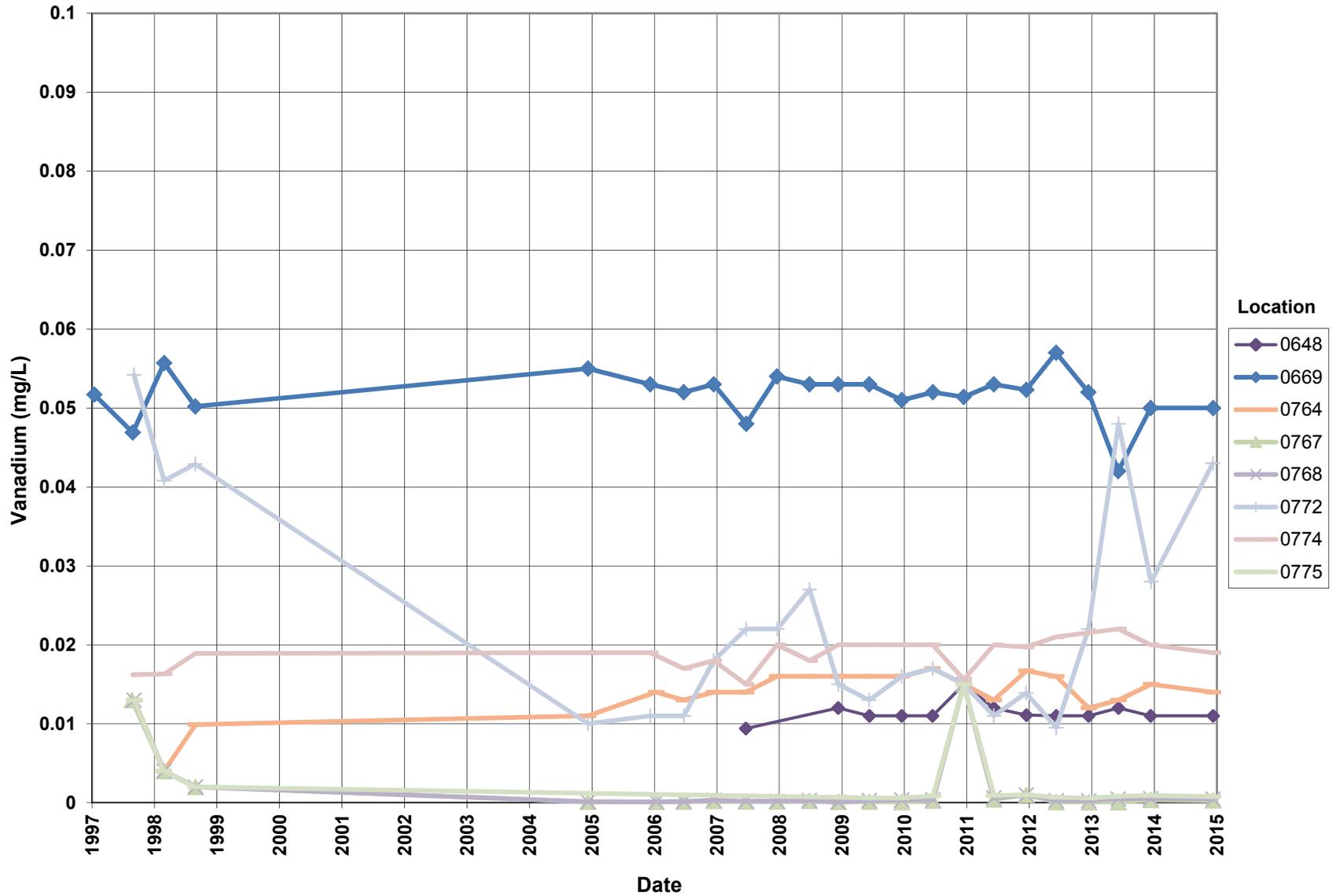
**Monument Valley Processing Site  
Uranium Concentration**  
Maximum Concentration Limit (MCL) = 0.044 mg/L



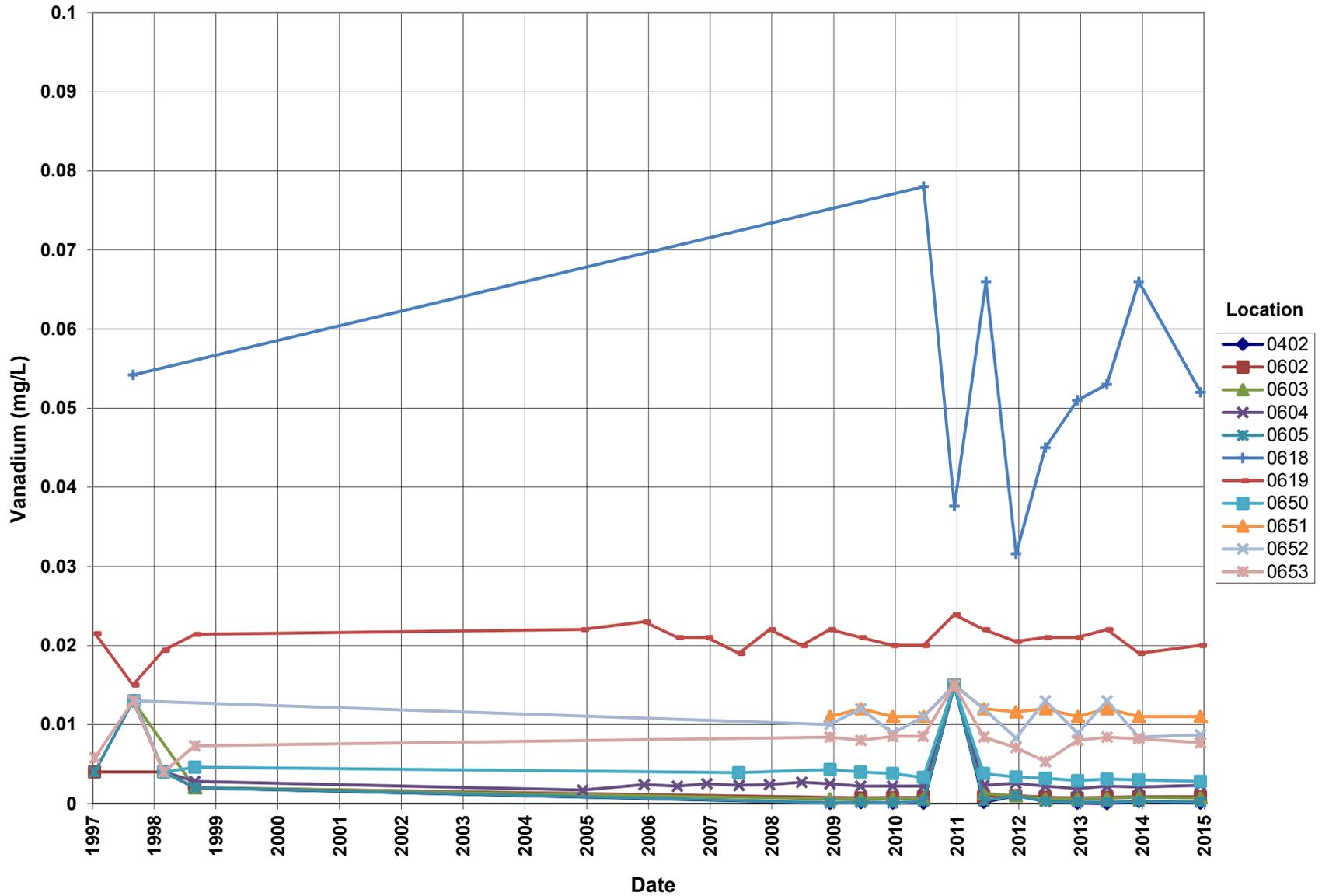
### Monument Valley Processing Site Vanadium Concentration



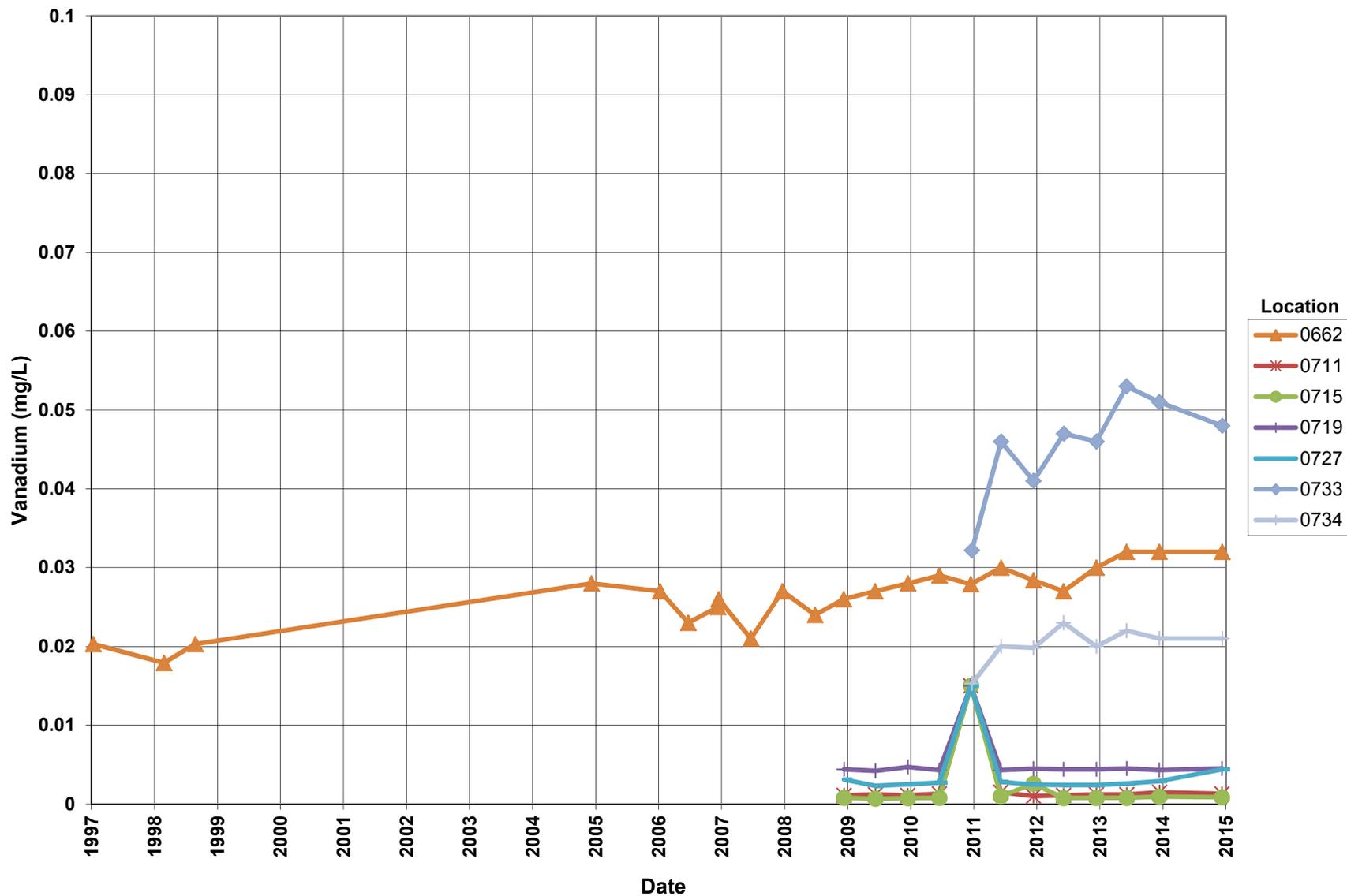
### Monument Valley Processing Site Vanadium Concentration



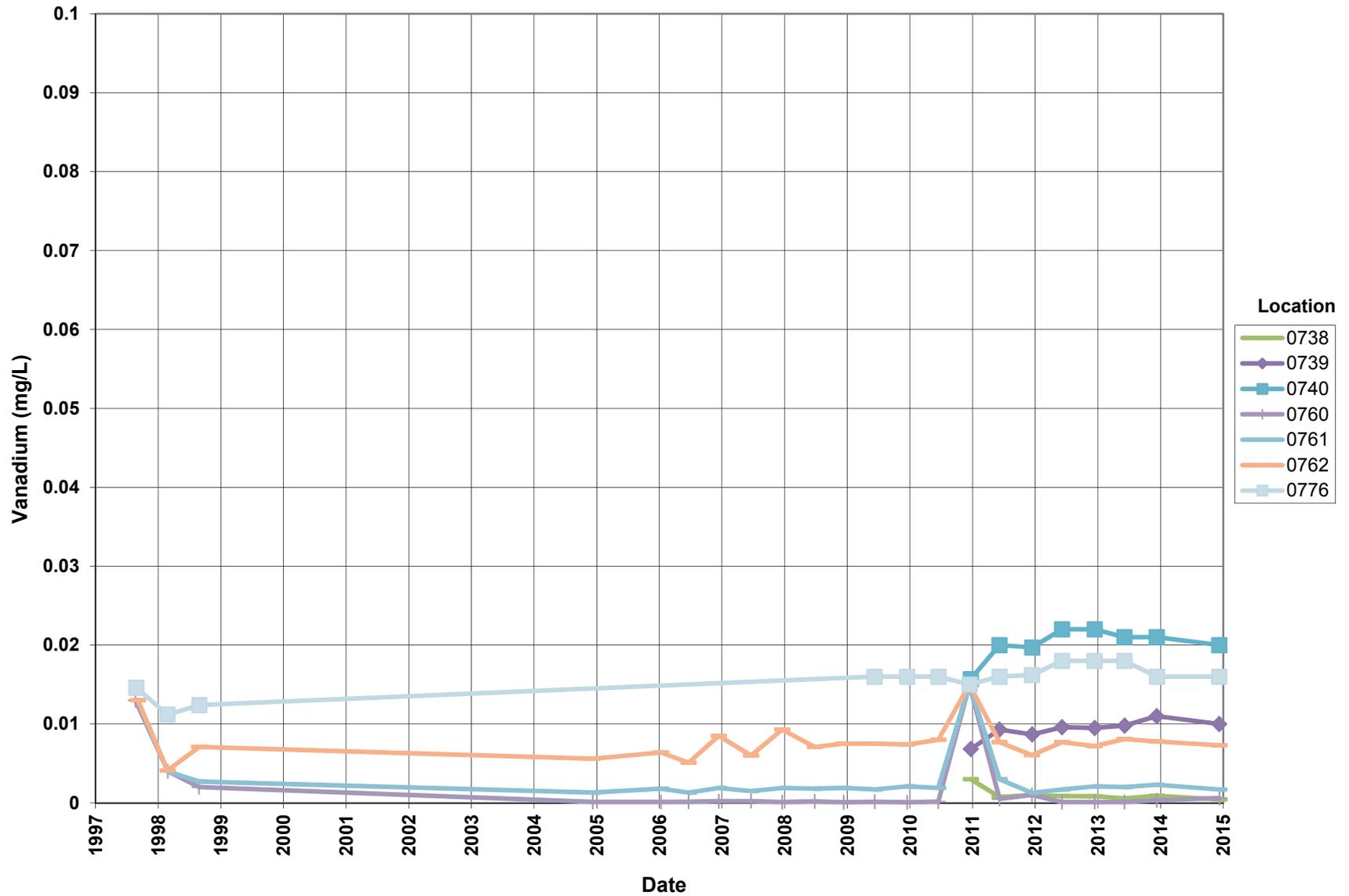
### Monument Valley Processing Site Vanadium Concentration



## Monument Valley Processing Site Vanadium Concentration



### Monument Valley Processing Site Vanadium Concentration



**Attachment 3**  
**Sampling and Analysis Work Order**

This page intentionally left blank



November 17, 2014

Task Assignment 103  
Control Number 15-0149

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

**SUBJECT:** Contract No. DE-LM0000415, The S.M. Stoller Corporation, a wholly owned subsidiary of Huntington Ingalls Industries (Stoller)  
Task Assignment 103 LTS&M - UMTRCA TI & TII, D&D, Others, and AS&T  
December 2014 Environmental Sampling at the Monument Valley, Arizona, Disposal Site

**REFERENCE:** Task Assignment 103, 3-103-1-02-114, Monument Valley, Arizona, Disposal Site

Dear Ms. Denny:

The purpose of this letter is to inform you of the upcoming sampling event at the Monument Valley, Arizona, Disposal Site. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Monument Valley disposal site. Water quality data will be collected from this site as part of the routine environmental sampling currently scheduled to begin the week of December 8, 2014.

The following lists show the monitoring wells (with zone of completion) and surface location scheduled to be sampled during this event.

**Monitoring Wells\***

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

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

Angelita Denny  
Control Number 15-0149  
Page 2

**Surface Location**

623

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.

Sincerely,



David Miller  
Site Lead

DM/bkb

Enclosures (3)

cc: (electronic)

Christina Pennal, DOE  
Steve Donovan, Stoller  
Lauren Goodknight, Stoller  
David Miller, Stoller  
EDD Delivery  
rc-grand.junction  
File: MON 410.02

## Sampling Frequencies for Locations at Monument Valley, Arizona

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
<b>Monitoring Wells</b>						
402		X				
602		X				
603		X				
604		X				
605		X				
606		X				
618		X				
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				

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
<b>Monitoring Wells</b>						
766		X				
767		X				
768		X				
770		X				
771		X				
772		X				
774		X				
775		X				
776		X				
<b>Surface Locations</b>						
623		X				

Sampling conducted in December and June

### Constituent Sampling Breakdown

Site	Monument Valley		Required Detection Limit (mg/L)	Analytical Method	Line Item Code
	Analyte	Groundwater			
<b>Approx. No. Samples/yr</b>	68	1			
<b>Field Measurements</b>					
Alkalinity					
Dissolved Oxygen					
Redox Potential	X				
pH	X				
Specific Conductance	X				
Turbidity	X				
Temperature	X				
<b>Laboratory Measurements</b>					
Aluminum					
Ammonia as N (NH <sub>3</sub> -N)	X	X	0.1	EPA 350.1	WCH-A-005
Arsenic			0.0001	SW-846 6020	LMM-02
Calcium					
Chloride	X	X	0.5	SW-846 9056	MIS-A_039
Chromium					
Gross Beta					
Iron			0.05	SW-846 6020	LMM-02
Lead					
Magnesium			5	SW-846 6010	LMM-01
Manganese			0.005	SW-846 6010	LMM-01
Molybdenum			0.003	SW-846 6020	LMM-02
Nickel					
Nickel-63					
Nitrate + Nitrite as N (NO <sub>3</sub> +NO <sub>2</sub> )-N	X	X	0.05	EPA 353.1	WCH-A-022
Potassium			1	SW-846 6010	LMM-01
Selenium					
Silica					
Sodium			1	SW-846 6010	LMM-01
Strontium					
Sulfate	X	X	0.5	SW-846 9056	MIS-A-044
Sulfide					
Total Dissolved Solids					
Total Organic Carbon					
Uranium	X	X	0.0001	SW-846 6020	LMM-02
Vanadium	X	X	0.0003	SW-846 6020	IMM-02
Zinc					
<b>Total No. of Analytes</b>	6	6			

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

This page intentionally left blank

# **Attachment 4 Trip Report**

This page intentionally left blank



DATE: December 29, 2014

TO: Dave Miller

FROM: Tashina Jasso

SUBJECT: Sampling Trip Report

**Site:** Monument Valley, AZ Processing Site

**Dates of Sampling Event:** December 9-11, 2014

**Team Members:** Alison Kuhlman, Gretchen Baer, Sam Campbell, and Tashina Jasso.

**Number of Locations Sampled:** All of the following planned locations were sampled:

Type	Planned Locations
Monitoring Wells	47
Surface Locations	1

**Location Specific Information:**

Location IDs	Comments
0623	The geographic location of this surface water location was verified via google earth.
0651	Pump information at this location was unknown which resulted in the pump being pulled and the following information was noted: pump length = 3.3 ft., pump intake = 26 ft.
0656	Water level readings were taken from the top of the outer casing during the purging process.
0734	Sand particles were noted in the purge water.
0760	Upon arrival it was noted this location did not have a lock installed; a lock was installed prior to leaving.
0764	Well went dry fast but recovered quickly.
0767,0768	A slight sulfur odor was noted at these locations.
0402,0605,0623,0733,0734,0735,0738,0744,0741,0760,0762	Turbidity at these locations was > 10 NTUs and therefore, they were filtered using a 0.45-µm filter.

A SUBSIDIARY OF HUNTINGTON INGALLS INDUSTRIES

2597 Legacy Way • Grand Junction, CO 81503-1789 • Telephone (970) 248-6000 • Fax (970) 248-6040

**Quality Control Sample Cross Reference:** The following table shows the false identifications assigned to the quality control samples:

False ID	Ticket #	True ID	Sample Type
2079	MNS 626	0604	Duplicate
2251	MNS 646	0662	Duplicate
2711	MNS 617	0618	Duplicate

Duplicates were collected by filling all bottles labeled with the location number first, then filling all bottles labeled with the false ID second.

**RIN Number Assigned:** Samples were assigned to RIN 14126645. Field data sheets can be found in Crow\sms\14126645.

**Sample Shipment:** Samples were shipped overnight via FedEx to ALS Laboratory Group Fort Collins, CO, from Grand Junction, CO on Monday, December 15, 2014.

**Water Level Measurements:** Water levels were measured in all sampled wells.

**Well Inspection Summary:** Many locations (some worse than others, see maintenance requirements) at the site are experiencing pedestaling from the erosion of the sand surrounding the wells which is contributing to damage of the well pads.

**Sampling Method:** Samples were collected according to the *Sampling and Analysis Plan for the U. S. Department of Energy Office of Legacy Management Sites* (LMS/PRO/S04351, continually updated).

**Field Variance:** Turbidity criteria was not met at locations; 0605, 0623, 0733, 0734, 0735, 0738, 0744, 0741, 0760, and 0762.

**Equipment:** All equipment functioned properly with one exception. One peristaltic pump failed but was temporarily repaired in the field. This pump was tagged out of service back at the office. All wells were sampled with either: a peristaltic pump and dedicated tubing, or via the installed bladder pump.

Surface water location 0623 was collected using dedicated tubing and a peristaltic pump; therefore, all equipment used during this event was dedicated and an equipment blank was not required.

**Institutional Controls:**

**Fences, Gates, Locks:** All gates were locked and in good condition.

**Signs:** No issues observed.

**Trespassing/Site Disturbances:** None observed.

**Regulatory/Stakeholder:** SM Stoller technical services personnel Jody Waugh, Ray Johnson, and Dave Miller, in addition to Department of Energy site manager Angelita Denny, observed sampling activities on December 9, 2014.

**Site Issues:**

**Disposal Cell/Drainage Structure Integrity:** Not applicable.

**Vegetation/Noxious Weed Concerns:** Nothing to note.

**Maintenance Requirements:** Address well pad issues at 0651 and 0764.

Well redevelopment at locations unable to meet turbidity criteria.

**Access Issues:** None.

**Safety Issues:** None.

**Corrective Action Required/Taken:**

- Well redevelopment.
- Consult with the engineering department to discuss options for pedestaling well pads at this site.

TJ/lcg

cc: (electronic)  
Rich Bush, DOE  
Steve Donovan, Stoller  
David Miller, Stoller  
EDD Delivery

This page intentionally left blank