Data Validation Package

December 2013
Groundwater and Surface Water Sampling at the Monument Valley, Arizona, Processing Site

March 2014

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Sampling Event Summary

Site: Monument Valley, Arizona, Processing Site

Sampling Period: December 9–12, 2013, April 21, 2014

Forty-four groundwater samples and one surface water sample were collected at the Monument Valley, Arizona, Processing Site to monitor groundwater contaminants for evaluating the effectiveness of the proposed compliance strategy as specified in the 1999 *Final Site Observational Work Plan for the UMTRA Project Site at Monument Valley, Arizona*. Sampling and analysis were conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PRO/S04351, continually updated). Samples were collected for metals, anions, nitrate + nitrite as N, and ammonia as N analyses at all locations. The original sample from well 0657 was mistakenly discarded, and a replacement sample was collected on April 21, 2014.

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

Table 1. Monument Valley Locations That Exceed Standards

Analyte	Standard[a] (mg/L)	Site Code	Location	Concentration (mg/L)
Nitrate + Nitrite as Nitrogen	10	MON01	0606	330
			0648	85
			0653	46
			0655	180
			0656	15
			0669	24
			0740	24
			0741	110
			0742	110
			0743	53
			0744	160
			0761	30
			0762	100
			0764	36
			0765	63
			0766	110
			0770	14
			0771	200
Uranium	0.044	MON01	0662	0.15
			0657	.049
			0734	0.15

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

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

Table 2. Sulfate Result

Location	Sulfate Concentration (mg/L)	Sulfate/Chloride Ratio	Treatment Goal Achieved?
0402	13	1	Yes
0602	100	8	Yes
0603	100	8	Yes
0604	100	9	Yes
0605	110	6	Yes
0606	720	9	Yes
0618	13	4	Yes
0619	29	5	Yes
0623	45	2	Yes
0648	990	35	No
0650	340	17	No
0651	110	9	Yes
0652	64	4	Yes
0653	1000	40	No
0655	880	44	No
0656	140	10	Yes
0657	70	10	Yes
0662	160	18	Yes
0669	110	14	Yes
0711	120	9	Yes
0715	67	7	Yes
0719	110	8	Yes
0727	77	8	Yes
0733	89	13	Yes
0734	78	14	Yes
0738	160	11	Yes
0739	150	11	Yes
0740	1200	39	No
0741	490	22	No
0742	500	24	No
0743	410	22	No
0744	430	23	No
0760	86	9	Yes
0761	420	30	No
0762	1500	23	No
0764	220	20	Yes
0765	530	24	No
0766	360	23	No
0767	33	6	Yes
0768	64	5	Yes

Table 1 (continued). Sulfate Result

Location	Sulfate Concentration (mg/L)	Sulfate/Chloride Ratio	Treatment Goal Achieved?
0770	180	11	Yes
0771	1400	74	No
0772	120	8	Yes
0774	33	6	Yes
0775	25	4	Yes
0776	34	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,
The S.M. Stoller Corporation,
a wholly owned subsidiary of
Huntington Ingalls Industries

5/20/14
Date

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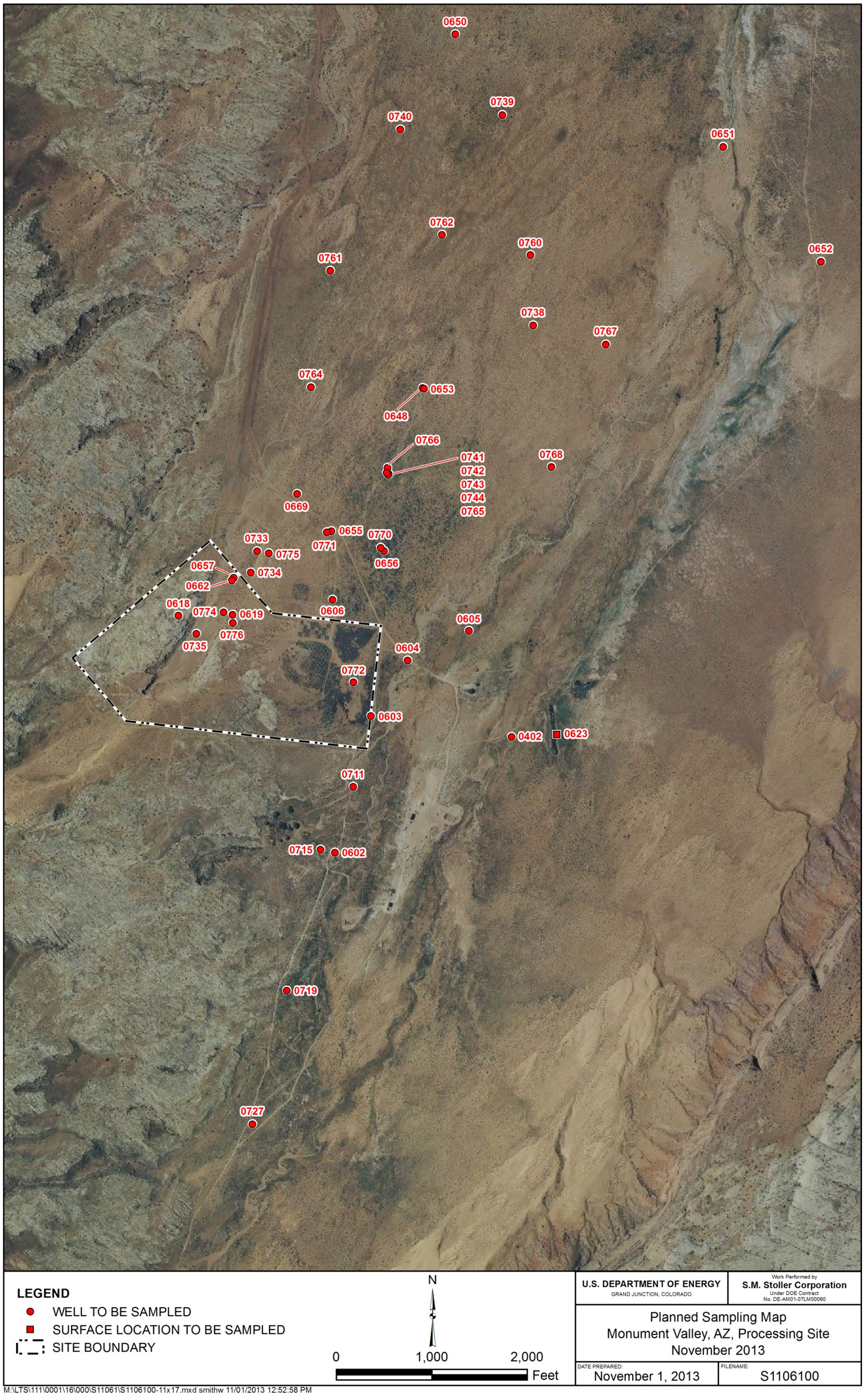

Monument Valley, Arizona, Processing Site, Sample Location Map

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Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	Monument Valley, Arizona	**Date(s) of Water Sampling**	December 9–12, 2013, April 21, 2014
Date(s) of Verification	May 13, 2014	**Name of Verifier**	Stephen Donivan

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures?	Yes	
List any Program Directives or other documents, SOPs, instructions.		Work Order letter dated November 8, 2013.
2. Were the sampling locations specified in the planning documents sampled?	No	Location 0735 was not sampled because it was dry. Location 0657 was sampled at a later date due to a communication error.
3. Were calibrations conducted as specified in the above-named documents?	Yes	Calibrations were performed December 6, 2013.
4. Was an operational check of the field equipment conducted daily?	No	Operational checks were not performed on December 9, 2013.
Did the operational checks meet criteria?	Yes	
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	Yes	
6. Were wells categorized correctly?	Yes	
7. Were the following conditions met when purging a Category I well:		
Was one pump/tubing volume purged prior to sampling?	Yes	
Did the water level stabilize prior to sampling?	Yes	
Did pH, specific conductance, and turbidity measurements meet criteria prior to sampling?	Yes	Locations 0734, 0741, 0760, 0764, 0771, and 0774 had turbidity values greater than 10 NTUs; samples were filtered.
Was the flow rate less than 500 mL/min?	Yes	

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 0623, 0657, 0742, and 0766.
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

Report Numbers (RINs):	13125794
Sample Event:	December 9–12, 2013
Site(s):	Monument Valley, Arizona
Laboratory:	ALS Laboratory Group, Fort Collins, Colorado
Work Order No.:	1312296
Analysis:	Metals and Wet Chemistry
Validator:	Stephen Donivan
Review Date:	February 5, 2014

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

Table 3. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Ammonia as Nitrogen	WCH-A-005	EPA 350.1	EPA 350.1
Chloride, Sulfate	MIS-A-045	SW-856 9056	SW-856 9056
Nitrate + Nitrite 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 4. Refer to the sections below for an explanation of the data qualifiers applied.

Table 4. Data Qualifier Summary

Sample Number	Location	Analyte	Flag	Reason
1312296-38	0767	Vanadium	U	Less than 5 times the calibration blank

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received 48 water samples on December 20, 2013, 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 cooler at 2.6 °C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

Detection and Quantitation Limits

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

Laboratory Instrument Calibration

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

Method EPA 350.1, Ammonia as Nitrogen
Calibrations were performed using six calibration standards on December 27, 2013. 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 EPA 353.2, Nitrite + Nitrate as Nitrogen
Calibrations were performed using seven calibration standards on December 26, 2013. 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 26, 2013, 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 PQL and all results were within the acceptance range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries associated with requested analytes were stable and within acceptable ranges.

Method SW-846 9056, Chloride, Sulfate
Calibrations were performed using six calibration standards on December 16, 2013. 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 blank and calibration blank results were below the MDLs and PQLs for all analytes with the following exception. Two calibration blank results for sulfate were above the PQL. The samples associated with these blanks had sulfate concentrations greater than 10 times the blank.

Inductively Coupled Plasma Interference Check Sample Analysis

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

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) samples are used to measure method performance in the sample matrix. The MS/MSD data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike. 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.

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 arrived on December 30, 2013. 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: 13125794 **Lab Code:** PAR **Validator:** Stephen Donivan **Validation Date:** 02/05/2014

Project: Monument Valley **Analysis Type:** ☑ Metals ☑ General Chem ☐ Rad ☐ Organics

# of Samples: 48 **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	All analyses were completed within the applicable holding times.
☑ Detection Limits	The reported detection limits are equal to or below contract requirements.
☐ Field/Trip Blanks	
☑ Field Duplicates	There were 3 duplicates evaluated.

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 13125794 **Lab Code:** PAR **Date Due:** 01/17/2014

Matrix: Water **Site Code:** MON01 **Date Completed:** 12/31/2013

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	12/26/2013	0.0000	1.0000	OK	OK	OK	106.0	107.0	105.0	2.0	99.0	2.0	120.0
Uranium	ICP/MS	12/26/2013					OK	107.0	116.0	113.0	2.0		7.0	
Uranium	ICP/MS	12/26/2013					OK	97.0	124.0	122.0	1.0			
Vanadium	ICP/MS	12/26/2013	0.0000	1.0000	OK	OK	OK	100.0	103.0	97.0	6.0	98.0	4.0	79.0
Vanadium	ICP/MS	12/26/2013					OK	101.0	107.0	106.0	1.0		3.0	
Vanadium	ICP/MS	12/26/2013					OK	95.0	111.0	108.0	2.0			

SAMPLE MANAGEMENT SYSTEM

Wet Chemistry Data Validation Worksheet

RIN: 13125794 **Lab Code:** PAR **Date Due:** 01/17/2014

Matrix: Water **Site Code:** MON01 **Date Completed:** 12/31/2013

Analyte	Date Analyzed	CALIBRATION				Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	CCV	CCB						
AMMONIA AS N	12/27/2013	0.000	1.0000	OK	OK	OK	97.00	89.0	87.0	3.00	
AMMONIA AS N	12/27/2013					OK	98.00	93.0	91.0	2.00	
AMMONIA AS N	12/27/2013					OK	99.00	104.0	87.0	9.00	
CHLORIDE	12/23/2013	0.000	1.0000	OK	OK	OK	105.00	95.0	93.0	1.00	
CHLORIDE	12/23/2013					OK	104.00	106.0	106.0	0	
CHLORIDE	12/24/2013			OK	OK	OK	103.00	104.0	104.0	0	
Nitrate+Nitrite as N	12/26/2013	0.000	1.0000	OK	OK	OK	99.00	108.0	111.0	3.00	
Nitrate+Nitrite as N	12/26/2013					OK	99.00	106.0	108.0	1.00	
Nitrate+Nitrite as N	12/26/2013					OK	101.00	101.0	86.0	3.00	
SULFATE	12/23/2013	0.000	1.0000	OK	OK	OK	101.00	105.0	104.0	0	
SULFATE	12/23/2013					OK	100.00	107.0	107.0	0	
SULFATE	12/24/2013					OK	100.00	94.0	92.0	0	

General Information

Report Numbers (RINs):	14046091
Sample Event:	April 21, 2014
Site(s):	Monument Valley, Arizona
Laboratory:	ALS Laboratory Group, Fort Collins, Colorado
Work Order No.:	1404383
Analysis:	Metals and Wet Chemistry
Validator:	Stephen Donivan
Review Date:	May 12, 2014

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

Table 3. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Ammonia as Nitrogen	WCH-A-005	EPA 350.1	EPA 350.1
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 Qualifier Summary

Sample Number	Location	Analyte(s)	Flag	Reason
1404383-1	0657	Vanadium	J	Serial dilution result
1404383-2	0657 Duplicate	Vanadium	J	Serial dilution result

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received two water samples on April 23, 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 cooler at 2.8 °C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

Detection and Quantitation Limits

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

Laboratory Instrument Calibration

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

Method EPA 350.1, Ammonia as Nitrogen
Calibrations were performed using six calibration standards on April 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 EPA 353.2, Nitrite + Nitrate as Nitrogen
Calibrations were performed using seven calibration standards on April 25, 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 April 29, 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 PQL and all results were within the acceptance range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance

with the analytical procedure. Internal standard recoveries associated with requested analytes were stable and within acceptable ranges.

Method SW-846 9056, Chloride, Sulfate
Calibrations were performed using six calibration standards on April 21, 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 blank and calibration blank results were below the MDLs and PQLs for all analytes with the following exception. Two calibration blank results for sulfate were above the PQL. The samples associated with these blank had sulfate concentrations greater than 10 times the blank.

Inductively Coupled Plasma Interference Check Sample Analysis

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

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) samples are used to measure method performance in the sample matrix. The MS/MSD data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike. 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. The vanadium serial dilution data did not meet the acceptance criteria. The associated sample vanadium results are qualified with a "J" flag as estimated values.

Completeness

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

Chromatography Peak Integration

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

Electronic Data Deliverable (EDD) File

The EDD file arrived on May 12, 2014. 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: 14046091 **Lab Code:** PAR **Validator:** Stephen Donivan **Validation Date:** 05/12/2014

Project: Monument Valley **Analysis Type:** ☑ Metals ☑ General Chem ☐ Rad ☐ Organics

# of Samples: 2 **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	All analyses were completed within the applicable holding times.
☑ Detection Limits	The reported detection limits are equal to or below contract requirements.
☐ Field/Trip Blanks	
☑ Field Duplicates	There was 1 duplicate evaluated.

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 14046091 **Lab Code:** PAR **Date Due:** 04/30/2014

Matrix: Water **Site Code:** MON01 **Date Completed:** 05/02/2014

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	04/29/2014	0.0000	1.0000	OK	OK	OK	107.0			8.0	103.0	1.0	100.0
Uranium	ICP/MS	04/29/2014									12.0			
Vanadium	ICP/MS	04/29/2014	0.0000	1.0000	OK	OK	OK	105.0	105.0	118.0	7.0	97.0	15.0	77.0

SAMPLE MANAGEMENT SYSTEM

Wet Chemistry Data Validation Worksheet

RIN: 14046091 **Lab Code:** PAR **Date Due:** 04/30/2014

Matrix: Water **Site Code:** MON01 **Date Completed:** 05/02/2014

Analyte	Date Analyzed	CALIBRATION				Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	CCV	CCB						
AMMONIA AS N	04/24/2014	0.000	1.0000	OK	OK	OK	107.00	100.0	95.0	5.00	
CHLORIDE	04/24/2014	0.000	1.0000	OK	OK	OK	96.00	95.0	95.0	0	
Nitrate+Nitrite as N	04/25/2014	0.000	1.0000	OK	OK	OK	101.00	77.0	102.0	11.00	
SULFATE	04/24/2014	0.000	1.0000	OK	OK	OK	95.00	97.0	100.0	2.00	

Sampling Quality Control Assessment

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

Sampling Protocol

The surface water location was sampled by container immersion. Location 0764 was sampled using a disposable bailer because the water level was below the pump intake. 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, 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 0623, 0657, 0742, and 0766. The duplicate results met the criteria, demonstrating acceptable overall precision.

SAMPLE MANAGEMENT SYSTEM

Validation Report: Field Duplicates

RIN: 13125794 **Lab Code:** PAR **Project:** Monument Valley **Validation Date:** 02/05/2014

Duplicate: 2079 **Sample:** 0742

Analyte	Sample Result	Sample Flag	Sample Error	Sample Dilution	Duplicate Result	Duplicate Flag	Duplicate Error	Duplicate Dilution	RPD	RER	Units
AMMONIA AS N	88			100	110			100	NA		MG/L
CHLORIDE	21			20	22			20	4.65		MG/L
Nitrate+Nitrite as N	110			100	110			100	0		MG/L
SULFATE	500			20	480			20	4.08		MG/L
Uranium	8.2			5	8.1			1	1.23		UG/L
Vanadium	7.6			5	7.8			1	2.60		UG/L

Duplicate: 2251 **Sample:** 0623

Analyte	Sample Result	Sample Flag	Sample Error	Sample Dilution	Duplicate Result	Duplicate Flag	Duplicate Error	Duplicate Dilution	RPD	RER	Units
AMMONIA AS N	0.1	U		1	0.1	U		1			MG/L
CHLORIDE	19			5	19			5	0		MG/L
Nitrate+Nitrite as N	0.012			1	0.013			1			MG/L
SULFATE	45			5	48			5	6.45		MG/L
Uranium	1.5			1	1.4			1	6.90		UG/L
Vanadium	0.84			1	0.92			1	9.09		UG/L

Duplicate: 2711 **Sample:** 0766

Analyte	Sample Result	Sample Flag	Sample Error	Sample Dilution	Duplicate Result	Duplicate Flag	Duplicate Error	Duplicate Dilution	RPD	RER	Units
AMMONIA AS N	91			100	120			100	NA		MG/L
CHLORIDE	16			20	17			20			MG/L
Nitrate+Nitrite as N	110			100	110			100	0		MG/L
SULFATE	360			20	360			20	0		MG/L
Uranium	8			1	8.6			1	7.23		UG/L
Vanadium	4.3			1	4.6			1	6.74		UG/L

SAMPLE MANAGEMENT SYSTEM

Validation Report: Field Duplicates

RIN: 14046091 **Lab Code:** PAR **Project:** Monument Valley **Validation Date:** 05/12/2014

Duplicate: 2603 **Sample:** 0657

Analyte	Sample Result	Sample Flag	Sample Error	Sample Dilution	Duplicate Result	Duplicate Flag	Duplicate Error	Duplicate Dilution	RPD	RER	Units
AMMONIA AS N	0.1	U		1	0.1	U		1			MG/L
CHLORIDE	7			5	6.5			5	7.41		MG/L
Nitrate+Nitrite as N	3.4			5	3.5			5	2.90		MG/L
SULFATE	70			5	70			5	0		MG/L
Uranium	49			50	52			50	5.94		UG/L
Vanadium	60	E		50	67			50	11.02		UG/L

Certification

All laboratory analytical quality control criteria were met except as qualified in this report. The data qualifiers listed on the 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 Donivan — Stephen Donivan — 5-16-2014 — Date

Data Validation Lead: Stephen Donivan — Stephen Donivan — 5-16-2014 — Date

Attachment 1
Assessment of Anomalous Data

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Potential Outliers Report

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Potential Outliers Report

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

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

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

1. Identify extreme values that may be potential outliers by generating the Outliers Report using the Sample Management System from data in the 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 if the data are normally distributed using the Shapiro-Wilk Test.
2. Apply the appropriate statistical test. Dixon's Extreme Value test is used to test for statistical outliers when the sample size is less than or equal to 25. This test considers both extreme values that are much smaller than the rest of the data (case 1) and extreme values that are much larger than the rest of the data (case 2). This test is valid only if the data without the suspected outlier are normally distributed. Rosner's Test is a parametric test that is used to detect outliers for sample sizes of 25 or more. This test also assumes that the data without the suspected outliers are normally distributed.
3. Scientifically review statistical outliers and decide on their disposition. The review should include an evaluation of any notable trends in the data that may indicate the outliers represent true extreme values.

Four laboratory results were identified as potentially anomalous. These results were identified as potential outliers because of the low variability of the historical data. There were no laboratory data errors indicated from the review of these potential outliers and the data from this event 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 and all field data from this event are acceptable as qualified.

Data Validation Outliers Report - No Field Parameters
Comparison: All Historical Data
Laboratory: ALS Laboratory Group
RIN: 13125794
Report Date: 02/05/2014

					Current			Historical Maximum			Historical Minimum			Number of		Statistical
						Qualifiers			Qualifiers			Qualifiers		Data Points		Outlier
Site Code	Location Code	Sample ID	Sample Date	Analyte	Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
MON01	0402	N001	12/10/2013	Sulfate	13		FQ	23.9		F	14		FQ	14	0	No
MON01	0606	0001	12/12/2013	Ammonia Total as N	69		FQ	140		F	90		FQ	17	0	No
MON01	0606	0001	12/12/2013	Chloride	80		FQ	74		FQ	13		F	53	0	NA
MON01	0623	N001	12/10/2013	Chloride	19			15			4.5			22	0	No
MON01	0650	N001	12/09/2013	Nitrate + Nitrite as Nitrogen	4.6		F	4.5		F	0.53		F	13	0	No
MON01	0656	N001	12/11/2013	Ammonia Total as N	30		F	59		F	40		F	17	0	No
MON01	0656	N001	12/11/2013	Uranium	0.0049		F	0.0117			0.0052		F	30	0	NA
MON01	0662	N001	12/11/2013	Nitrate + Nitrite as Nitrogen	5.3		F	26		F	6.9		F	21	0	No
MON01	0662	N001	12/11/2013	Sulfate	160		F	953			180		F	39	0	No
MON01	0669	N001	12/10/2013	Nitrate + Nitrite as Nitrogen	24		F	23		F	5.5		F	20	0	No
MON01	0711	N001	12/12/2013	Uranium	0.0036		F	0.0042		F	0.00378		F	10	0	No
MON01	0715	N001	12/10/2013	Uranium	0.0026		F	0.0032		F	0.0027		F	10	0	No
MON01	0719	N001	12/10/2013	Sulfate	110		F	130		F	111		F	11	0	No
MON01	0719	N001	12/10/2013	Uranium	0.0034		F	0.00439		F	0.0036		FQ	11	0	No
MON01	0727	N001	12/10/2013	Nitrate + Nitrite as Nitrogen	0.8		F	0.91		F	0.81		F	10	0	No
MON01	0727	N001	12/10/2013	Sulfate	77		F	99		F	79		F	10	0	No
MON01	0727	N001	12/10/2013	Uranium	0.0017		F	0.00209		F	0.0018		F	10	0	Yes

Data Validation Outliers Report - No Field Parameters
Comparison: All Historical Data
Laboratory: ALS Laboratory Group
RIN: 13125794
Report Date: 02/05/2014

					Current			Historical Maximum			Historical Minimum			Number of		Statistical
						Qualifiers			Qualifiers			Qualifiers		Data Points		Outlier
Site Code	Location Code	Sample ID	Sample Date	Analyte	Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
MON01	0733	N001	12/11/2013	Nitrate + Nitrite as Nitrogen	4		F	5.5		F	4.15		F	6	0	No
MON01	0733	N001	12/11/2013	Sulfate	89		F	83		F	56.4		F	6	0	No
MON01	0734	0001	12/11/2013	Nitrate + Nitrite as Nitrogen	2.7		F	5.4		F	2.8		F	6	0	No
MON01	0738	N001	12/10/2013	Sulfate	160		F	190		F	174		F	6	0	No
MON01	0738	N001	12/10/2013	Uranium	0.00025		F	0.00035		F	0.00027		F	6	0	No
MON01	0739	N001	12/09/2013	Ammonia Total as N	0.73		F	0.63		F	0.102		UF	6	1	No
MON01	0739	N001	12/09/2013	Chloride	14		F	20		F	15.4		F	6	0	No
MON01	0739	N001	12/09/2013	Nitrate + Nitrite as Nitrogen	0.87		F	2.2		F	0.99		F	6	0	No
MON01	0739	N001	12/09/2013	Sulfate	150		F	220		F	160		F	6	0	No
MON01	0739	N001	12/09/2013	Uranium	0.0037		F	0.00508		F	0.0039		F	6	0	NA
MON01	0739	N001	12/09/2013	Vanadium	0.011		F	0.0098		F	0.00683	B	FJ	6	0	No
MON01	0740	N001	12/09/2013	Chloride	31		F	44		F	34		F	7	0	No
MON01	0740	N001	12/09/2013	Nitrate + Nitrite as Nitrogen	24		F	23		F	12		F	7	0	No
MON01	0741	0001	12/10/2013	Ammonia Total as N	81		F	120		F	105		F	6	0	Yes
MON01	0741	0001	12/10/2013	Chloride	22		F	21		F	14.6		F	6	0	No
MON01	0741	0001	12/10/2013	Uranium	0.0088		F	0.012		F	0.01		F	6	0	No
MON01	0742	N001	12/10/2013	Ammonia Total as N	88		F	130		F	118		F	6	0	Yes

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: ALS Laboratory Group

RIN: 13125794

Report Date: 02/05/2014

					Current			Historical Maximum			Historical Minimum			Number of		Statistical
						Qualifiers			Qualifiers			Qualifiers		Data Points		Outlier
Site Code	Location Code	Sample ID	Sample Date	Analyte	Result	*Lab*	*Data*	Result	*Lab*	*Data*	Result	*Lab*	*Data*	N	N Below Detect	
MON01	0742	N001	12/10/2013	Uranium	0.0082		F	0.0105		F	0.0091		F	6	0	No
MON01	0744	N001	12/10/2013	Ammonia Total as N	93		F	140		F	120		F	6	0	Yes
MON01	0765	N001	12/10/2013	Ammonia Total as N	93		F	150		F	98		F	17	0	No
MON01	0766	N001	12/10/2013	Ammonia Total as N	91		F	160		FQ	103		F	10	0	No
MON01	0766	N001	12/10/2013	Uranium	0.008		F	0.0193		F	0.01		F	10	0	NA
MON01	0770	N001	12/11/2013	Ammonia Total as N	25		F	40		F	28		F	17	0	No
MON01	0770	N001	12/11/2013	Nitrate + Nitrite as Nitrogen	14		F	23		F	15		F	17	0	No
MON01	0770	N001	12/11/2013	Uranium	0.0049		F	0.0078			0.0052		F	21	0	NA
MON01	0771	0001	12/11/2013	Ammonia Total as N	190		FQ	260		F	210		FQ	17	0	No
MON01	0772	N001	12/12/2013	Ammonia Total as N	0.99		F	7.9		F	1.1		F	21	0	No

STATISTICAL TESTS:
The distribution of the data is tested for normality or lognormality using the Shapiro-Wilk Test
Outliers are identified using Dixon's Test when there are 25 or fewer data points.
Outliers are identified using Rosner's Test when there are 26 or more data points.
See Data Quality Assessment: Statistical Methods for Practitioners, EPA QC/G-9S, February 2006.

NA: Data are not normally or lognormally distributed.

Attachment 2
Data Presentation

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Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0402 WELL Tribal Well No. 08-0643.

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	5.17	-	9.63	0.1	U	FQ	#	0.1	
Chloride	mg/L	12/10/2013	N001	5.17	-	9.63	14		FQ	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	5.17	-	9.63	0.13		FQ	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	5.17	-	9.63	-16.4		FQ	#		
pH	s.u.	12/10/2013	N001	5.17	-	9.63	8.24		FQ	#		
Specific Conductance	umhos /cm	12/10/2013	N001	5.17	-	9.63	534		FQ	#		
Sulfate	mg/L	12/10/2013	N001	5.17	-	9.63	13		FQ	#	0.5	
Temperature	C	12/10/2013	N001	5.17	-	9.63	12.37		FQ	#		
Turbidity	NTU	12/10/2013	N001	5.17	-	9.63	6.37		FQ	#		
Uranium	mg/L	12/10/2013	N001	5.17	-	9.63	0.000011		FQ	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	5.17	-	9.63	0.00029	B	FQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0602 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	19.5	-	29.5	0.1	U	FQ	#	0.1	
Chloride	mg/L	12/10/2013	N001	19.5	-	29.5	13		FQ	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	19.5	-	29.5	0.76		FQ	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	19.5	-	29.5	18.5		FQ	#		
pH	s.u.	12/10/2013	N001	19.5	-	29.5	7.84		FQ	#		
Specific Conductance	umhos /cm	12/10/2013	N001	19.5	-	29.5	624		FQ	#		
Sulfate	mg/L	12/10/2013	N001	19.5	-	29.5	100		FQ	#	2.5	
Temperature	C	12/10/2013	N001	19.5	-	29.5	12.78		FQ	#		
Turbidity	NTU	12/10/2013	N001	19.5	-	29.5	2.68		FQ	#		
Uranium	mg/L	12/10/2013	N001	19.5	-	29.5	0.0032		FQ	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	19.5	-	29.5	0.00086		FQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0603 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/12/2013	N001	43	-	53	0.27		F	#	0.1	
Chloride	mg/L	12/12/2013	N001	43	-	53	12		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/12/2013	N001	43	-	53	0.36		F	#	0.01	
Oxidation Reduction Potential	mV	12/12/2013	N001	43	-	53	0.4		F	#		
pH	s.u.	12/12/2013	N001	43	-	53	7.81		F	#		
Specific Conductance	umhos /cm	12/12/2013	N001	43	-	53	618		F	#		
Sulfate	mg/L	12/12/2013	N001	43	-	53	100		F	#	2.5	
Temperature	C	12/12/2013	N001	43	-	53	14.29		F	#		
Turbidity	NTU	12/12/2013	N001	43	-	53	7.24		F	#		
Uranium	mg/L	12/12/2013	N001	43	-	53	0.0028		F	#	0.0000029	
Vanadium	mg/L	12/12/2013	N001	43	-	53	0.0008		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0604 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	13	-	28	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2013	N001	13	-	28	11		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	13	-	28	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	13	-	28	2.7		F	#		
pH	s.u.	12/10/2013	N001	13	-	28	8.12		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	13	-	28	597		F	#		
Sulfate	mg/L	12/10/2013	N001	13	-	28	100		F	#	2.5	
Temperature	C	12/10/2013	N001	13	-	28	14.62		F	#		
Turbidity	NTU	12/10/2013	N001	13	-	28	4.4		F	#		
Uranium	mg/L	12/10/2013	N001	13	-	28	0.002		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	13	-	28	0.0021		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0605 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	14	-	29	0.38		F	#	0.1	
Chloride	mg/L	12/10/2013	N001	14	-	29	18		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	14	-	29	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	14	-	29	-130.7		F	#		
pH	s.u.	12/10/2013	N001	14	-	29	8.28		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	14	-	29	598		F	#		
Sulfate	mg/L	12/10/2013	N001	14	-	29	110		F	#	2.5	
Temperature	C	12/10/2013	N001	14	-	29	15.48		F	#		
Turbidity	NTU	12/10/2013	N001	14	-	29	4.4		F	#		
Uranium	mg/L	12/10/2013	N001	14	-	29	0.000068		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	14	-	29	0.00029	B	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0606 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/12/2013	0001	32	-	42	69		FQ	#	10	
Chloride	mg/L	12/12/2013	0001	32	-	42	80		FQ	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/12/2013	0001	32	-	42	330		FQ	#	2	
Oxidation Reduction Potential	mV	12/12/2013	N001	32	-	42	66.6		FQ	#		
pH	s.u.	12/12/2013	N001	32	-	42	6.94		FQ	#		
Specific Conductance	umhos /cm	12/12/2013	N001	32	-	42	3918		FQ	#		
Sulfate	mg/L	12/12/2013	0001	32	-	42	720		FQ	#	10	
Temperature	C	12/12/2013	N001	32	-	42	14.49		FQ	#		
Turbidity	NTU	12/12/2013	N001	32	-	42	14.7		FQ	#		
Uranium	mg/L	12/12/2013	0001	32	-	42	0.01		FQ	#	0.0000029	
Vanadium	mg/L	12/12/2013	0001	32	-	42	0.00059		FQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0618 WELL 12" DIA Steel CSG. Old Mill Well??

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	-	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2013	N001	-	3.7		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	-	1		F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	-	17.6		F	#		
pH	s.u.	12/10/2013	N001	-	7.87		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	-	317		F	#		
Sulfate	mg/L	12/10/2013	N001	-	13		F	#	0.5	
Temperature	C	12/10/2013	N001	-	14.84		F	#		
Turbidity	NTU	12/10/2013	N001	-	1.2		F	#		
Uranium	mg/L	12/10/2013	N001	-	0.0043		F	#	0.000029	
Vanadium	mg/L	12/10/2013	N001	-	0.066		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0619 WELL Water Use Permit No. 92-082.

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/11/2013	N001	103.9 - 153.9	0.1	U	F	#	0.1	
Chloride	mg/L	12/11/2013	N001	103.9 - 153.9	5.3		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2013	N001	103.9 - 153.9	0.93		F	#	0.01	
Oxidation Reduction Potential	mV	12/11/2013	N001	103.9 - 153.9	72.5		F	#		
pH	s.u.	12/11/2013	N001	103.9 - 153.9	7.66		F	#		
Specific Conductance	umhos /cm	12/11/2013	N001	103.9 - 153.9	377		F	#		
Sulfate	mg/L	12/11/2013	N001	103.9 - 153.9	29		F	#	0.5	
Temperature	C	12/11/2013	N001	103.9 - 153.9	14.52		F	#		
Turbidity	NTU	12/11/2013	N001	103.9 - 153.9	0.55		F	#		
Uranium	mg/L	12/11/2013	N001	103.9 - 153.9	0.0077		F	#	0.0000029	
Vanadium	mg/L	12/11/2013	N001	103.9 - 153.9	0.019		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0648 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	38.5	-	88.5	1.9		F	#	0.1	
Chloride	mg/L	12/10/2013	N001	38.5	-	88.5	28		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	38.5	-	88.5	85		F	#	1	
Oxidation Reduction Potential	mV	12/10/2013	N001	38.5	-	88.5	168.6		F	#		
pH	s.u.	12/10/2013	N001	38.5	-	88.5	7.51		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	38.5	-	88.5	2666		F	#		
Sulfate	mg/L	12/10/2013	N001	38.5	-	88.5	990		F	#	10	
Temperature	C	12/10/2013	N001	38.5	-	88.5	14.34		F	#		
Turbidity	NTU	12/10/2013	N001	38.5	-	88.5	0.39		F	#		
Uranium	mg/L	12/10/2013	N001	38.5	-	88.5	0.011		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	38.5	-	88.5	0.011		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0650 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/09/2013	N001	77.5	-	97.5	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2013	N001	77.5	-	97.5	20		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2013	N001	77.5	-	97.5	4.6		F	#	0.05	
Oxidation Reduction Potential	mV	12/09/2013	N001	77.5	-	97.5	43.4		F	#		
pH	s.u.	12/09/2013	N001	77.5	-	97.5	8.07		F	#		
Specific Conductance	umhos /cm	12/09/2013	N001	77.5	-	97.5	1091		F	#		
Sulfate	mg/L	12/09/2013	N001	77.5	-	97.5	340		F	#	5	
Temperature	C	12/09/2013	N001	77.5	-	97.5	14.35		F	#		
Turbidity	NTU	12/09/2013	N001	77.5	-	97.5	8.75		F	#		
Uranium	mg/L	12/09/2013	N001	77.5	-	97.5	0.0022		F	#	0.0000029	
Vanadium	mg/L	12/09/2013	N001	77.5	-	97.5	0.003		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0651 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	20	-	80	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2013	N001	20	-	80	12		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	20	-	80	0.16		F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	20	-	80	-35.9		F	#		
pH	s.u.	12/10/2013	N001	20	-	80	8.33		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	20	-	80	641		F	#		
Sulfate	mg/L	12/10/2013	N001	20	-	80	110		F	#	2.5	
Temperature	C	12/10/2013	N001	20	-	80	14.62		F	#		
Turbidity	NTU	12/10/2013	N001	20	-	80	2.21		F	#		
Uranium	mg/L	12/10/2013	N001	20	-	80	0.0021		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	20	-	80	0.011		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0652 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	34	-	54	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2013	N001	34	-	54	15		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	34	-	54	4.8		F	#	0.05	
Oxidation Reduction Potential	mV	12/10/2013	N001	34	-	54	-11.1		F	#		
pH	s.u.	12/10/2013	N001	34	-	54	7.95		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	34	-	54	572		F	#		
Sulfate	mg/L	12/10/2013	N001	34	-	54	64		F	#	2.5	
Temperature	C	12/10/2013	N001	34	-	54	14.85		F	#		
Turbidity	NTU	12/10/2013	N001	34	-	54	1.13		F	#		
Uranium	mg/L	12/10/2013	N001	34	-	54	0.0039		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	34	-	54	0.0084		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0653 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	56	-	76	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2013	N001	56	-	76	25		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	56	-	76	46		F	#	0.5	
Oxidation Reduction Potential	mV	12/10/2013	N001	56	-	76	198.2		F	#		
pH	s.u.	12/10/2013	N001	56	-	76	7.49		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	56	-	76	2412		F	#		
Sulfate	mg/L	12/10/2013	N001	56	-	76	1000		F	#	10	
Temperature	C	12/10/2013	N001	56	-	76	12.71		F	#		
Turbidity	NTU	12/10/2013	N001	56	-	76	0.57		F	#		
Uranium	mg/L	12/10/2013	N001	56	-	76	0.0096		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	56	-	76	0.0082		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0655 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/11/2013	N001	38	-	58	110		F	#	10	
Chloride	mg/L	12/11/2013	N001	38	-	58	20		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2013	N001	38	-	58	180		F	#	2	
Oxidation Reduction Potential	mV	12/11/2013	N001	38	-	58	78.5		F	#		
pH	s.u.	12/11/2013	N001	38	-	58	7.18		F	#		
Specific Conductance	umhos /cm	12/11/2013	N001	38	-	58	3468		F	#		
Sulfate	mg/L	12/11/2013	N001	38	-	58	880		F	#	10	
Temperature	C	12/11/2013	N001	38	-	58	15.42		F	#		
Turbidity	NTU	12/11/2013	N001	38	-	58	2.37		F	#		
Uranium	mg/L	12/11/2013	N001	38	-	58	0.011		F	#	0.0000029	
Vanadium	mg/L	12/11/2013	N001	38	-	58	0.0081		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0656 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/11/2013	N001	38	-	58	30		F	#	2	
Chloride	mg/L	12/11/2013	N001	38	-	58	14		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2013	N001	38	-	58	15		F	#	0.2	
Oxidation Reduction Potential	mV	12/11/2013	N001	38	-	58	61.5		F	#		
pH	s.u.	12/11/2013	N001	38	-	58	7.8		F	#		
Specific Conductance	umhos /cm	12/11/2013	N001	38	-	58	926		F	#		
Sulfate	mg/L	12/11/2013	N001	38	-	58	140		F	#	5	
Temperature	C	12/11/2013	N001	38	-	58	15.01		F	#		
Turbidity	NTU	12/11/2013	N001	38	-	58	1.05		F	#		
Uranium	mg/L	12/11/2013	N001	38	-	58	0.0049		F	#	0.0000029	
Vanadium	mg/L	12/11/2013	N001	38	-	58	0.00069		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 05/13/2014
Location: 0657 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	04/21/2014	N001	121	-	136	0.1	U	F	#	0.1	
Ammonia Total as N	mg/L	04/21/2014	N002	121	-	136	0.1	U	F	#	0.1	
Chloride	mg/L	04/21/2014	N001	121	-	136	7		F	#	1	
Chloride	mg/L	04/21/2014	N002	121	-	136	6.5		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	04/21/2014	N001	121	-	136	3.4		F	#	0.05	
Nitrate + Nitrite as Nitrogen	mg/L	04/21/2014	N002	121	-	136	3.5		F	#	0.05	
Oxidation Reduction Potential	mV	04/21/2014	N001	121	-	136	98.8		F	#		
pH	s.u.	04/21/2014	N001	121	-	136	7.63		F	#		
Specific Conductance	umhos /cm	04/21/2014	N001	121	-	136	466		F	#		
Sulfate	mg/L	04/21/2014	N001	121	-	136	70		F	#	2.5	
Sulfate	mg/L	04/21/2014	N002	121	-	136	70		F	#	2.5	
Temperature	C	04/21/2014	N001	121	-	136	17.72		F	#		
Turbidity	NTU	04/21/2014	N001	121	-	136	1.22		F	#		
Uranium	mg/L	04/21/2014	N001	121	-	136	0.049		F	#	0.00015	
Uranium	mg/L	04/21/2014	N002	121	-	136	0.052		F	#	0.00015	
Vanadium	mg/L	04/21/2014	N001	121	-	136	0.06	E	FJ	#	0.00076	
Vanadium	mg/L	04/21/2014	N002	121	-	136	0.067		FJ	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0662 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/11/2013	N001	37.5	-	67.5	0.1	U	F	#	0.1	
Chloride	mg/L	12/11/2013	N001	37.5	-	67.5	8.9		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2013	N001	37.5	-	67.5	5.3		F	#	0.05	
Oxidation Reduction Potential	mV	12/11/2013	N001	37.5	-	67.5	58.7		F	#		
pH	s.u.	12/11/2013	N001	37.5	-	67.5	7.5		F	#		
Specific Conductance	umhos /cm	12/11/2013	N001	37.5	-	67.5	721		F	#		
Sulfate	mg/L	12/11/2013	N001	37.5	-	67.5	160		F	#	2.5	
Temperature	C	12/11/2013	N001	37.5	-	67.5	15.58		F	#		
Turbidity	NTU	12/11/2013	N001	37.5	-	67.5	0.88		F	#		
Uranium	mg/L	12/11/2013	N001	37.5	-	67.5	0.15		F	#	0.000029	
Vanadium	mg/L	12/11/2013	N001	37.5	-	67.5	0.032		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0669 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	34	-	54	4.4		F	#	0.1	
Chloride	mg/L	12/10/2013	N001	34	-	54	7.7		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	34	-	54	24		F	#	0.2	
Oxidation Reduction Potential	mV	12/10/2013	N001	34	-	54	28.9		F	#		
pH	s.u.	12/10/2013	N001	34	-	54	7.52		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	34	-	54	797		F	#		
Sulfate	mg/L	12/10/2013	N001	34	-	54	110		F	#	2.5	
Temperature	C	12/10/2013	N001	34	-	54	14.4		F	#		
Turbidity	NTU	12/10/2013	N001	34	-	54	0.77		F	#		
Uranium	mg/L	12/10/2013	N001	34	-	54	0.0064		F	#	0.000029	
Vanadium	mg/L	12/10/2013	N001	34	-	54	0.05		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0711 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/12/2013	N001	25.5	-	30.5	0.1	U	F	#	0.1	
Chloride	mg/L	12/12/2013	N001	25.5	-	30.5	14		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/12/2013	N001	25.5	-	30.5	0.54		F	#	0.01	
Oxidation Reduction Potential	mV	12/12/2013	N001	25.5	-	30.5	57.7		F	#		
pH	s.u.	12/12/2013	N001	25.5	-	30.5	7.76		F	#		
Specific Conductance	umhos /cm	12/12/2013	N001	25.5	-	30.5	670		F	#		
Sulfate	mg/L	12/12/2013	N001	25.5	-	30.5	120		F	#	2.5	
Temperature	C	12/12/2013	N001	25.5	-	30.5	11.69		F	#		
Turbidity	NTU	12/12/2013	N001	25.5	-	30.5	5.68		F	#		
Uranium	mg/L	12/12/2013	N001	25.5	-	30.5	0.0036		F	#	0.0000029	
Vanadium	mg/L	12/12/2013	N001	25.5	-	30.5	0.0015		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0715 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	16	-	21	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2013	N001	16	-	21	9.5		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	16	-	21	0.74		F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	16	-	21	13.8		F	#		
pH	s.u.	12/10/2013	N001	16	-	21	7.91		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	16	-	21	523		F	#		
Sulfate	mg/L	12/10/2013	N001	16	-	21	67		F	#	2.5	
Temperature	C	12/10/2013	N001	16	-	21	14.48		F	#		
Turbidity	NTU	12/10/2013	N001	16	-	21	3.04		F	#		
Uranium	mg/L	12/10/2013	N001	16	-	21	0.0026		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	16	-	21	0.00093		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0719 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	19.35 - 24.35	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2013	N001	19.35 - 24.35	14		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	19.35 - 24.35	0.77		F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	19.35 - 24.35	-2.7		F	#		
pH	s.u.	12/10/2013	N001	19.35 - 24.35	7.77		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	19.35 - 24.35	696		F	#		
Sulfate	mg/L	12/10/2013	N001	19.35 - 24.35	110		F	#	2.5	
Temperature	C	12/10/2013	N001	19.35 - 24.35	14.74		F	#		
Turbidity	NTU	12/10/2013	N001	19.35 - 24.35	1.61		F	#		
Uranium	mg/L	12/10/2013	N001	19.35 - 24.35	0.0034		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	19.35 - 24.35	0.0043		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0727 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	23.73 - 28.78	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2013	N001	23.73 - 28.78	9.5		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	23.73 - 28.78	0.8		F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	23.73 - 28.78	-33		F	#		
pH	s.u.	12/10/2013	N001	23.73 - 28.78	7.89		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	23.73 - 28.78	544		F	#		
Sulfate	mg/L	12/10/2013	N001	23.73 - 28.78	77		F	#	2.5	
Temperature	C	12/10/2013	N001	23.73 - 28.78	14.87		F	#		
Turbidity	NTU	12/10/2013	N001	23.73 - 28.78	8.19		F	#		
Uranium	mg/L	12/10/2013	N001	23.73 - 28.78	0.0017		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	23.73 - 28.78	0.0029		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0733 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/11/2013	N001	49	-	54	0.1	U	F	#	0.1	
Chloride	mg/L	12/11/2013	N001	49	-	54	6.6		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2013	N001	49	-	54	4		F	#	0.05	
Oxidation Reduction Potential	mV	12/11/2013	N001	49	-	54	56.7		F	#		
pH	s.u.	12/11/2013	N001	49	-	54	7.59		F	#		
Specific Conductance	umhos /cm	12/11/2013	N001	49	-	54	585		F	#		
Sulfate	mg/L	12/11/2013	N001	49	-	54	89		F	#	2.5	
Temperature	C	12/11/2013	N001	49	-	54	14.72		F	#		
Turbidity	NTU	12/11/2013	N001	49	-	54	9.74		F	#		
Uranium	mg/L	12/11/2013	N001	49	-	54	0.0057		F	#	0.000029	
Vanadium	mg/L	12/11/2013	N001	49	-	54	0.051		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0734 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/11/2013	0001	50	-	80	0.1	U	F	#	0.1	
Chloride	mg/L	12/11/2013	0001	50	-	80	5.7		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2013	0001	50	-	80	2.7		F	#	0.02	
Oxidation Reduction Potential	mV	12/11/2013	N001	50	-	80	53.5		F	#		
pH	s.u.	12/11/2013	N001	50	-	80	7.69		F	#		
Specific Conductance	umhos /cm	12/11/2013	N001	50	-	80	504		F	#		
Sulfate	mg/L	12/11/2013	0001	50	-	80	78		F	#	0.5	
Temperature	C	12/11/2013	N001	50	-	80	14.27		F	#		
Turbidity	NTU	12/11/2013	N001	50	-	80	23.2		F	#		
Uranium	mg/L	12/11/2013	0001	50	-	80	0.15		F	#	0.000029	
Vanadium	mg/L	12/11/2013	0001	50	-	80	0.021		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0738 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	26	-	31	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2013	N001	26	-	31	14		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	26	-	31	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	26	-	31	-42.1		F	#		
pH	s.u.	12/10/2013	N001	26	-	31	8.2		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	26	-	31	761		F	#		
Sulfate	mg/L	12/10/2013	N001	26	-	31	160		F	#	2.5	
Temperature	C	12/10/2013	N001	26	-	31	13.69		F	#		
Turbidity	NTU	12/10/2013	N001	26	-	31	9.28		F	#		
Uranium	mg/L	12/10/2013	N001	26	-	31	0.00025		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	26	-	31	0.00091		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0739 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/09/2013	N001	33	-	38	0.73		F	#	0.1	
Chloride	mg/L	12/09/2013	N001	33	-	38	14		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2013	N001	33	-	38	0.87		F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2013	N001	33	-	38	9		F	#		
pH	s.u.	12/09/2013	N001	33	-	38	8.1		F	#		
Specific Conductance	umhos /cm	12/09/2013	N001	33	-	38	766		F	#		
Sulfate	mg/L	12/09/2013	N001	33	-	38	150		F	#	2.5	
Temperature	C	12/09/2013	N001	33	-	38	13.86		F	#		
Turbidity	NTU	12/09/2013	N001	33	-	38	9.24		F	#		
Uranium	mg/L	12/09/2013	N001	33	-	38	0.0037		F	#	0.000029	
Vanadium	mg/L	12/09/2013	N001	33	-	38	0.011		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0740 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/09/2013	N001	30	-	35	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2013	N001	30	-	35	31		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2013	N001	30	-	35	24		F	#	0.2	
Oxidation Reduction Potential	mV	12/09/2013	N001	30	-	35	71.2		F	#		
pH	s.u.	12/09/2013	N001	30	-	35	7.58		F	#		
Specific Conductance	umhos /cm	12/09/2013	N001	30	-	35	2456		F	#		
Sulfate	mg/L	12/09/2013	N001	30	-	35	1200		F	#	10	
Temperature	C	12/09/2013	N001	30	-	35	13.41		F	#		
Turbidity	NTU	12/09/2013	N001	30	-	35	4.04		F	#		
Uranium	mg/L	12/09/2013	N001	30	-	35	0.022		F	#	0.000029	
Vanadium	mg/L	12/09/2013	N001	30	-	35	0.021		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0741 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	0001	50	-	80	81		F	#	10	
Chloride	mg/L	12/10/2013	0001	50	-	80	22		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	0001	50	-	80	110		F	#	1	
Oxidation Reduction Potential	mV	12/10/2013	N001	50	-	80	77.6		F	#		
pH	s.u.	12/10/2013	N001	50	-	80	7.42		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	50	-	80	2336		F	#		
Sulfate	mg/L	12/10/2013	0001	50	-	80	490		F	#	10	
Temperature	C	12/10/2013	N001	50	-	80	12.65		F	#		
Turbidity	NTU	12/10/2013	N001	50	-	80	580		F	#		
Uranium	mg/L	12/10/2013	0001	50	-	80	0.0088		F	#	0.000015	
Vanadium	mg/L	12/10/2013	0001	50	-	80	0.007		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0742 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	50	-	80	88		F	#	10	
Ammonia Total as N	mg/L	12/10/2013	N002	50	-	80	110		F	#	10	
Chloride	mg/L	12/10/2013	N001	50	-	80	21		F	#	4	
Chloride	mg/L	12/10/2013	N002	50	-	80	22		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	50	-	80	110		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N002	50	-	80	110		F	#	1	
Oxidation Reduction Potential	mV	12/10/2013	N001	50	-	80	68.1		F	#		
pH	s.u.	12/10/2013	N001	50	-	80	7.36		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	50	-	80	2366		F	#		
Sulfate	mg/L	12/10/2013	N001	50	-	80	500		F	#	10	
Sulfate	mg/L	12/10/2013	N002	50	-	80	480		F	#	10	
Temperature	C	12/10/2013	N001	50	-	80	13.79		F	#		
Turbidity	NTU	12/10/2013	N001	50	-	80	8.27		F	#		
Uranium	mg/L	12/10/2013	N001	50	-	80	0.0082		F	#	0.000015	
Uranium	mg/L	12/10/2013	N002	50	-	80	0.0081		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	50	-	80	0.0076		F	#	0.000076	
Vanadium	mg/L	12/10/2013	N002	50	-	80	0.0078		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0743 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	45	-	75	70		F	#	10	
Chloride	mg/L	12/10/2013	N001	45	-	75	19		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	45	-	75	53		F	#	1	
Oxidation Reduction Potential	mV	12/10/2013	N001	45	-	75	33.4		F	#		
pH	s.u.	12/10/2013	N001	45	-	75	7.45		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	45	-	75	2153		F	#		
Sulfate	mg/L	12/10/2013	N001	45	-	75	410		F	#	10	
Temperature	C	12/10/2013	N001	45	-	75	14.3		F	#		
Turbidity	NTU	12/10/2013	N001	45	-	75	9.76		F	#		
Uranium	mg/L	12/10/2013	N001	45	-	75	0.015		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	45	-	75	0.0043		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0744 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	31	-	61	93		F	#	10	
Chloride	mg/L	12/10/2013	N001	31	-	61	19		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	31	-	61	160		F	#	1	
Oxidation Reduction Potential	mV	12/10/2013	N001	31	-	61	61.9		F	#		
pH	s.u.	12/10/2013	N001	31	-	61	7.27		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	31	-	61	2617		F	#		
Sulfate	mg/L	12/10/2013	N001	31	-	61	430		F	#	10	
Temperature	C	12/10/2013	N001	31	-	61	14.35		F	#		
Turbidity	NTU	12/10/2013	N001	31	-	61	9.79		F	#		
Uranium	mg/L	12/10/2013	N001	31	-	61	0.0095		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	31	-	61	0.0079		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0760 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	0001	55	-	75	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2013	0001	55	-	75	10		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	0001	55	-	75	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	55	-	75	-98.7		F	#		
pH	s.u.	12/10/2013	N001	55	-	75	8.24		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	55	-	75	524		F	#		
Sulfate	mg/L	12/10/2013	0001	55	-	75	86		F	#	0.5	
Temperature	C	12/10/2013	N001	55	-	75	14.6		F	#		
Turbidity	NTU	12/10/2013	N001	55	-	75	41		F	#		
Uranium	mg/L	12/10/2013	0001	55	-	75	0.00021		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	0001	55	-	75	0.00032		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0761 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/09/2013	N001	39	-	49	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2013	N001	39	-	49	14		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2013	N001	39	-	49	30		F	#	0.2	
Oxidation Reduction Potential	mV	12/09/2013	N001	39	-	49	98.8		F	#		
pH	s.u.	12/09/2013	N001	39	-	49	7.35		F	#		
Specific Conductance	umhos /cm	12/09/2013	N001	39	-	49	1349		F	#		
Sulfate	mg/L	12/09/2013	N001	39	-	49	420		F	#	5	
Temperature	C	12/09/2013	N001	39	-	49	15.55		F	#		
Turbidity	NTU	12/09/2013	N001	39	-	49	3.85		F	#		
Uranium	mg/L	12/09/2013	N001	39	-	49	0.026		F	#	0.0000029	
Vanadium	mg/L	12/09/2013	N001	39	-	49	0.0023		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0762 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/09/2013	N001	29	-	49	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2013	N001	29	-	49	65		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2013	N001	29	-	49	100		F	#	1	
Oxidation Reduction Potential	mV	12/09/2013	N001	29	-	49	43		F	#		
pH	s.u.	12/09/2013	N001	29	-	49	7.5		F	#		
Specific Conductance	umhos /cm	12/09/2013	N001	29	-	49	3782		F	#		
Sulfate	mg/L	12/09/2013	N001	29	-	49	1500		F	#	10	
Temperature	C	12/09/2013	N001	29	-	49	14.15		F	#		
Turbidity	NTU	12/09/2013	N001	29	-	49	8.4		F	#		
Uranium	mg/L	12/09/2013	N001	29	-	49	0.011		F	#	0.0000029	
Vanadium	mg/L	12/09/2013	N001	29	-	49	0.0078		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0764 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/11/2013	0001	47	-	52	0.1	U		#	0.1	
Chloride	mg/L	12/11/2013	0001	47	-	52	11			#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2013	0001	47	-	52	36			#	0.5	
Oxidation Reduction Potential	mV	12/11/2013	N001	47	-	52	183.8			#		
pH	s.u.	12/11/2013	N001	47	-	52	7.69			#		
Specific Conductance	umhos /cm	12/11/2013	N001	47	-	52	1216			#		
Sulfate	mg/L	12/11/2013	0001	47	-	52	220			#	5	
Temperature	C	12/11/2013	N001	47	-	52	8.9			#		
Turbidity	NTU	12/11/2013	N001	47	-	52	83.9			#		
Uranium	mg/L	12/11/2013	0001	47	-	52	0.011			#	0.0000029	
Vanadium	mg/L	12/11/2013	0001	47	-	52	0.015			#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0765 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	58.6	-	88.7	93		F	#	10	
Chloride	mg/L	12/10/2013	N001	58.6	-	88.7	22		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	58.6	-	88.7	63		F	#	0.5	
Oxidation Reduction Potential	mV	12/10/2013	N001	58.6	-	88.7	-.8		F	#		
pH	s.u.	12/10/2013	N001	58.6	-	88.7	7.3		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	58.6	-	88.7	2175		F	#		
Sulfate	mg/L	12/10/2013	N001	58.6	-	88.7	530		F	#	10	
Temperature	C	12/10/2013	N001	58.6	-	88.7	12.48		F	#		
Turbidity	NTU	12/10/2013	N001	58.6	-	88.7	1.33		F	#		
Uranium	mg/L	12/10/2013	N001	58.6	-	88.7	0.0091		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	58.6	-	88.7	0.0031		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0766 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	47.2	-	57.2	91		F	#	10	
Ammonia Total as N	mg/L	12/10/2013	N002	47.2	-	57.2	120		F	#	10	
Chloride	mg/L	12/10/2013	N001	47.2	-	57.2	16		F	#	4	
Chloride	mg/L	12/10/2013	N002	47.2	-	57.2	17		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	47.2	-	57.2	110		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N002	47.2	-	57.2	110		F	#	1	
Oxidation Reduction Potential	mV	12/10/2013	N001	47.2	-	57.2	47.8		F	#		
pH	s.u.	12/10/2013	N001	47.2	-	57.2	7.5		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	47.2	-	57.2	2235		F	#		
Sulfate	mg/L	12/10/2013	N001	47.2	-	57.2	360		F	#	10	
Sulfate	mg/L	12/10/2013	N002	47.2	-	57.2	360		F	#	10	
Temperature	C	12/10/2013	N001	47.2	-	57.2	15.26		F	#		
Turbidity	NTU	12/10/2013	N001	47.2	-	57.2	4.42		F	#		
Uranium	mg/L	12/10/2013	N001	47.2	-	57.2	0.008		F	#	0.0000029	
Uranium	mg/L	12/10/2013	N002	47.2	-	57.2	0.0086		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	47.2	-	57.2	0.0043		F	#	0.000015	
Vanadium	mg/L	12/10/2013	N002	47.2	-	57.2	0.0046		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0767 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	43.5	-	63.5	0.1		F	#	0.1	
Chloride	mg/L	12/10/2013	N001	43.5	-	63.5	5.7		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	43.5	-	63.5	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	43.5	-	63.5	-84.6		F	#		
pH	s.u.	12/10/2013	N001	43.5	-	63.5	8		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	43.5	-	63.5	411		F	#		
Sulfate	mg/L	12/10/2013	N001	43.5	-	63.5	33		F	#	0.5	
Temperature	C	12/10/2013	N001	43.5	-	63.5	14.03		F	#		
Turbidity	NTU	12/10/2013	N001	43.5	-	63.5	0.77		F	#		
Uranium	mg/L	12/10/2013	N001	43.5	-	63.5	0.00066		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	43.5	-	63.5	0.00036		UF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0768 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	24.4	-	44.4	0.46		F	#	0.1	
Chloride	mg/L	12/10/2013	N001	24.4	-	44.4	12		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	24.4	-	44.4	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	24.4	-	44.4	-159.7		F	#		
pH	s.u.	12/10/2013	N001	24.4	-	44.4	8.23		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	24.4	-	44.4	477		F	#		
Sulfate	mg/L	12/10/2013	N001	24.4	-	44.4	64		F	#	0.5	
Temperature	C	12/10/2013	N001	24.4	-	44.4	13.84		F	#		
Turbidity	NTU	12/10/2013	N001	24.4	-	44.4	5.96		F	#		
Uranium	mg/L	12/10/2013	N001	24.4	-	44.4	0.000039		F	#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	24.4	-	44.4	0.00052		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0770 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/11/2013	N001	54.9 - 64.9	25		F	#	2	
Chloride	mg/L	12/11/2013	N001	54.9 - 64.9	16		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2013	N001	54.9 - 64.9	14		F	#	0.1	
Oxidation Reduction Potential	mV	12/11/2013	N001	54.9 - 64.9	63.7		F	#		
pH	s.u.	12/11/2013	N001	54.9 - 64.9	7.59		F	#		
Specific Conductance	umhos /cm	12/11/2013	N001	54.9 - 64.9	983		F	#		
Sulfate	mg/L	12/11/2013	N001	54.9 - 64.9	180		F	#	5	
Temperature	C	12/11/2013	N001	54.9 - 64.9	15.47		F	#		
Turbidity	NTU	12/11/2013	N001	54.9 - 64.9	2.32		F	#		
Uranium	mg/L	12/11/2013	N001	54.9 - 64.9	0.0049		F	#	0.0000029	
Vanadium	mg/L	12/11/2013	N001	54.9 - 64.9	0.0009		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0771 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/11/2013	0001	57.4	-	77.4	190		FQ	#	10	
Chloride	mg/L	12/11/2013	0001	57.4	-	77.4	19		FQ	#	5	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2013	0001	57.4	-	77.4	200		FQ	#	2	
Oxidation Reduction Potential	mV	12/11/2013	N001	57.4	-	77.4	74.9		FQ	#		
pH	s.u.	12/11/2013	N001	57.4	-	77.4	7.22		FQ	#		
Specific Conductance	umhos /cm	12/11/2013	N001	57.4	-	77.4	4391		FQ	#		
Sulfate	mg/L	12/11/2013	0001	57.4	-	77.4	1400		FQ	#	12	
Temperature	C	12/11/2013	N001	57.4	-	77.4	13.14		FQ	#		
Turbidity	NTU	12/11/2013	N001	57.4	-	77.4	17.2		FQ	#		
Uranium	mg/L	12/11/2013	0001	57.4	-	77.4	0.013		FQ	#	0.0000029	
Vanadium	mg/L	12/11/2013	0001	57.4	-	77.4	0.0079		FQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0772 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/12/2013	N001	7.4	-	27.4	0.99		F	#	0.1	
Chloride	mg/L	12/12/2013	N001	7.4	-	27.4	16		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/12/2013	N001	7.4	-	27.4	1.7		F	#	0.01	
Oxidation Reduction Potential	mV	12/12/2013	N001	7.4	-	27.4	33.9		F	#		
pH	s.u.	12/12/2013	N001	7.4	-	27.4	7.71		F	#		
Specific Conductance	umhos /cm	12/12/2013	N001	7.4	-	27.4	766		F	#		
Sulfate	mg/L	12/12/2013	N001	7.4	-	27.4	120		F	#	2.5	
Temperature	C	12/12/2013	N001	7.4	-	27.4	15.01		F	#		
Turbidity	NTU	12/12/2013	N001	7.4	-	27.4	6.14		F	#		
Uranium	mg/L	12/12/2013	N001	7.4	-	27.4	0.0074		F	#	0.000029	
Vanadium	mg/L	12/12/2013	N001	7.4	-	27.4	0.028		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0774 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	0001	45	-	55	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2013	0001	45	-	55	5.1		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	0001	45	-	55	1.5		F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	45	-	55	21		F	#		
pH	s.u.	12/10/2013	N001	45	-	55	7.83		F	#		
Specific Conductance	umhos /cm	12/10/2013	N001	45	-	55	383		F	#		
Sulfate	mg/L	12/10/2013	0001	45	-	55	33		F	#	0.5	
Temperature	C	12/10/2013	N001	45	-	55	14.7		F	#		
Turbidity	NTU	12/10/2013	N001	45	-	55	23.9		F	#		
Uranium	mg/L	12/10/2013	0001	45	-	55	0.028		F	#	0.000029	
Vanadium	mg/L	12/10/2013	0001	45	-	55	0.02		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0775 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/11/2013	N001	142	-	167	0.1	U	F	#	0.1	
Chloride	mg/L	12/11/2013	N001	142	-	167	5.8		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2013	N001	142	-	167	0.62		F	#	0.01	
Oxidation Reduction Potential	mV	12/11/2013	N001	142	-	167	41.2		F	#		
pH	s.u.	12/11/2013	N001	142	-	167	7.77		F	#		
Specific Conductance	umhos /cm	12/11/2013	N001	142	-	167	386		F	#		
Sulfate	mg/L	12/11/2013	N001	142	-	167	25		F	#	0.5	
Temperature	C	12/11/2013	N001	142	-	167	14.91		F	#		
Turbidity	NTU	12/11/2013	N001	142	-	167	0.39		F	#		
Uranium	mg/L	12/11/2013	N001	142	-	167	0.0026		F	#	0.0000029	
Vanadium	mg/L	12/11/2013	N001	142	-	167	0.00091		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0776 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/11/2013	N001	99.5	-	149.5	0.1	U	F	#	0.1	
Chloride	mg/L	12/11/2013	N001	99.5	-	149.5	6		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/11/2013	N001	99.5	-	149.5	0.88		F	#	0.01	
Oxidation Reduction Potential	mV	12/11/2013	N001	99.5	-	149.5	46.8		F	#		
pH	s.u.	12/11/2013	N001	99.5	-	149.5	7.85		F	#		
Specific Conductance	umhos /cm	12/11/2013	N001	99.5	-	149.5	399		F	#		
Sulfate	mg/L	12/11/2013	N001	99.5	-	149.5	34		F	#	0.5	
Temperature	C	12/11/2013	N001	99.5	-	149.5	15.74		F	#		
Turbidity	NTU	12/11/2013	N001	99.5	-	149.5	9.57		F	#		
Uranium	mg/L	12/11/2013	N001	99.5	-	149.5	0.0068		F	#	0.0000029	
Vanadium	mg/L	12/11/2013	N001	99.5	-	149.5	0.016		F	#	0.000015	

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

LAB QUALIFIERS:

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

DATA QUALIFIERS:

F	Low flow sampling method used.	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.

Surface Water Quality Data

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Surface Water Quality Data by Location (USEE102) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014
Location: 0623 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	12/10/2013	N001	0.1	U		#	0.1	
Ammonia Total as N	mg/L	12/10/2013	N002	0.1	U		#	0.1	
Chloride	mg/L	12/10/2013	N001	19			#	1	
Chloride	mg/L	12/10/2013	N002	19			#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N001	0.012			#	0.01	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2013	N002	0.013			#	0.01	
Oxidation Reduction Potential	mV	12/10/2013	N001	8.1			#		
pH	s.u.	12/10/2013	N001	7.95			#		
Specific Conductance	umhos/cm	12/10/2013	N001	731			#		
Sulfate	mg/L	12/10/2013	N001	45			#	2.5	
Sulfate	mg/L	12/10/2013	N002	48			#	2.5	
Temperature	C	12/10/2013	N001	4.05			#		
Turbidity	NTU	12/10/2013	N001	5.51			#		
Uranium	mg/L	12/10/2013	N001	0.0015			#	0.0000029	
Uranium	mg/L	12/10/2013	N002	0.0014			#	0.0000029	
Vanadium	mg/L	12/10/2013	N001	0.00084			#	0.000015	
Vanadium	mg/L	12/10/2013	N002	0.00092			#	0.000015	

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

LAB QUALIFIERS:

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

DATA QUALIFIERS:

F	Low flow sampling method used.	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.

Static Water Level Data

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STATIC WATER LEVELS (USEE700) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)
0402	U	4840.3	12/10/2013	14:35:14	4.69	4835.61
0602	U	4864.43	12/10/2013	17:14:30	9.65	4854.78
0603	U	4849.41	12/12/2013	10:29:07	11.32	4838.09
0604	C	4840.42	12/10/2013	15:28:29	9.33	4831.09
0605	C	4835.07	12/10/2013	13:45:27	11.18	4823.89
0606	D	4864.73	12/12/2013	10:58:06	36.78	4827.95
0618	O	4924.81	12/10/2013	16:05:22	94.21	4830.6
0619	O	4888.63	12/11/2013	09:40:11	59.01	4829.62
0648	N	4835.14	12/10/2013	10:00:05	35.3	4799.84
0650	D	4794.28	12/09/2013	16:05:58	20.71	4773.57
0651	C	4787.88	12/10/2013	12:45:08	7.93	4779.95
0652	C	4808.93	12/10/2013	13:10:32	19.22	4789.71
0653	D	4837.08	12/10/2013	09:45:01	37.14	4799.94
0655	D	4862.06	12/11/2013	15:58:48	41.02	4821.04
0656	D	4856.33	12/11/2013	15:22:10	37.7	4818.63
0657	O	4878.99	12/11/2013	11:53:54	51.38	4827.61
0662	D	4878.56	12/11/2013	11:28:35	50.75	4827.81
0669	D	4867.19	12/10/2013	14:53:29	51.13	4816.06
0711		NA	12/12/2013	10:01:31	11.48	NA
0715		NA	12/10/2013	16:57:58	11.03	NA
0719		NA	12/10/2013	16:32:18	12.47	NA
0727		NA	12/10/2013	16:04:17	14.47	NA
0733		4875.16	12/11/2013	13:20:45	49.83	4825.33
0734		4877.97	12/11/2013	13:48:20	51.6	4826.37
0738		4810.86	12/10/2013	11:40:06	17.05	4793.81
0739		4823.58	12/09/2013	16:25:46	23.34	4800.24
0740		4810.28	12/09/2013	15:35:17	27.84	4782.44
0741		4846.98	12/10/2013	10:37:27	36.93	4810.05

STATIC WATER LEVELS (USEE700) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 02/06/2014

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)
0742		4847.02	12/10/2013	11:05:10	37.05	4809.97
0743		4846.92	12/10/2013	12:44:25	36.58	4810.34
0744		4847.19	12/10/2013	11:32:31	36.98	4810.21
0760	D	4814.8	12/10/2013	12:05:58	26.51	4788.29
0761	D	4835.02	12/09/2013	15:10:22	44.69	4790.33
0762	D	4820.74	12/09/2013	17:00:22	33.59	4787.15
0764	D	4851.53	12/11/2013	10:00:40	51.35	4800.18
0765	D	4848.45	12/10/2013	14:04:51	36.67	4811.78
0766	D	4847.97	12/10/2013	13:21:14	37.24	4810.73
0767	D	4808.25	12/10/2013	11:15:37	7.49	4800.76
0768	D	4820.73	12/10/2013	10:45:59	15.11	4805.62
0770	D	4857.26	12/11/2013	15:05:50	33.97	4823.29
0771	D	4863.26	12/11/2013	16:36:29	42.98	4820.28
0772	O	4847.6	12/12/2013	11:26:50	12.1	4835.5
0774	O	4880.14	12/10/2013	17:15:54	50.62	4829.52
0774	O	4880.14	12/11/2013	11:09:38	50.74	4829.4
0775	D	4879.68	12/11/2013	14:30:24	51.05	4828.63
0776	O	4883.33	12/11/2013	10:41:59	54.65	4828.68

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

Time-Concentration Graphs

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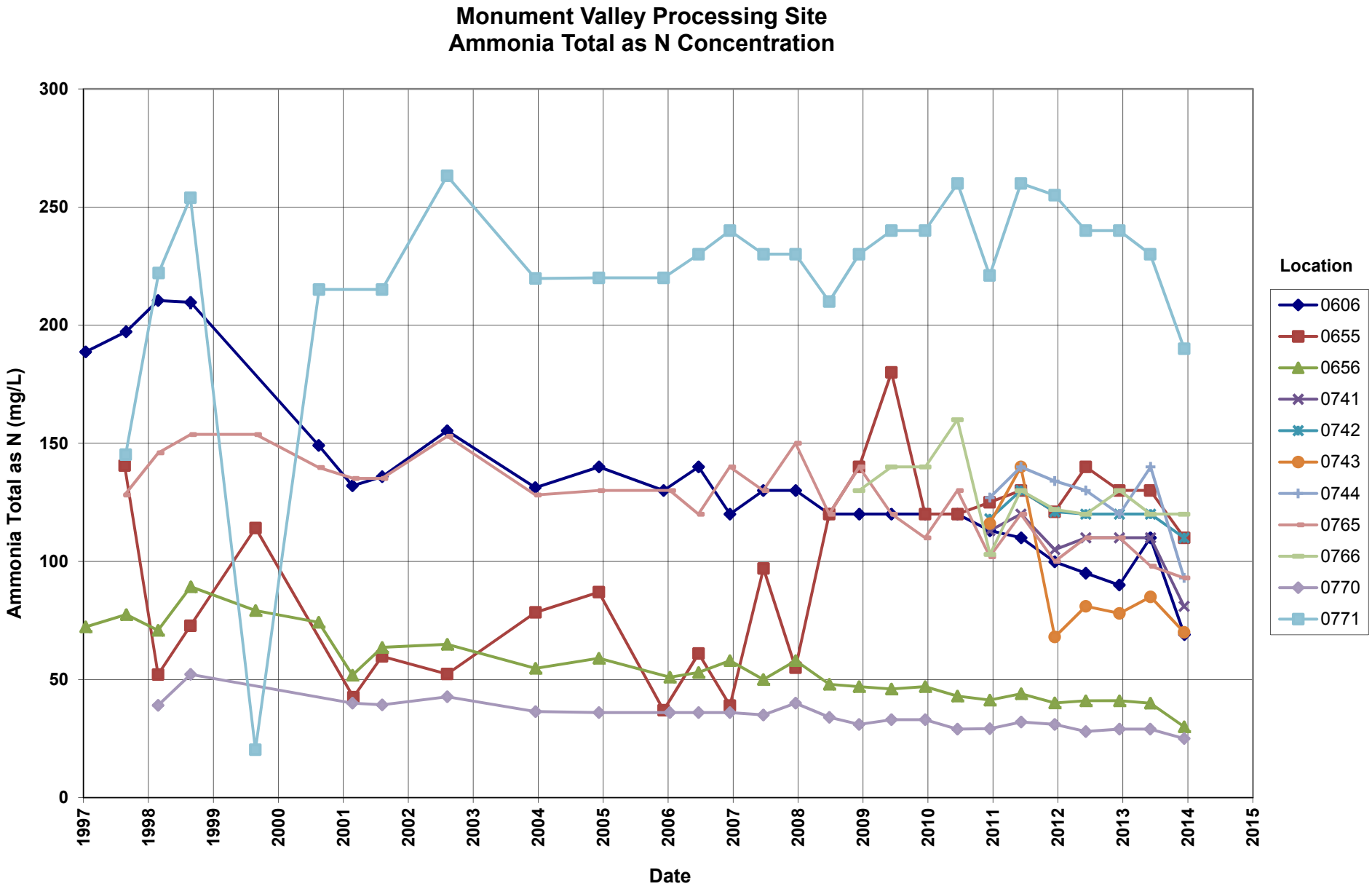
Monument Valley Processing Site
Ammonia Total as N Concentration
Ammonia Total as N (mg/L)
300
250
200
150
100
50
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
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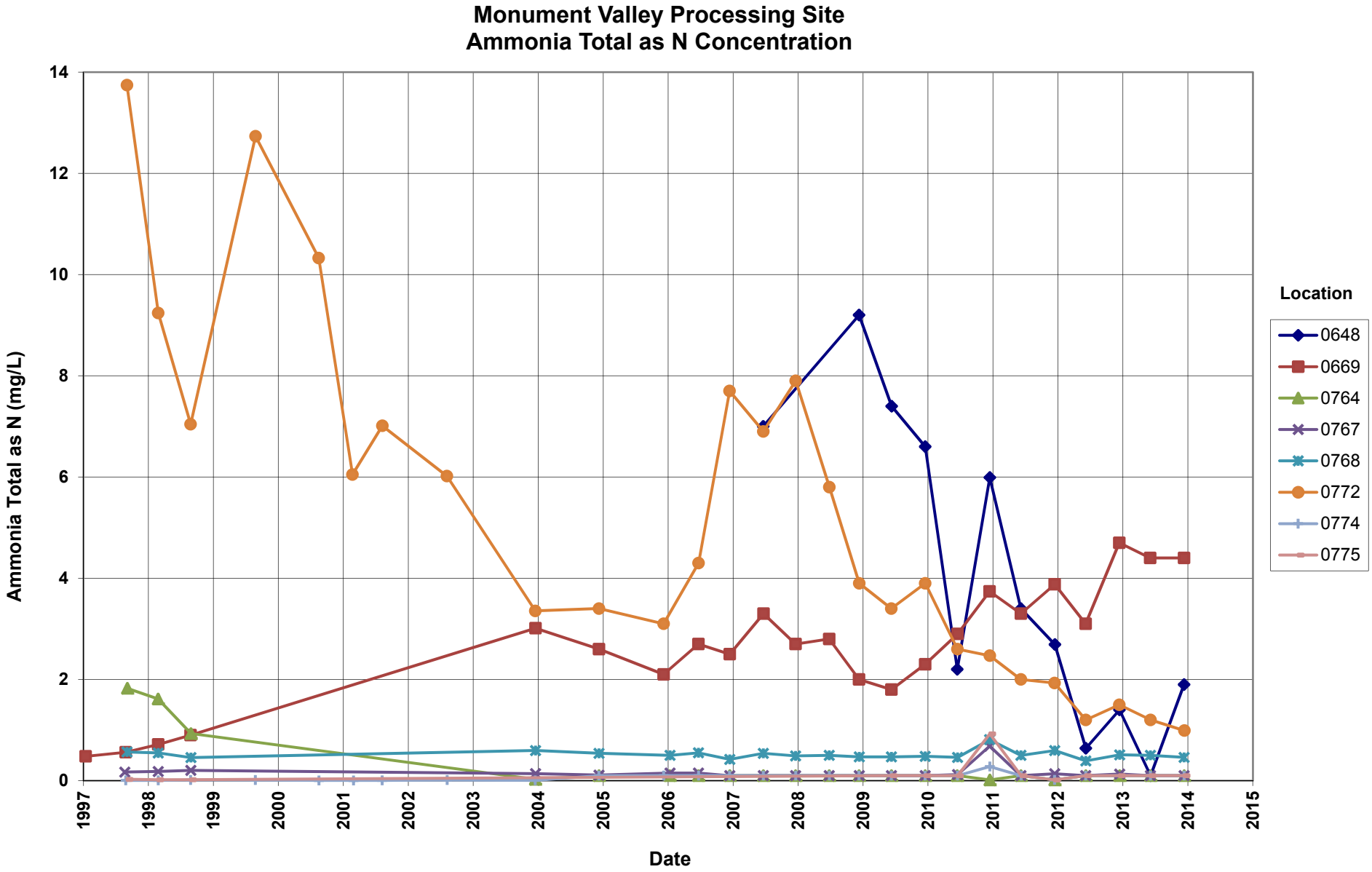
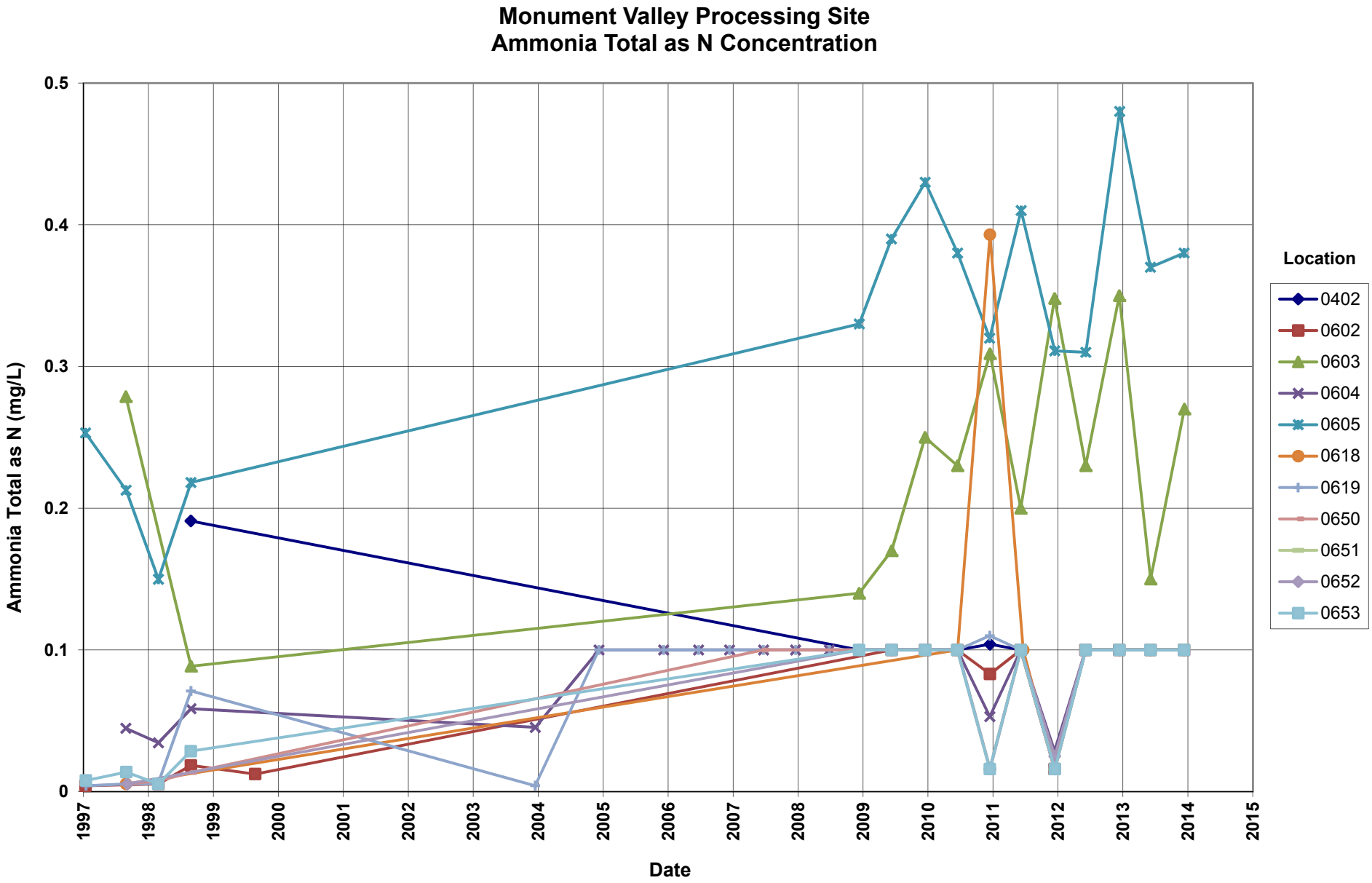

Monument Valley Processing Site
Ammonia Total as N Concentration
Ammonia Total as N (mg/L)
14
12
10
8
6
4
2
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0648
0669
0764
0767
0768
0772
0774
0775


Monument Valley Processing Site
Ammonia Total as N Concentration
Ammonia Total as N (mg/L)
0.5
0.4
0.3
0.2
0.1
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
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0604
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0618
0619
0650
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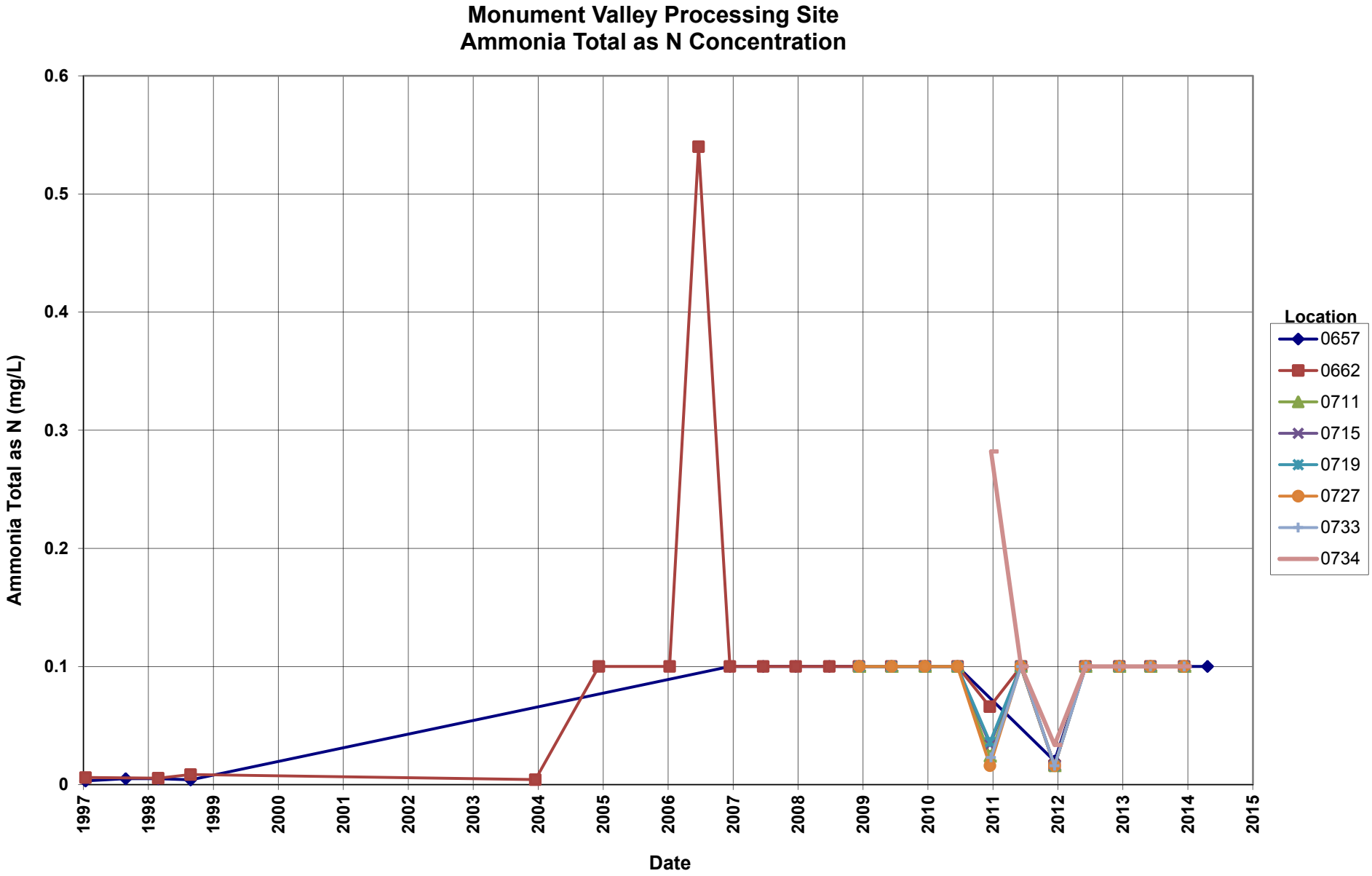
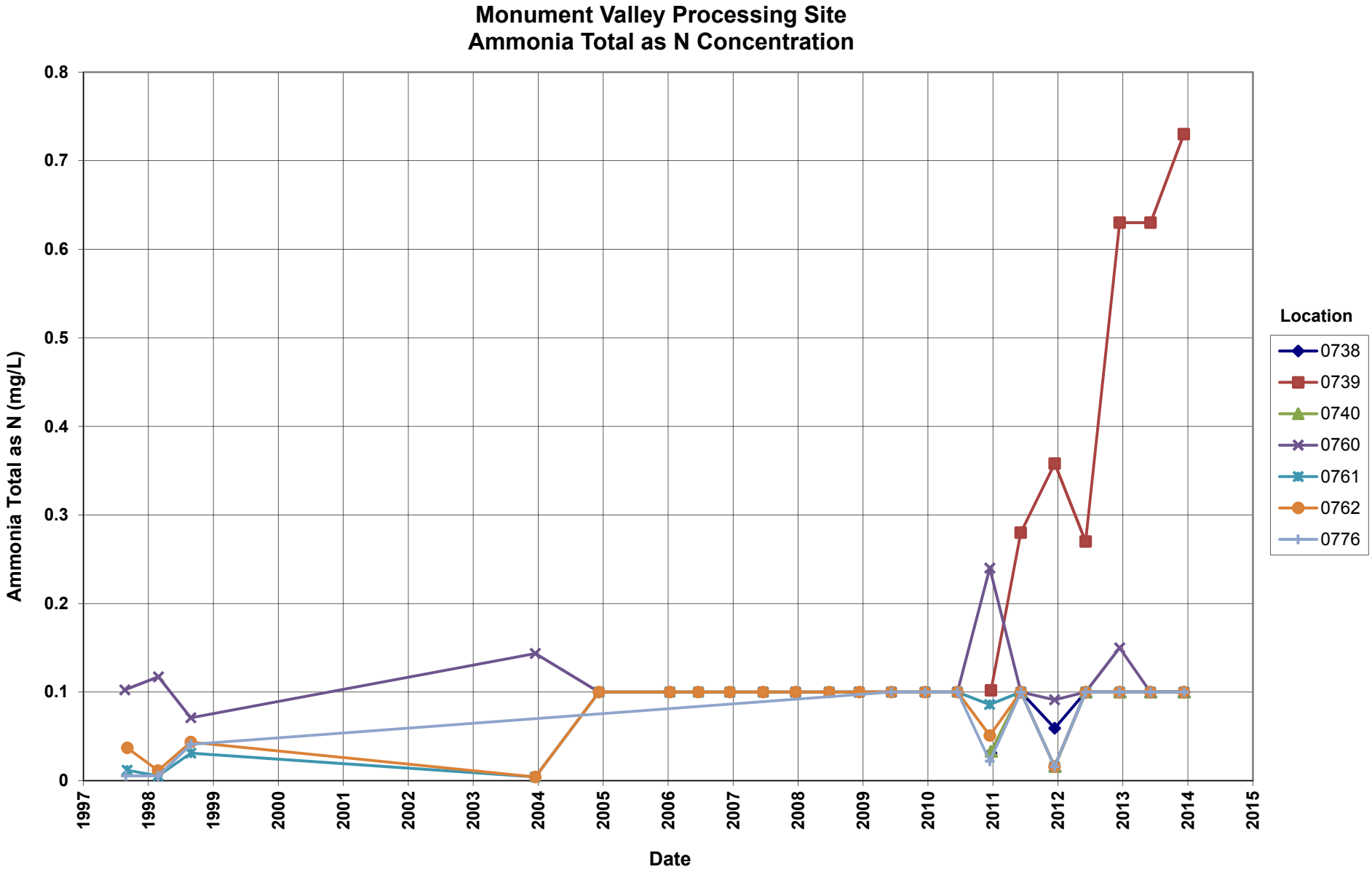
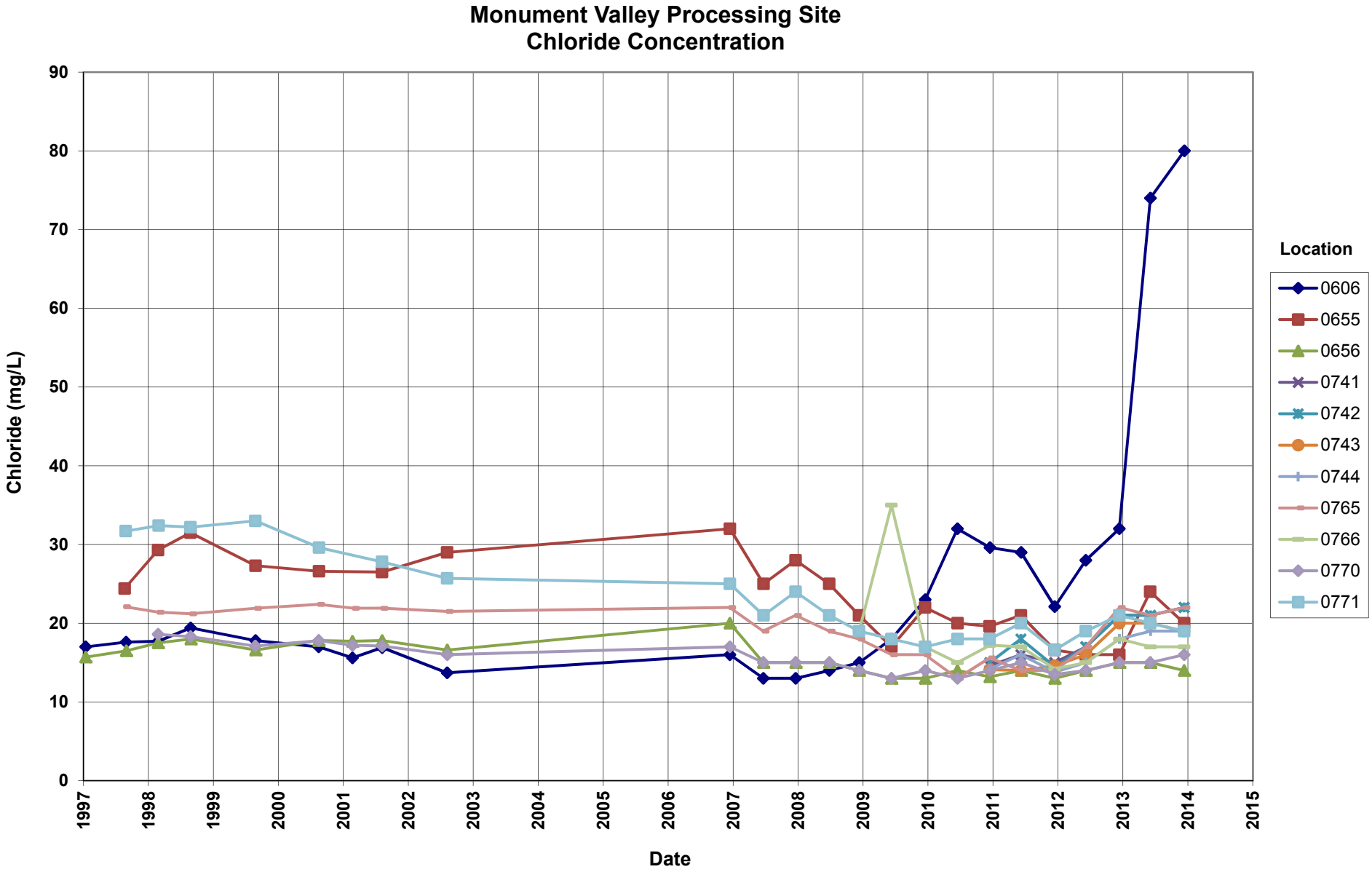
0652
0653


Monument Valley Processing Site
Ammonia Total as N Concentration
Ammonia Total as N (mg/L)
0.6
0.5
0.4
0.3
0.2
0.1
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0657
0662
0711
0715
0719
0727
0733
0734


Monument Valley Processing Site
Ammonia Total as N Concentration
Ammonia Total as N (mg/L)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0738
0739
0740
0760
0761
0762
0776


Monument Valley Processing Site
Chloride Concentration
Chloride (mg/L)
90
80
70
60
50
40
30
20
10
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
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0743
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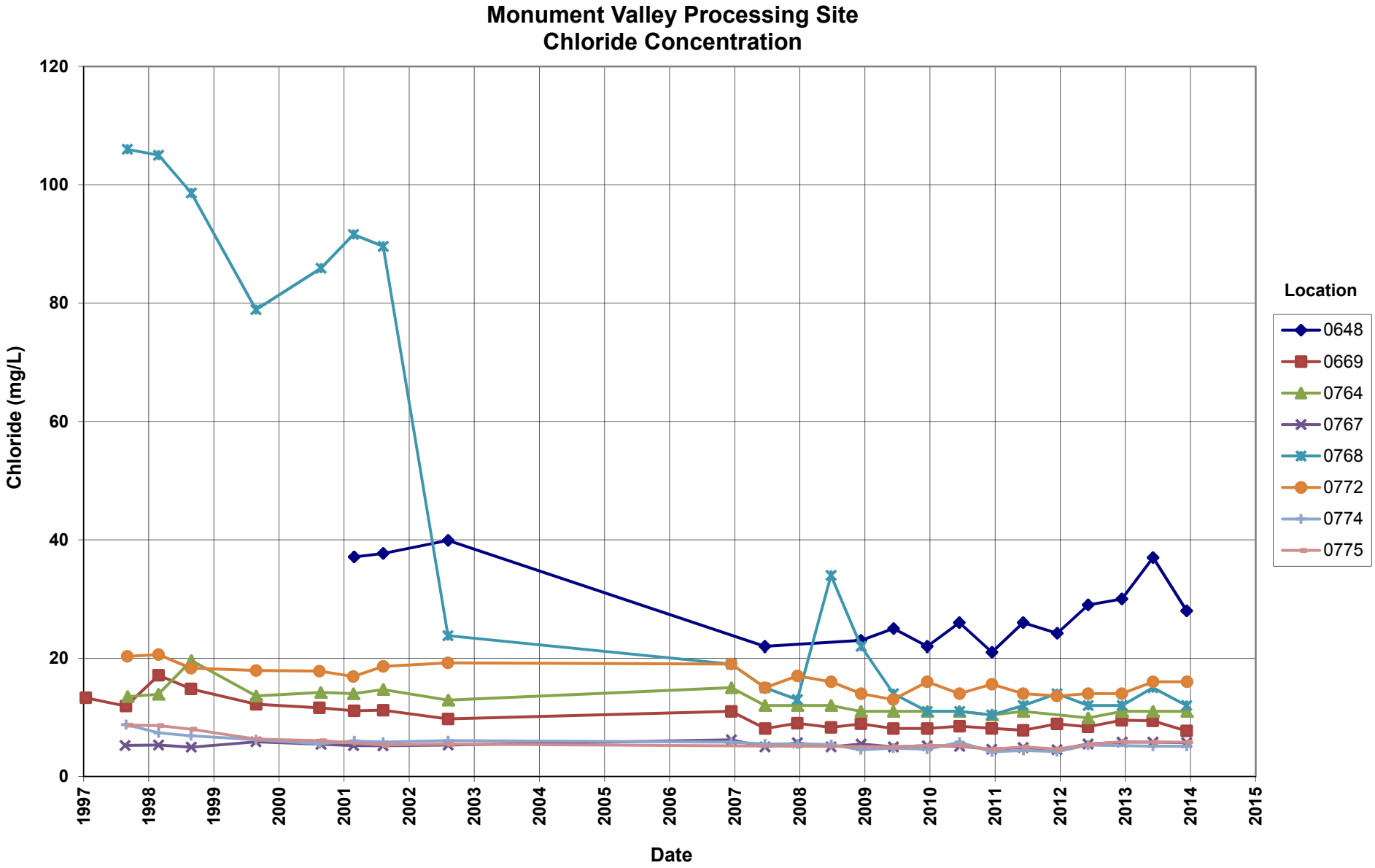
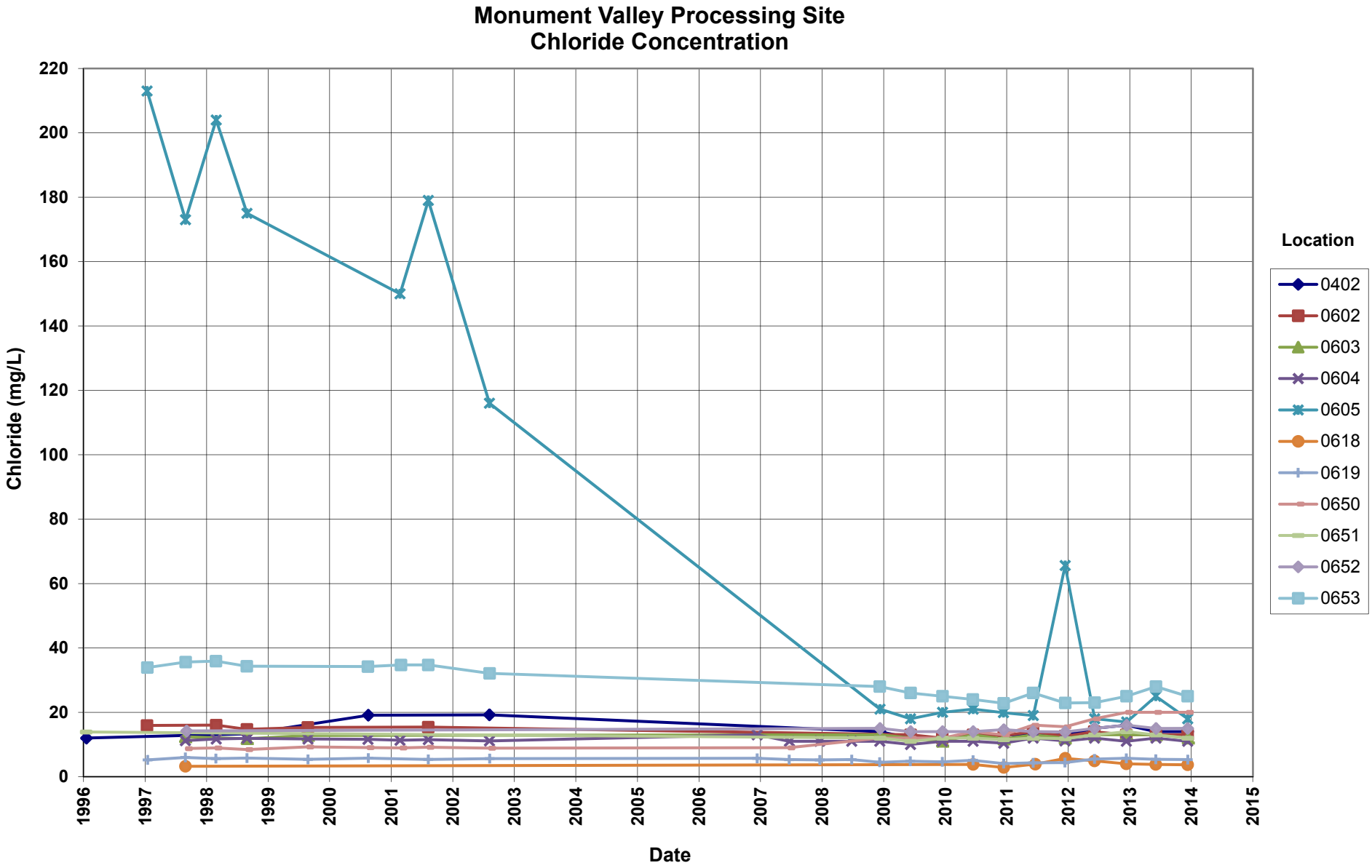
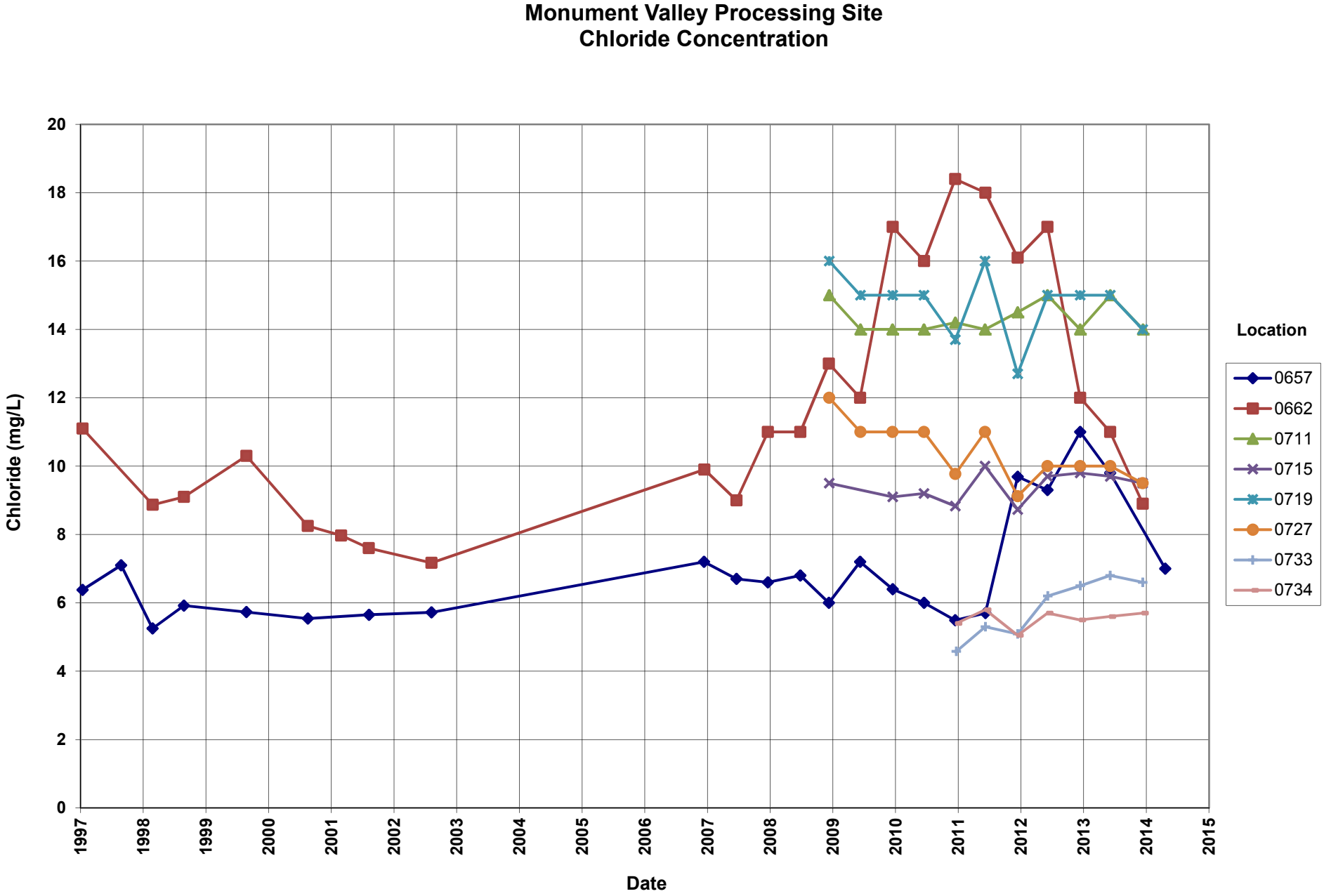
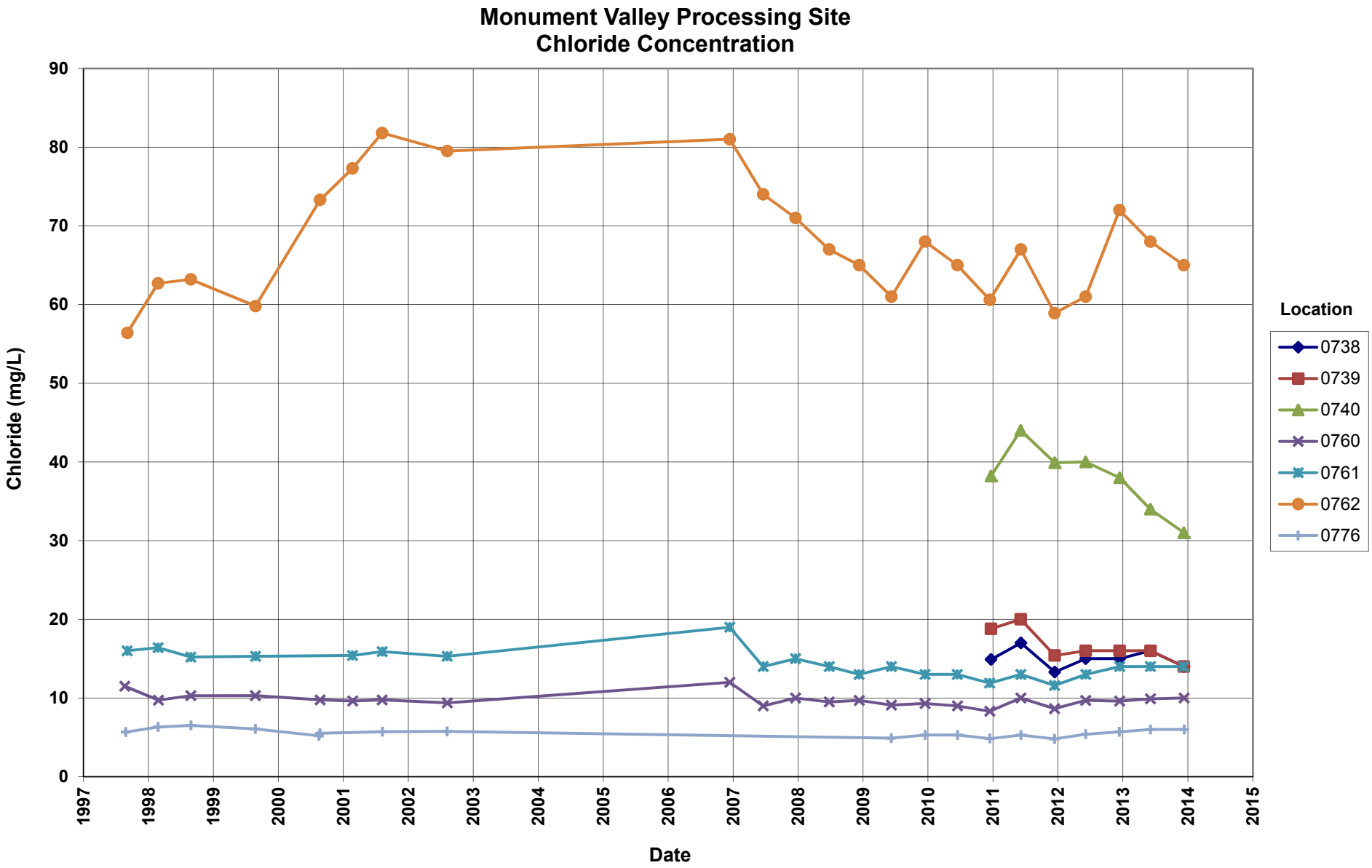
0766
0770
0771

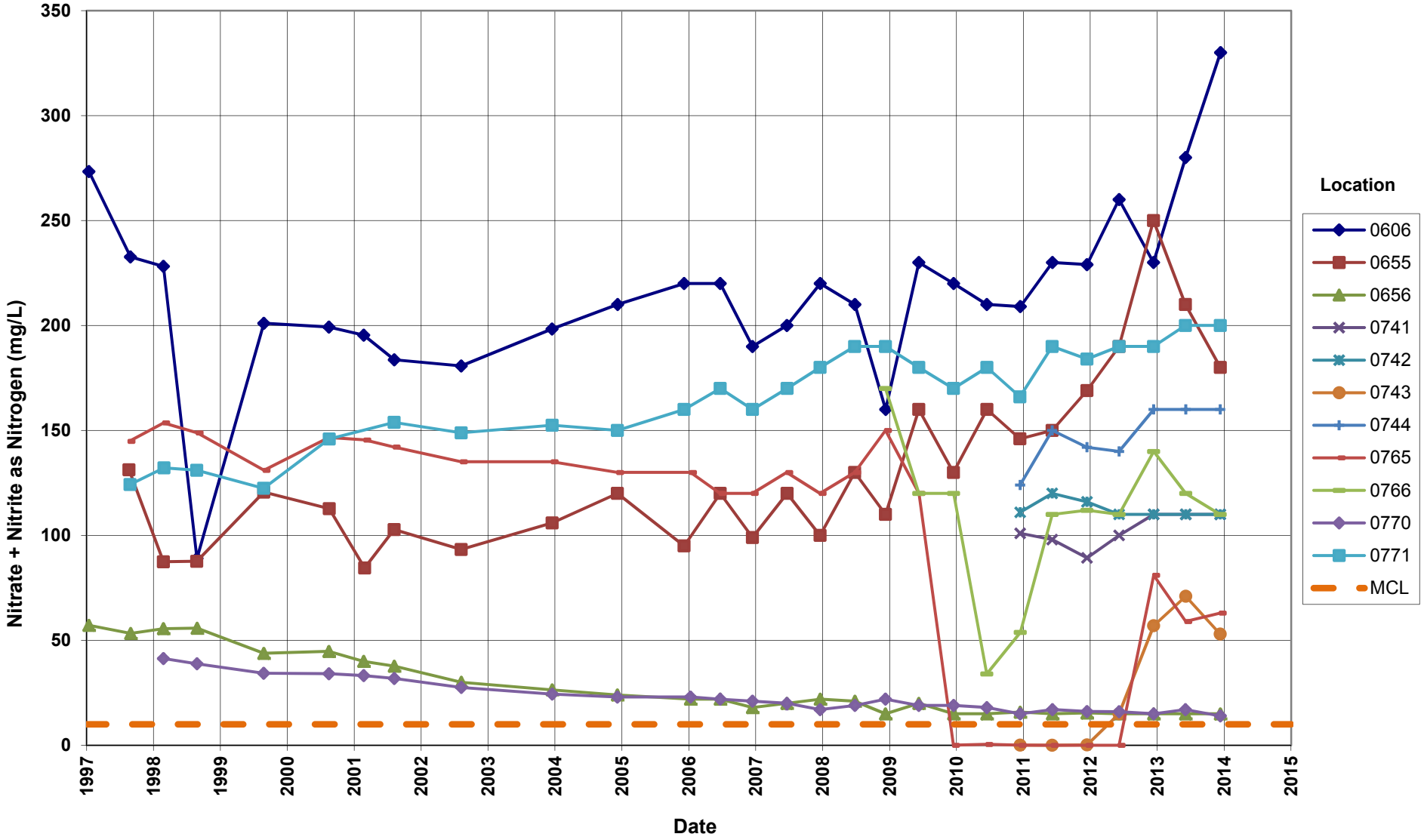

Monument Valley Processing Site
Chloride Concentration
Chloride (mg/L)
120
100
80
60
40
20
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0648
0669
0764
0767
0768
0772
0774
0775


Monument Valley Processing Site
Chloride Concentration
Chloride (mg/L)
220
200
180
160
140
120
100
80
60
40
20
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0402
0602
0603
0604
0605
0618
0619
0650
0651
0652
0653

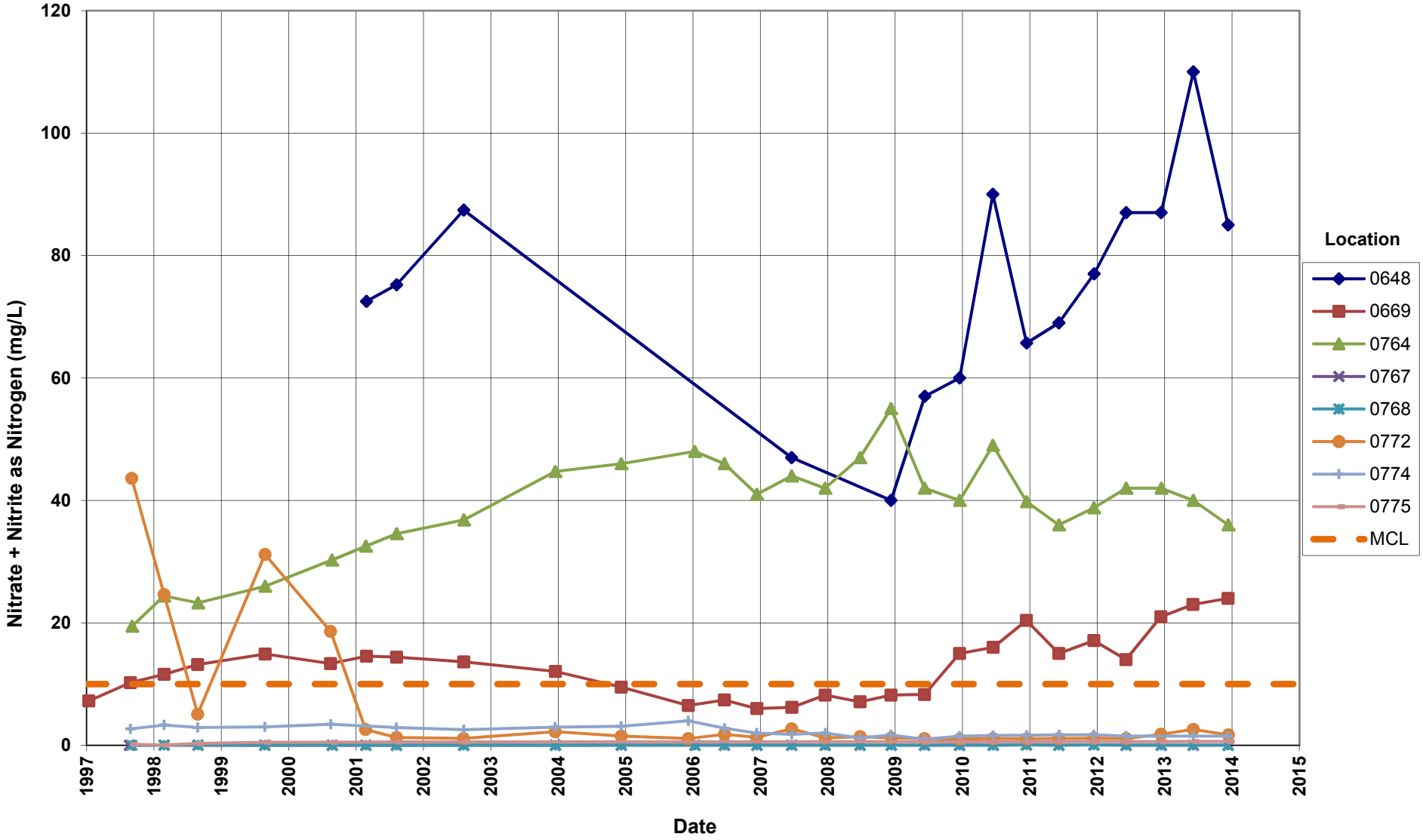

Monument Valley Processing Site
Chloride Concentration
Chloride (mg/L)
Date
Location
0657
0662
0711
0715
0719
0727
0733
0734
0
2
4
6
8
10
12
14
16
18
20
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

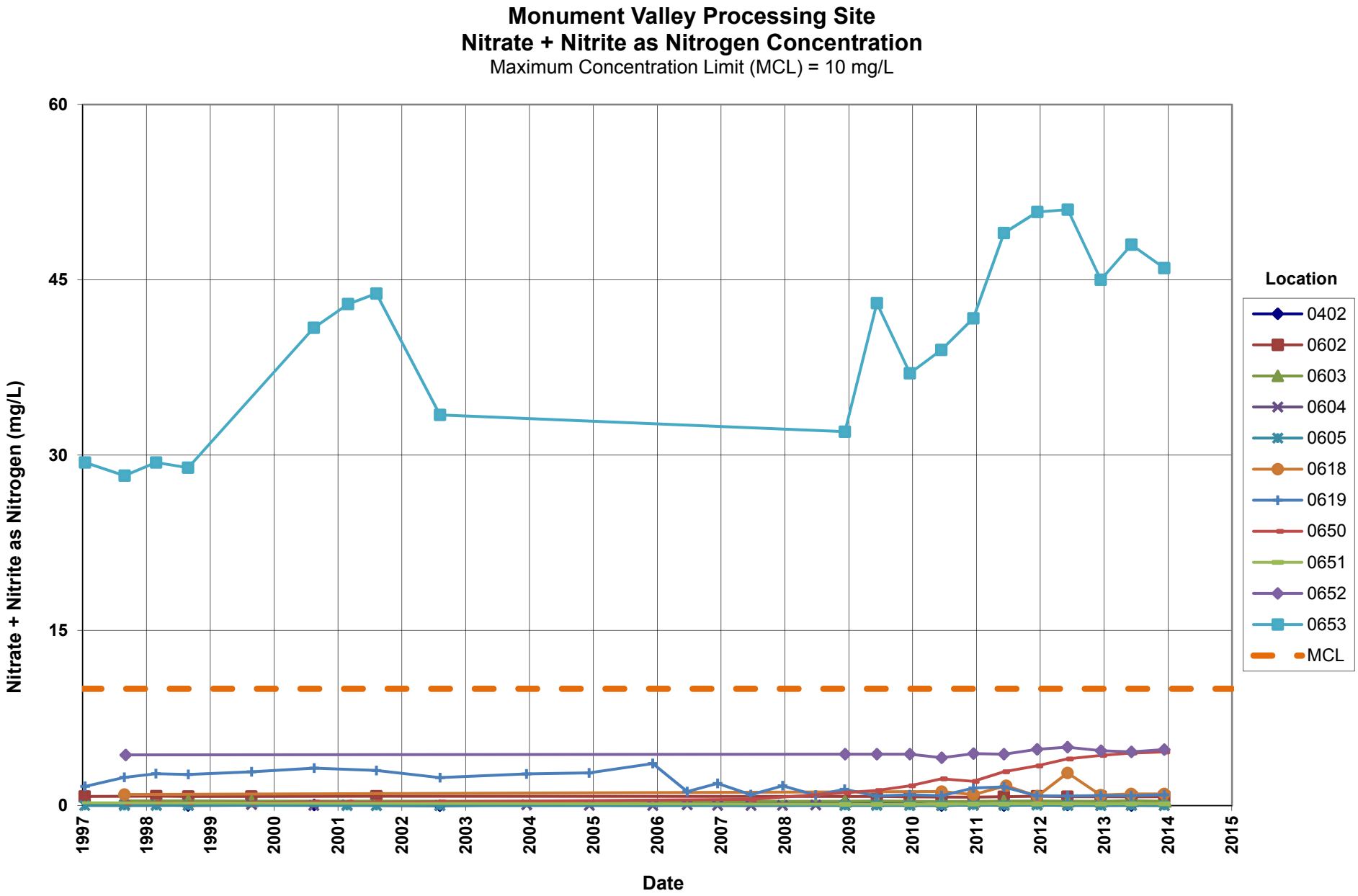

Monument Valley Processing Site
Chloride Concentration
Chloride (mg/L)
Date
Location
0738
0739
0740
0760
0761
0762
0776
0
10
20
30
40
50
60
70
80
90
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

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

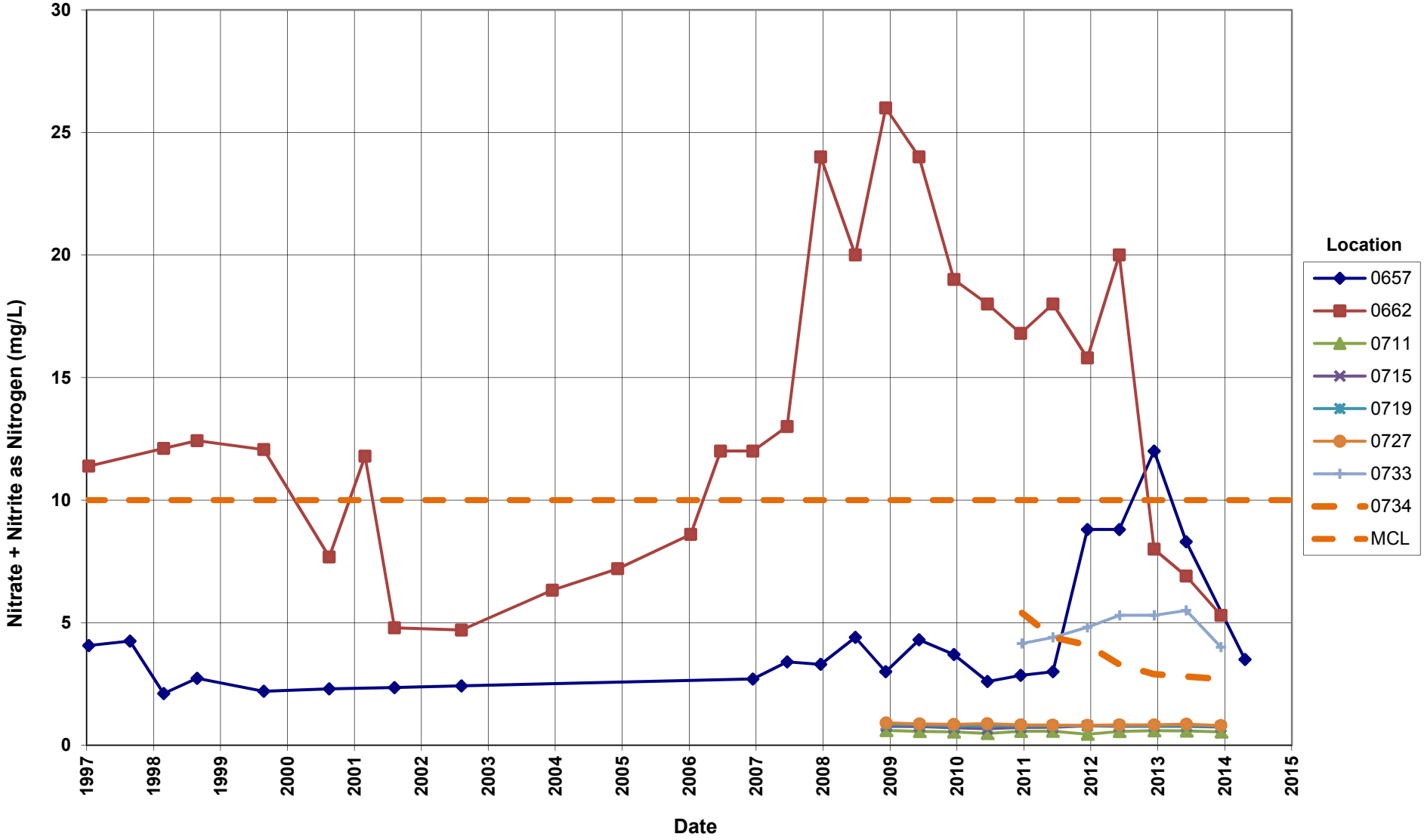


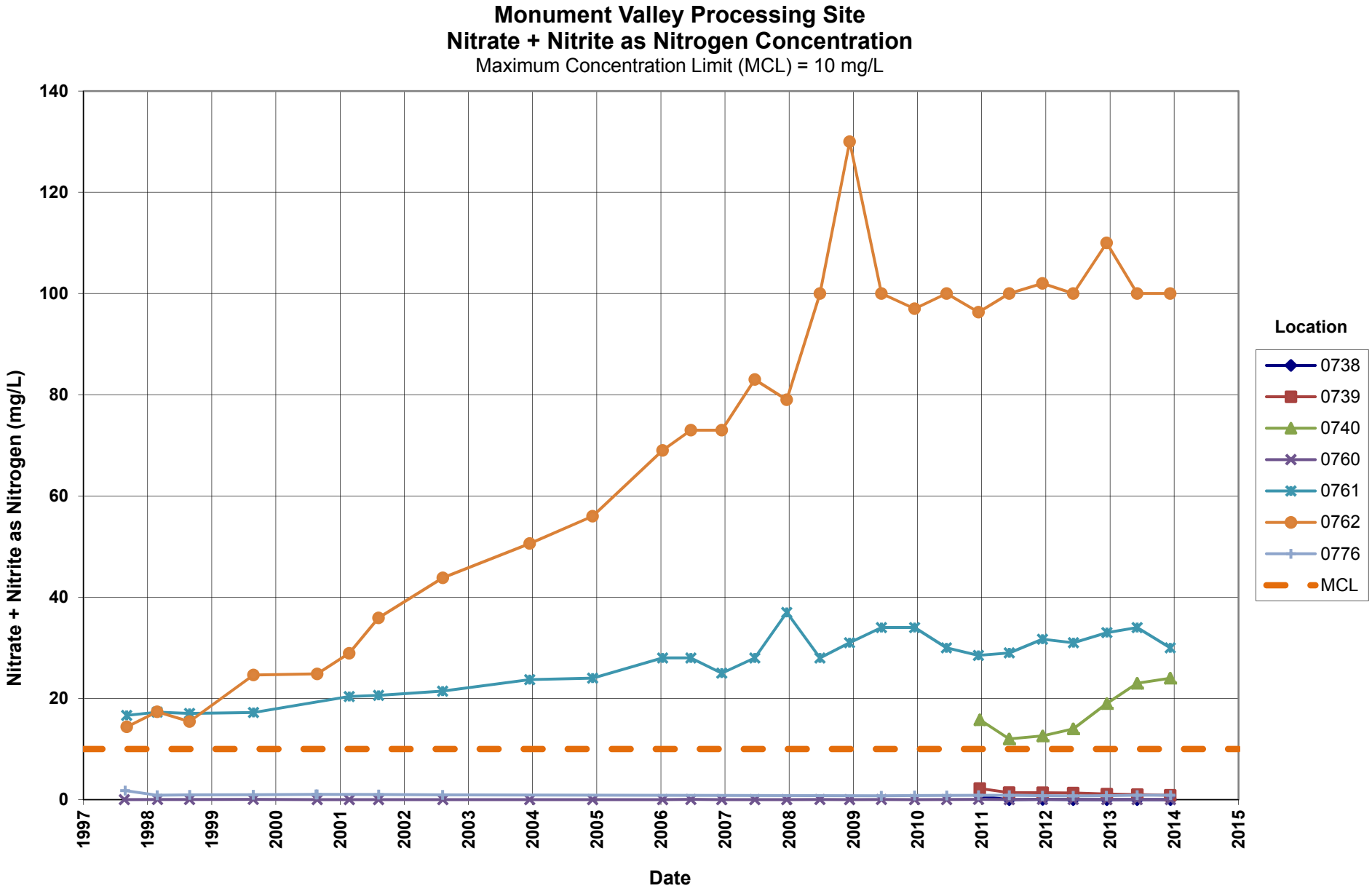
Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit (MCL) = 10 mg/L

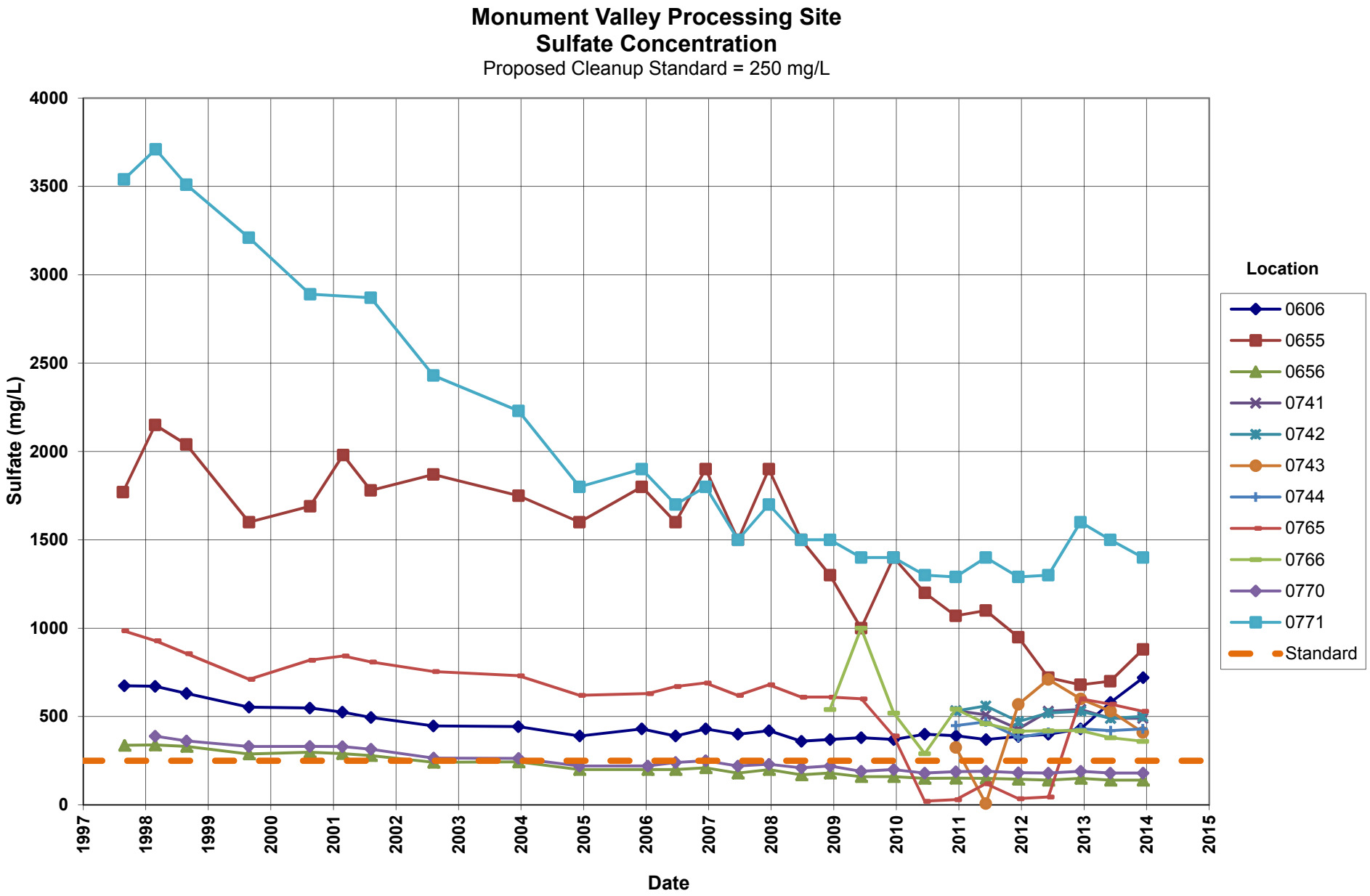


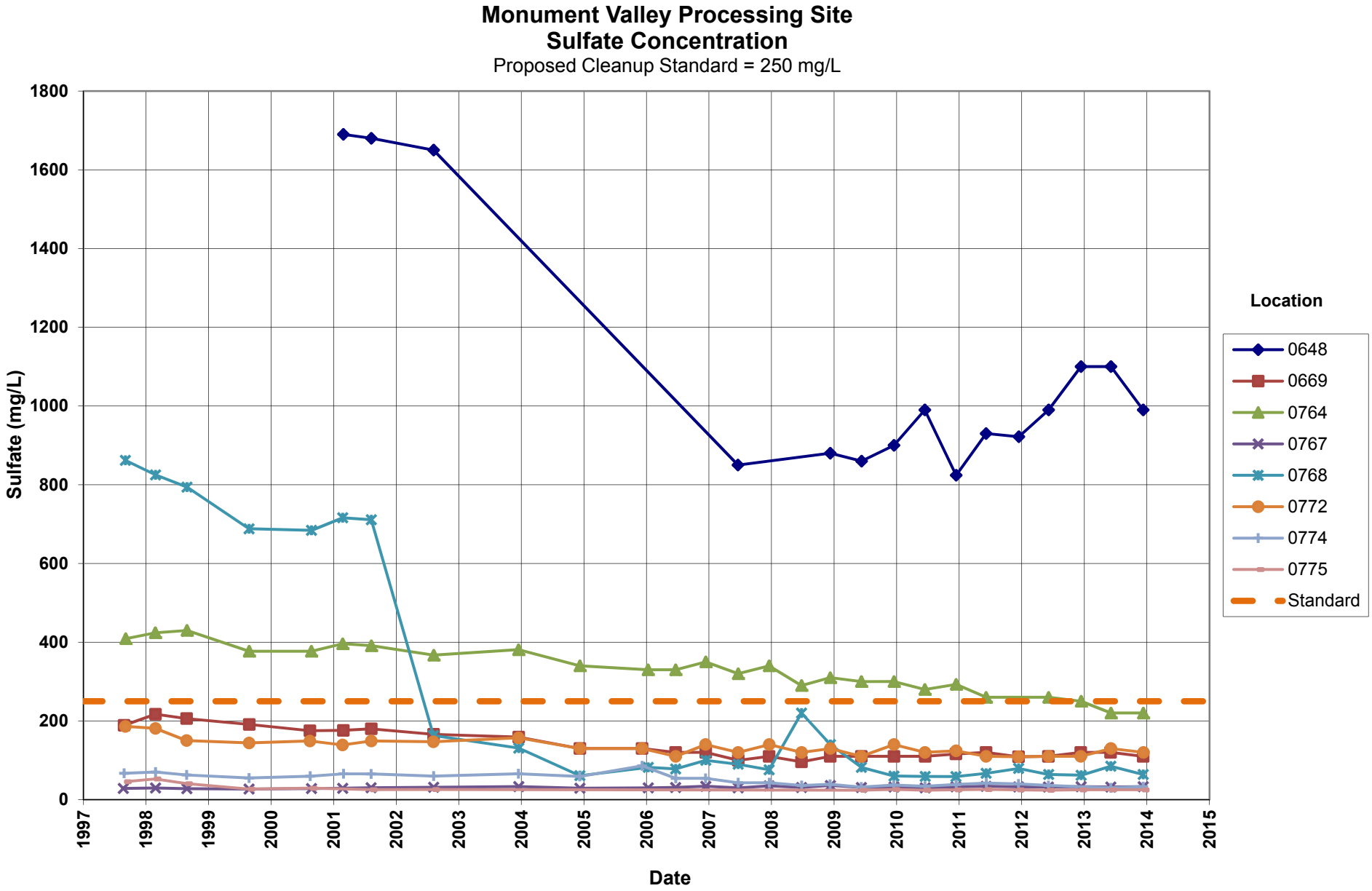

Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit (MCL) = 10 mg/L
Nitrate + Nitrite as Nitrogen (mg/L)
60
45
30
15
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0402
0602
0603
0604
0605
0618
0619
0650
0651
0652
0653
MCL

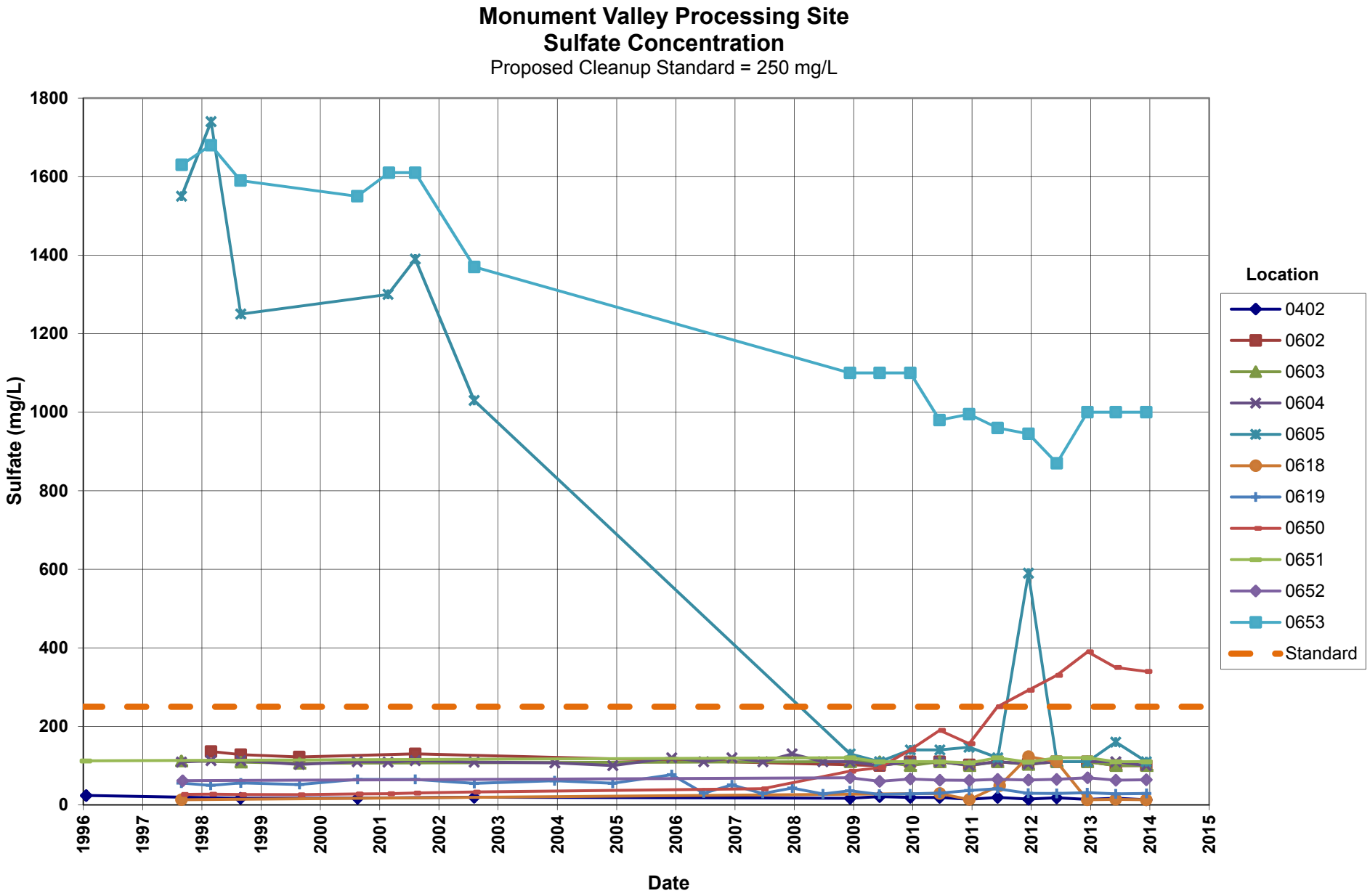
Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit (MCL) = 10 mg/L

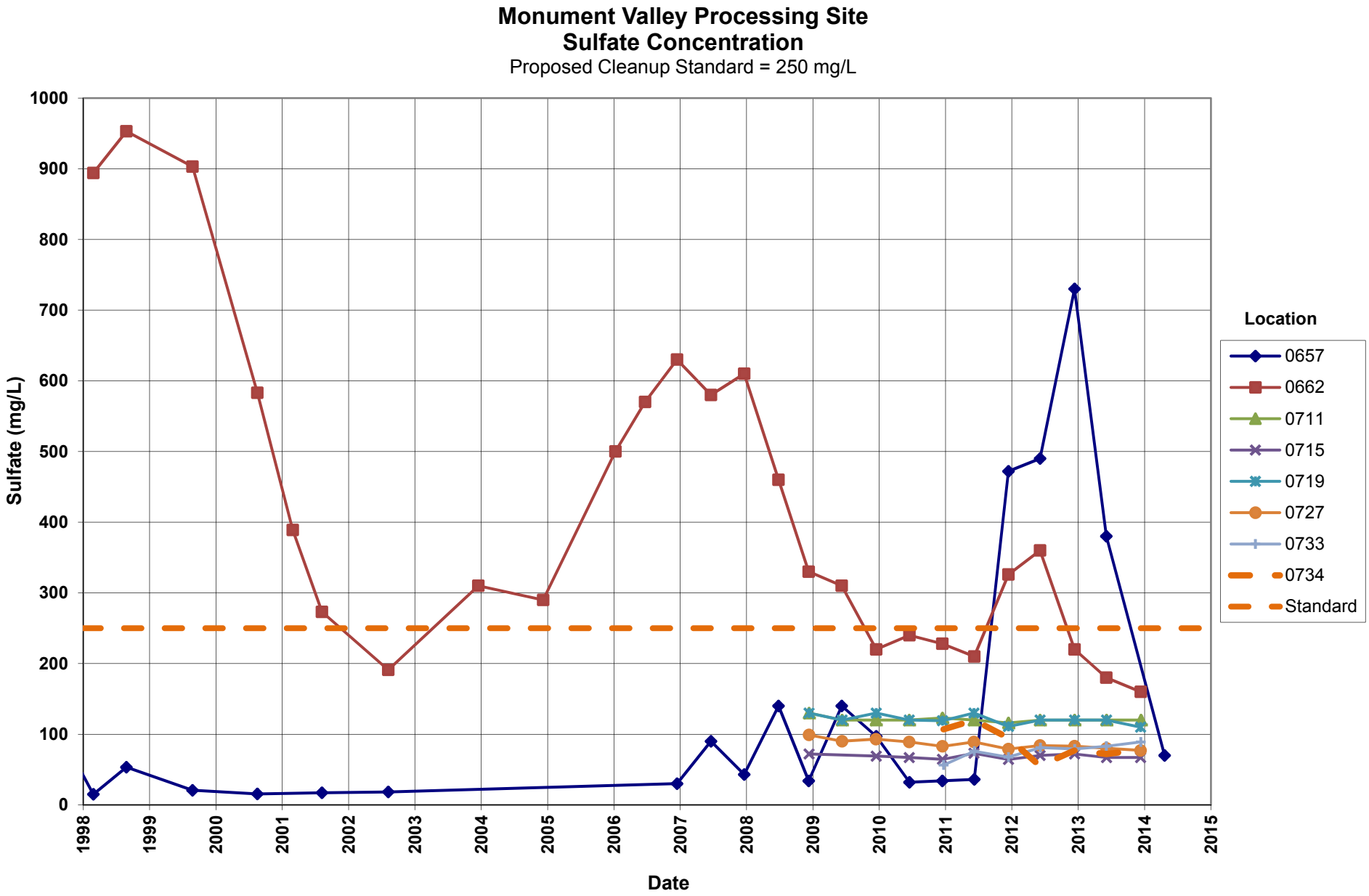


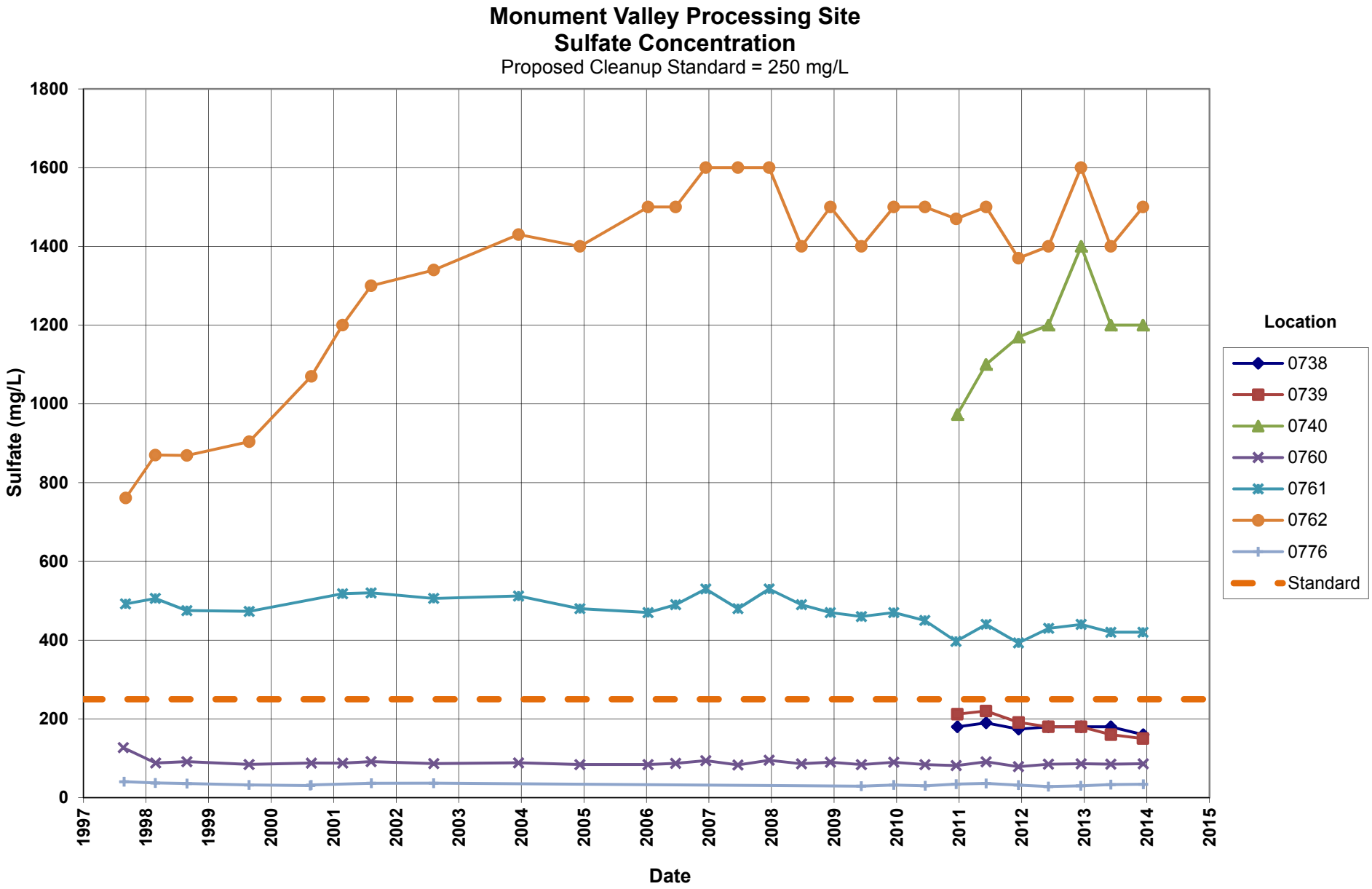

Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit (MCL) = 10 mg/L
Nitrate + Nitrite as Nitrogen (mg/L)
140
120
100
80
60
40
20
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0738
0739
0740
0760
0761
0762
0776
MCL

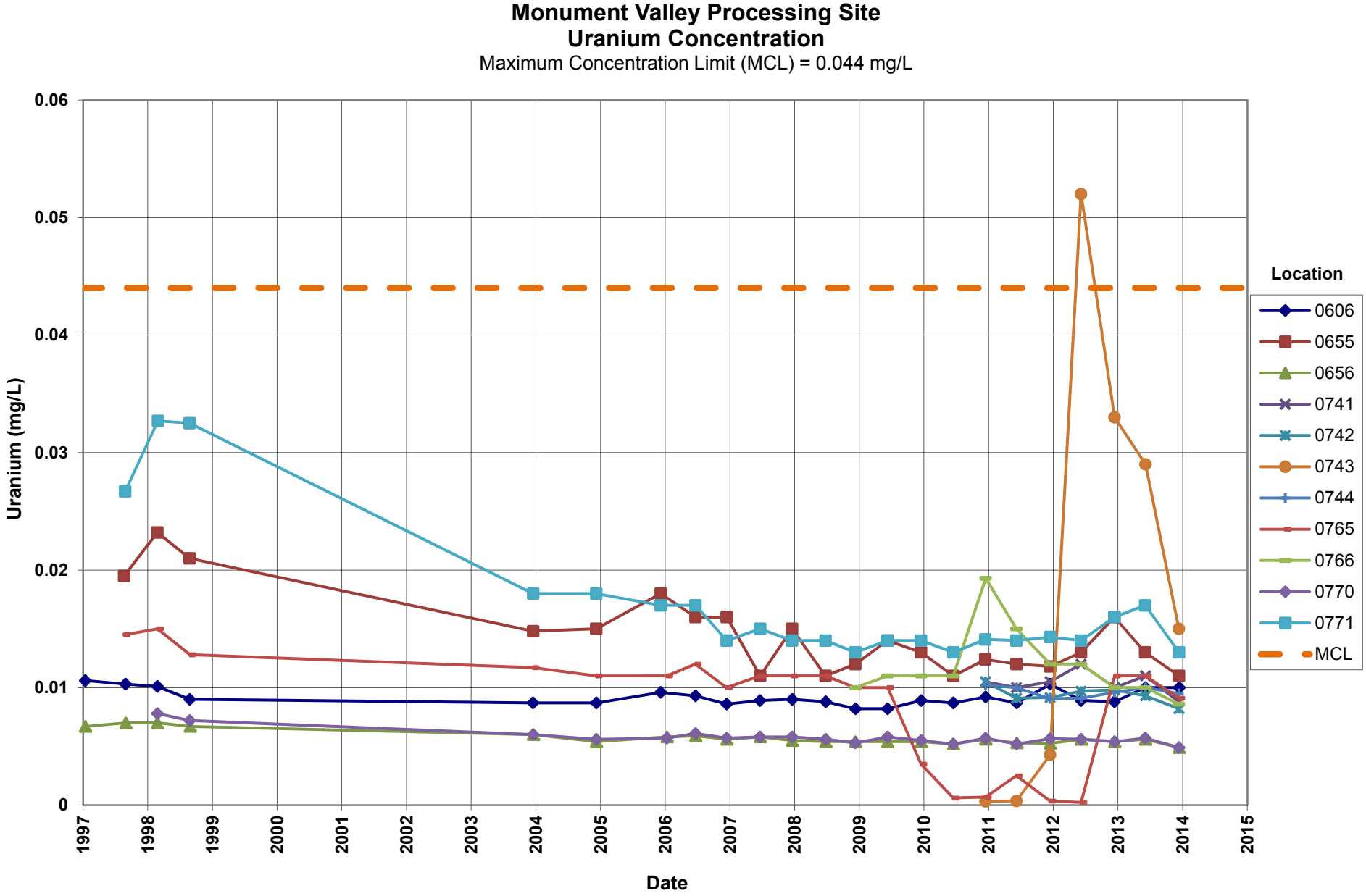

Monument Valley Processing Site
Sulfate Concentration
Proposed Cleanup Standard = 250 mg/L
Sulfate (mg/L)
4000
3500
3000
2500
2000
1500
1000
500
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0606
0655
0656
0741
0742
0743
0744
0765
0766
0770
0771
Standard

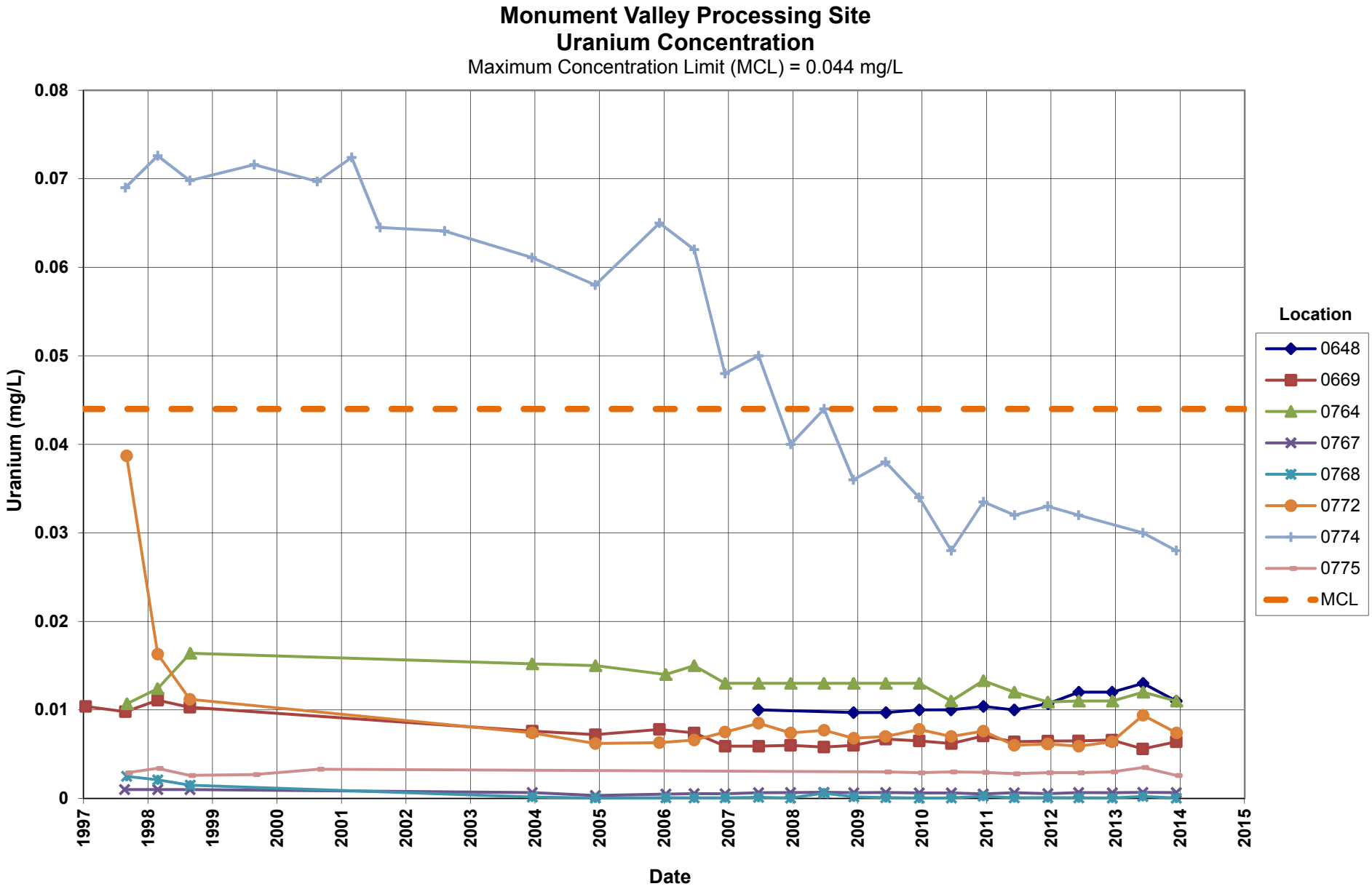

Monument Valley Processing Site
Sulfate Concentration
Proposed Cleanup Standard = 250 mg/L
Sulfate (mg/L)
1800
1600
1400
1200
1000
800
600
400
200
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0648
0669
0764
0767
0768
0772
0774
0775
Standard


Monument Valley Processing Site
Sulfate Concentration
Proposed Cleanup Standard = 250 mg/L
Sulfate (mg/L)
1800
1600
1400
1200
1000
800
600
400
200
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0402
0602
0603
0604
0605
0618
0619
0650
0651
0652
0653
Standard

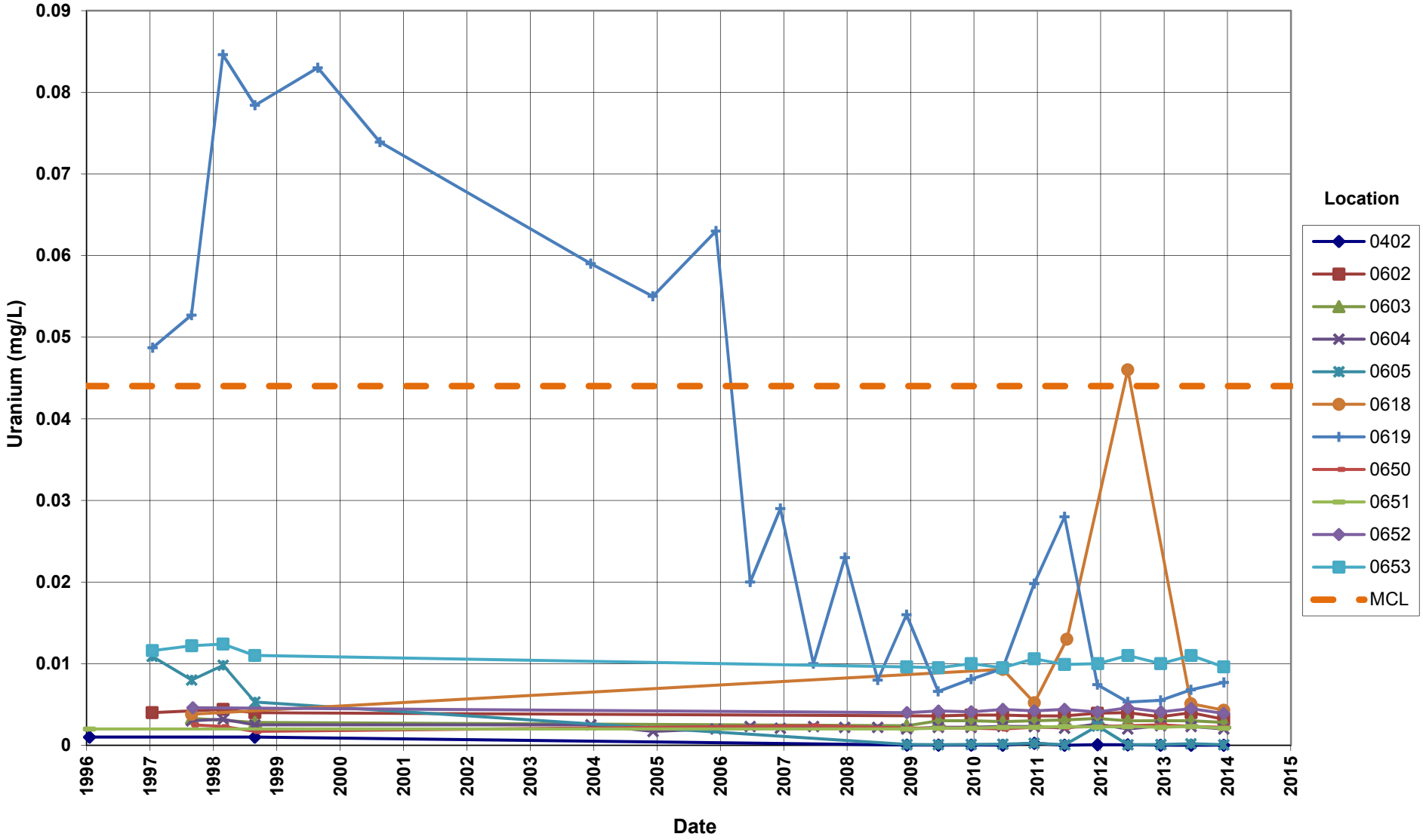

Monument Valley Processing Site
Sulfate Concentration
Proposed Cleanup Standard = 250 mg/L
Sulfate (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0657
0662
0711
0715
0719
0727
0733
0734
Standard


Monument Valley Processing Site
Sulfate Concentration
Proposed Cleanup Standard = 250 mg/L
Sulfate (mg/L)
1800
1600
1400
1200
1000
800
600
400
200
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0738
0739
0740
0760
0761
0762
0776
Standard

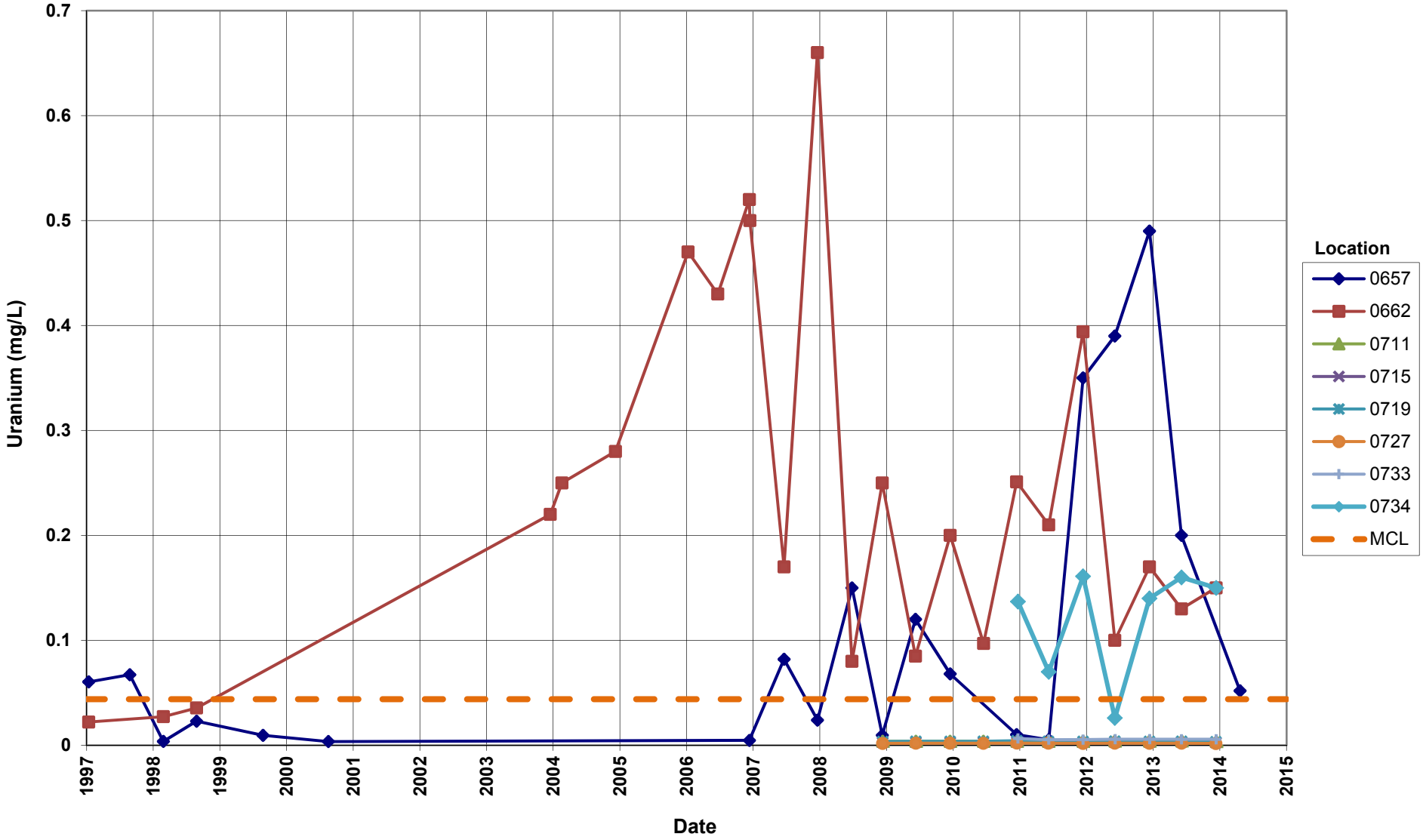

Monument Valley Processing Site
Uranium Concentration
Maximum Concentration Limit (MCL) = 0.044 mg/L
Uranium (mg/L)
0.06
0.05
0.04
0.03
0.02
0.01
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0606
0655
0656
0741
0742
0743
0744
0765
0766
0770
0771
MCL

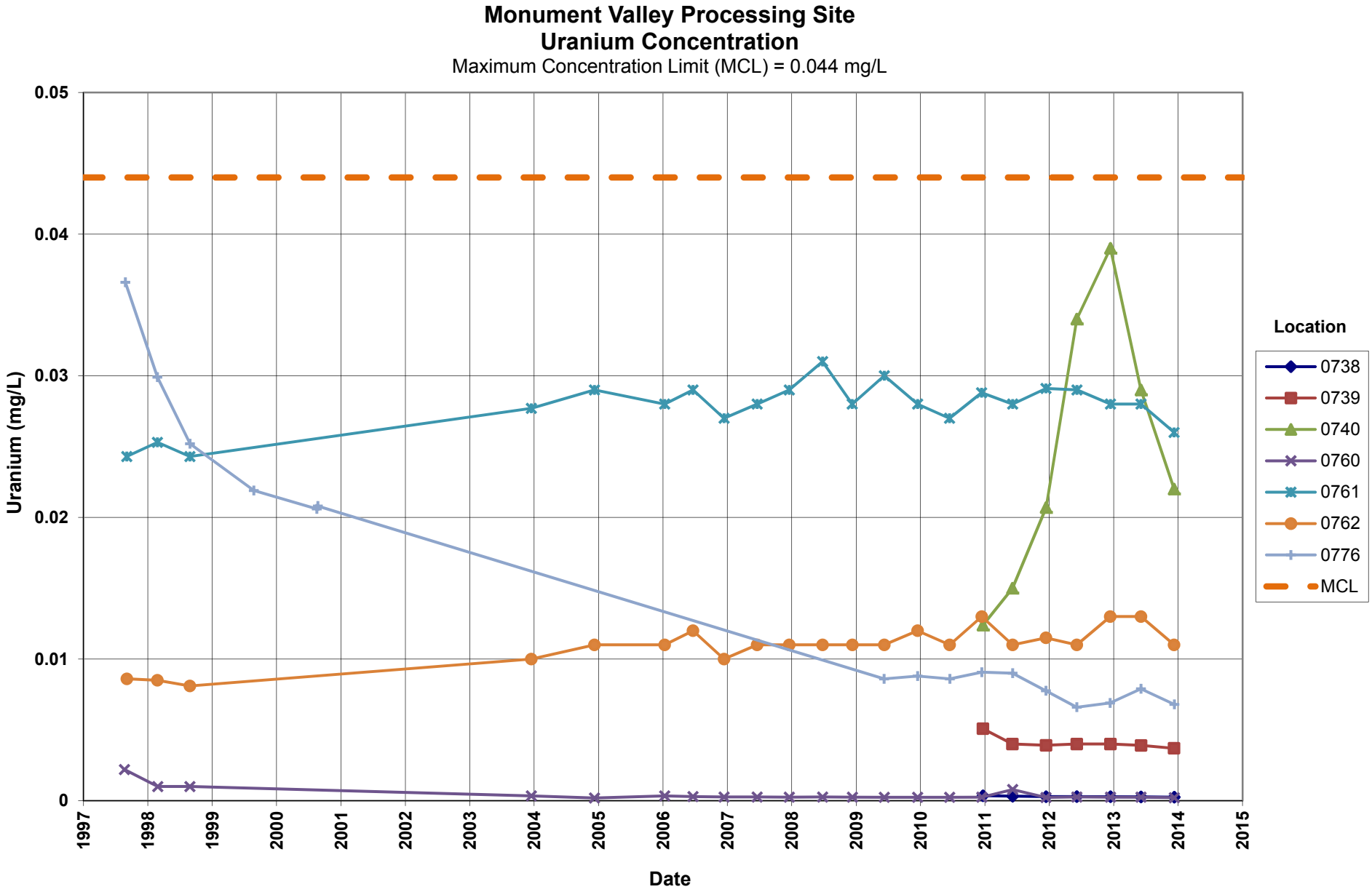

Monument Valley Processing Site
Uranium Concentration
Maximum Concentration Limit (MCL) = 0.044 mg/L
Uranium (mg/L)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0648
0669
0764
0767
0768
0772
0774
0775
MCL

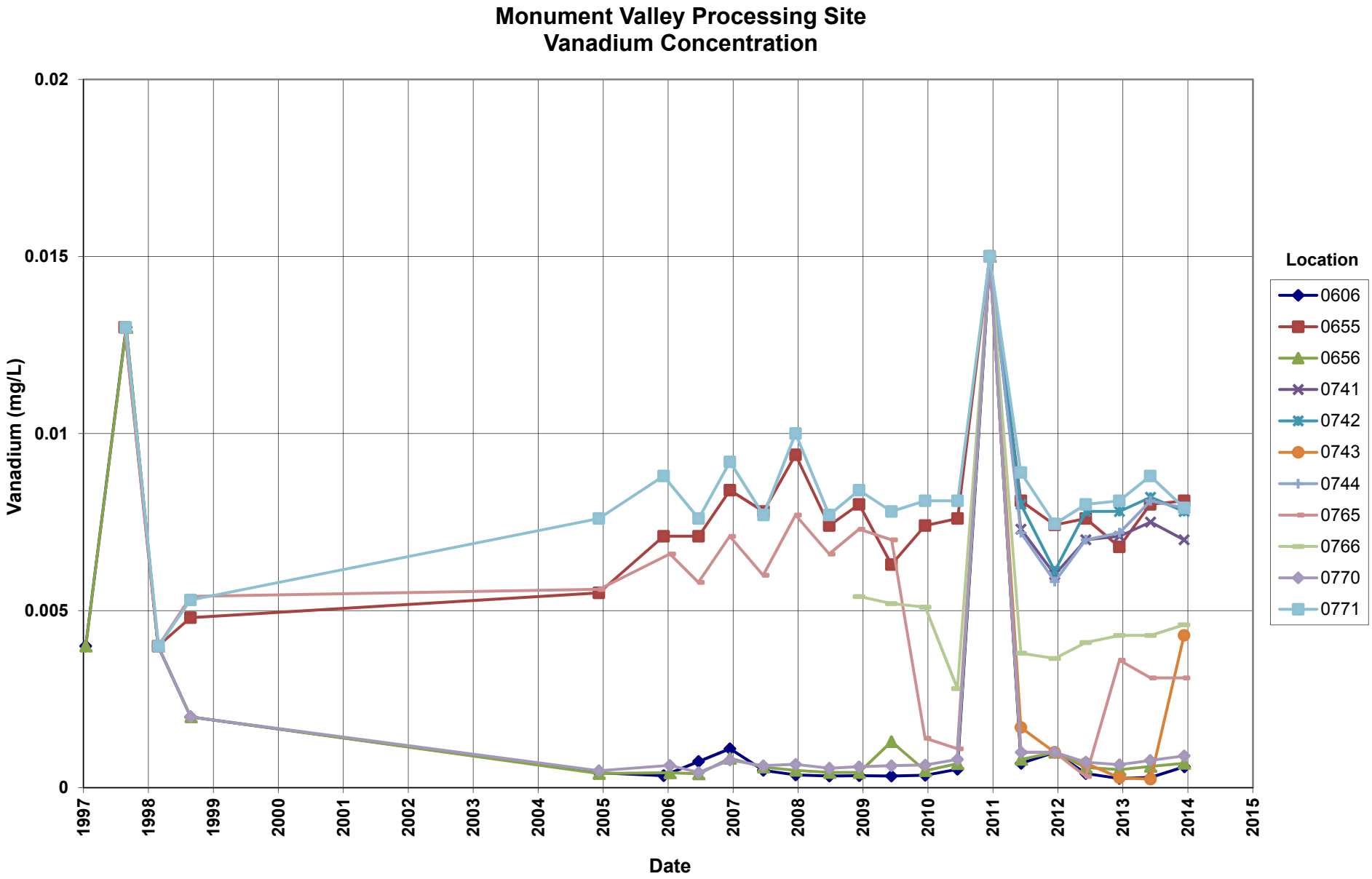
Monument Valley Processing Site
Uranium Concentration
Maximum Concentration Limit (MCL) = 0.044 mg/L

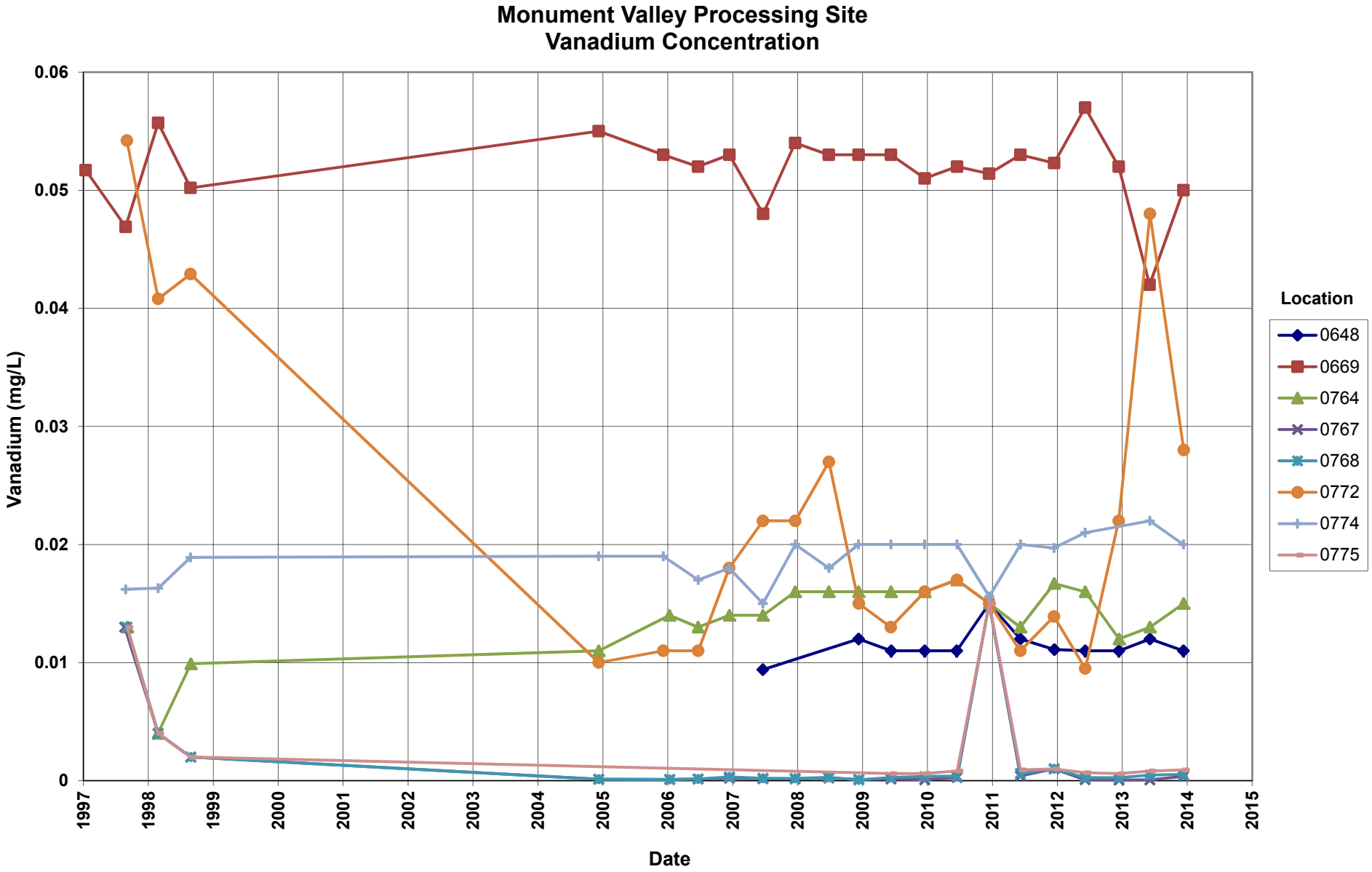


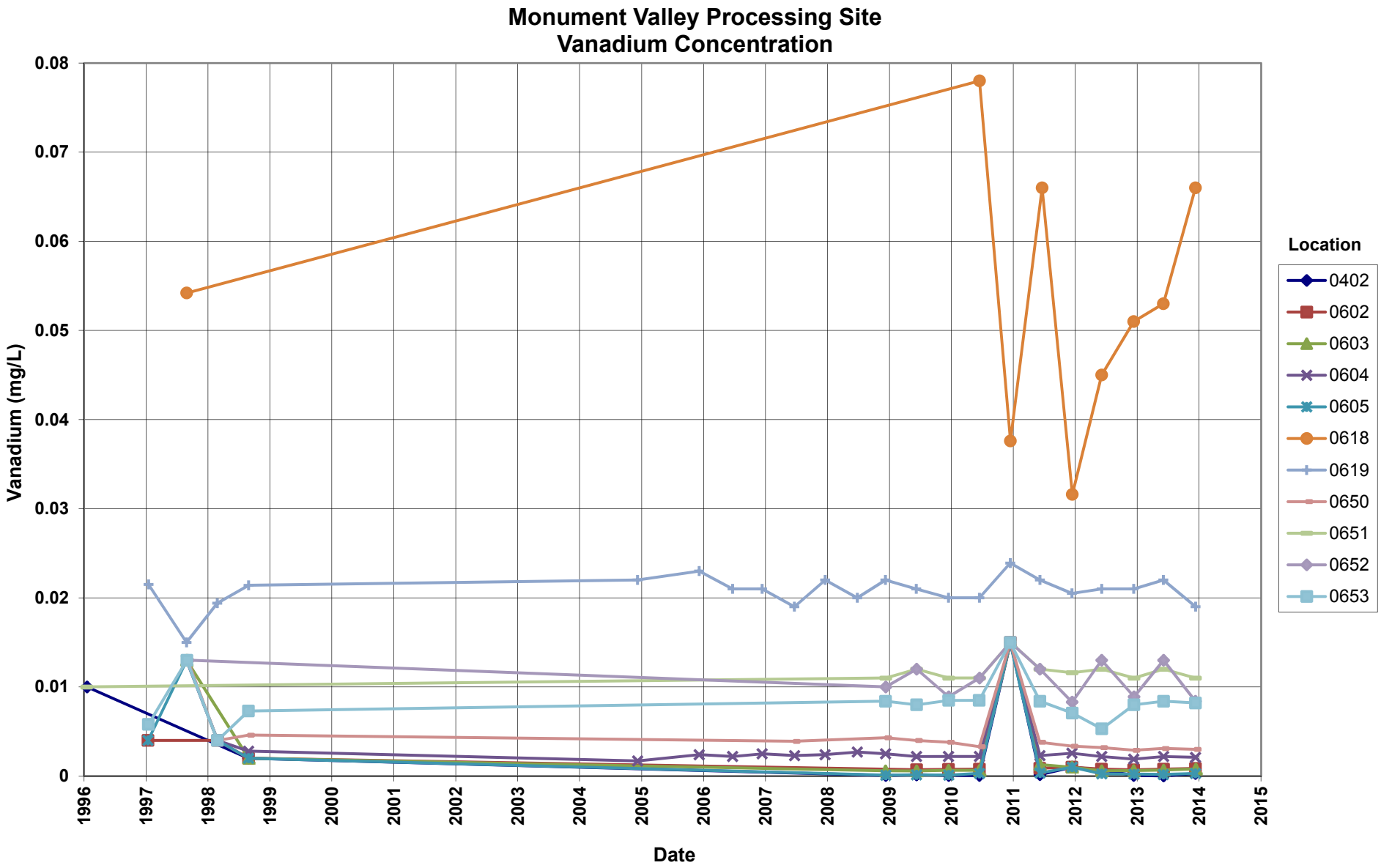
Monument Valley Processing Site
Uranium Concentration
Maximum Concentration Limit (MCL) = 0.044 mg/L

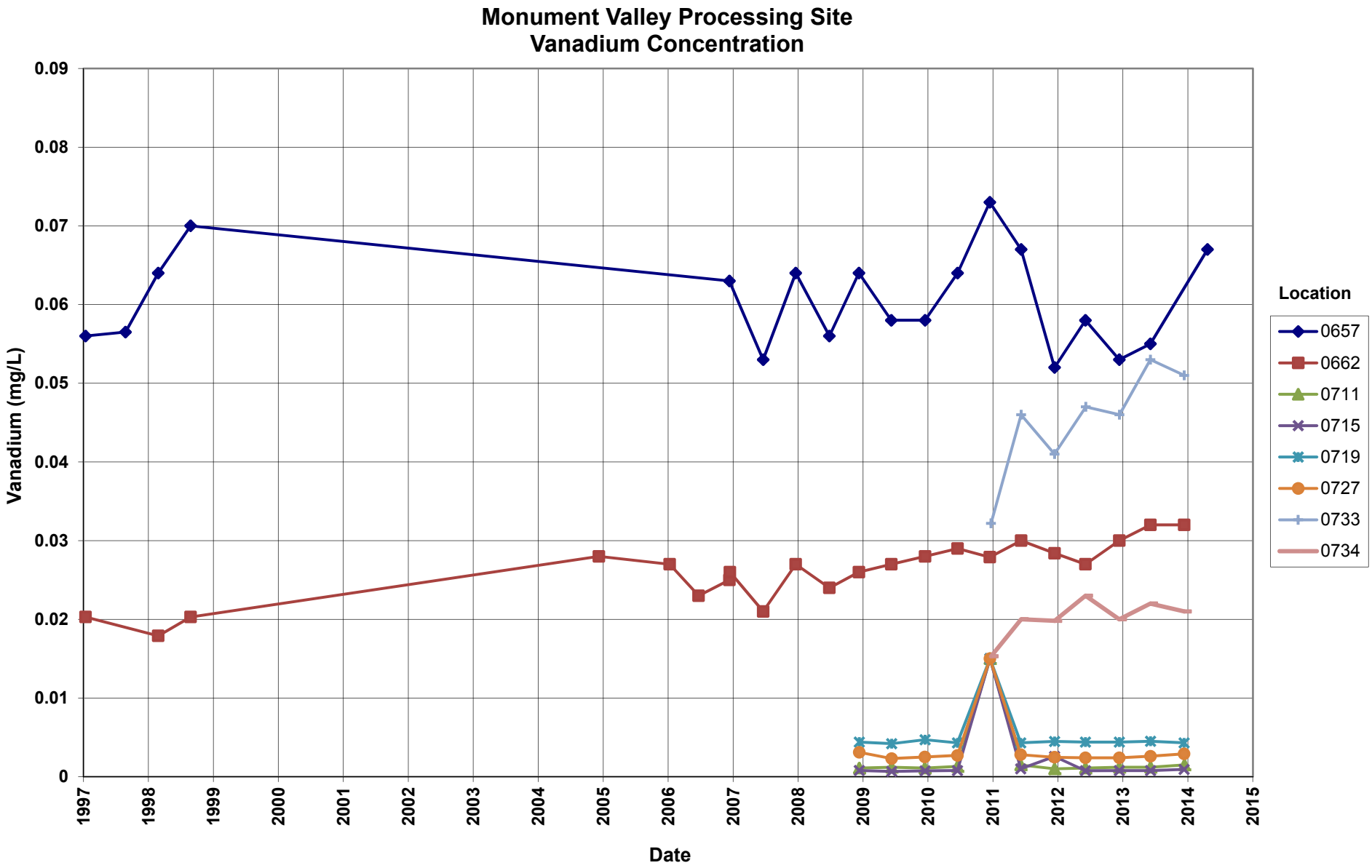


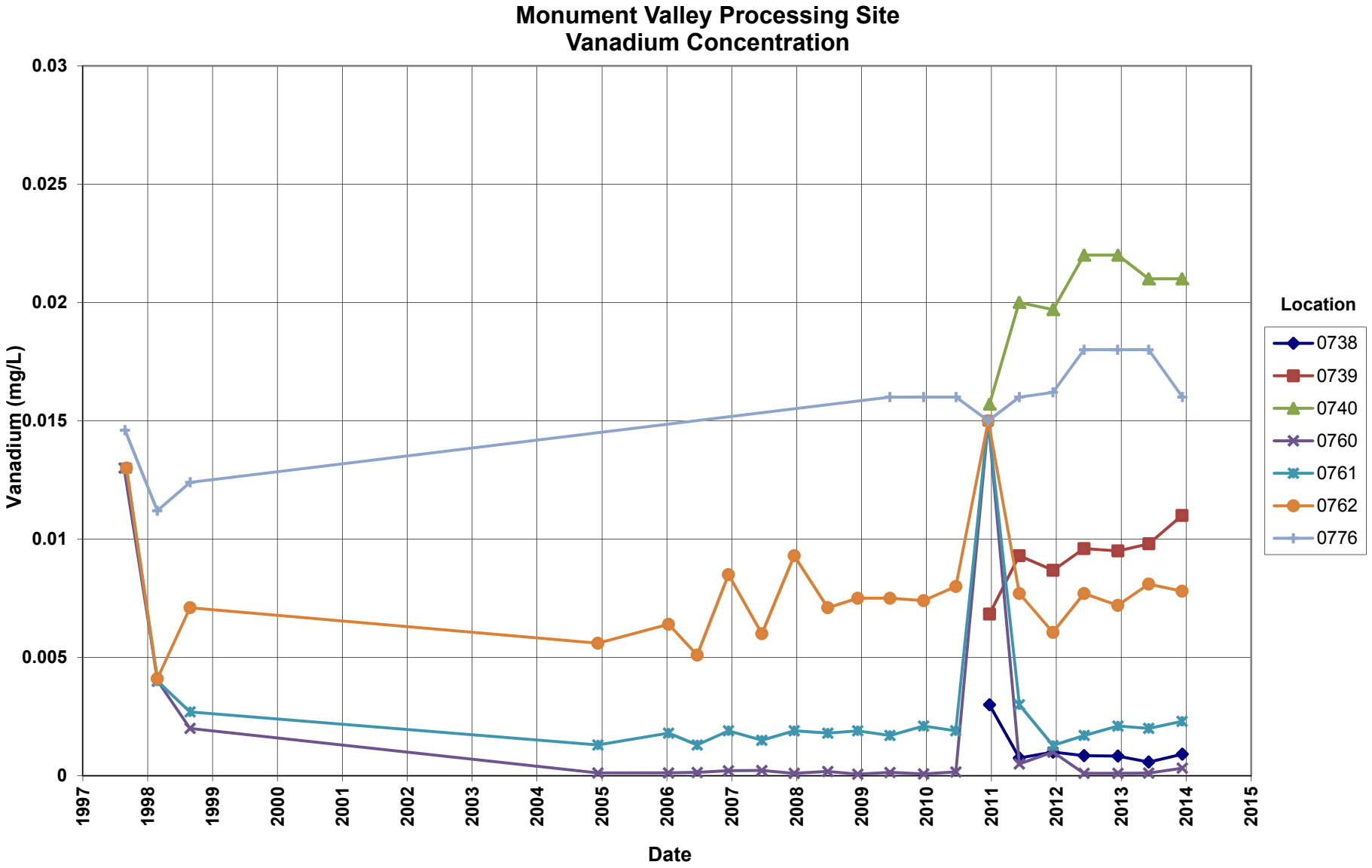

Monument Valley Processing Site
Uranium Concentration
Maximum Concentration Limit (MCL) = 0.044 mg/L
Uranium (mg/L)
0.05
0.04
0.03
0.02
0.01
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0738
0739
0740
0760
0761
0762
0776
MCL


Monument Valley Processing Site
Vanadium Concentration
Vanadium (mg/L)
0.02
0.015
0.01
0.005
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0606
0655
0656
0741
0742
0743
0744
0765
0766
0770
0771


Monument Valley Processing Site
Vanadium Concentration
Vanadium (mg/L)
0.06
0.05
0.04
0.03
0.02
0.01
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0648
0669
0764
0767
0768
0772
0774
0775


Monument Valley Processing Site
Vanadium Concentration
Vanadium (mg/L)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0402
0602
0603
0604
0605
0618
0619
0650
0651
0652
0653


Monument Valley Processing Site
Vanadium Concentration
Vanadium (mg/L)
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0657
0662
0711
0715
0719
0727
0733
0734


Monument Valley Processing Site
Vanadium Concentration
Vanadium (mg/L)
0.03
0.025
0.02
0.015
0.01
0.005
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Location
0738
0739
0740
0760
0761
0762
0776

Attachment 3
Sampling and Analysis Work Order

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Stoller

established 1959

Task Order LM-501
Control Number 14-0099

November 8, 2013

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

SUBJECT: Contract No. DE-AM01-07LM00060, S.M. Stoller Corporation (Stoller) December 2013 Environmental Sampling at the Monument Valley, Arizona Processing Site

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

Dear Mr. Bush:

The purpose of this letter is to inform you of the upcoming sampling event at Monument Valley, Arizona. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Monument Valley site. Water quality data will be collected from monitoring wells and surface locations at this site as part of the routine environmental sampling currently scheduled to begin the week of December 9, 2013.

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

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

Surface Location
623

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/lcg/lb

Enclosures (3)

cc: (electronic)
Christina Pennal, DOE
Steve Donivan, Stoller
Lauren Goodknight, Stoller
David Miller, Stoller
EDD Delivery
rc-grand.junction
File: MON 410.02 (A)

Sampling Frequencies for Locations at Monument Valley, Arizona

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
Monitoring Wells						
402		X				
602		X				
603		X				
604		X				
605		X				
606		X				
618		X				
619		X				
648		X				
650		X				
651		X				
652		X				
653		X				
655		X				
656		X				
657		X				
662		X				
669		X				
711		X				
715		X				
719		X				
727		X				
733		X				
734		X				
735		X				
738		X				
739		X				
740		X				
741		X				
742		X				
743		X				
744		X				
760		X				
761		X				
762		X				
764		X				
765		X				
766		X				
767		X				
768		X				
770		X				
771		X				

Sampling Frequencies for Locations at Monument Valley, Arizona

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
772		X				
774		X				
775		X				
776		X				
Surface Locations						
623		X				

Sampling conducted in December and June

Constituent Sampling Breakdown

Site	Monument Valley				
Analyte	**Groundwater**	**Surface Water**	**Required Detection Limit (mg/L)**	**Analytical Method**	**Line Item Code**
Approx. No. Samples/yr	68	1			
Field Measurements					
Alkalinity					
Dissolved Oxygen					
Redox Potential	X				
pH	X				
Specific Conductance	X				
Turbidity	X				
Temperature	X				
Laboratory Measurements					
Aluminum					
Ammonia as N (NH3-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_3+NO_2)-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					
Total No. of Analytes	6	6			

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

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Attachment 4
Trip Report

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Stoller
established 1959
Grand Junction Office

Memorandum

DATE: December 27, 2013

TO: David Miller

FROM: David Atkinson

SUBJECT: Trip Report

Site: Monument Valley Processing Site.

Dates of Sampling Event: December 9 - 12, 2012

Team Members: Dan Sellers, Joe Trevino, David Atkinson, and Alison Kuhlman.

Number of Locations Sampled: Samples were collected at 44 monitoring well locations and 1 surface water location; 3 duplicate samples were also collected.

Locations Not Sampled/Reason: Location 0735 was dry and no sample was collected. Location 0657 was not sampled due to a communication error.

Location Specific Information: The following locations failed to make turbidity less than 10 NTUs and had to be filtered: 0606, 0734, 0741, 0760, 0764, 0771, and 0774. The sample at location 0764 was collected using a disposable bailer because the water level was below the pump intake. Locations 0733, 0734, 0741, 0742, 0743, 0744, and possibly others have incorrect values for well depths entered in the SEEPro database. It appears that these depth values are entered in total elevation instead of depth below top-of-casing. These incorrect depth numbers need to be changed by the data management team.

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

Ticket #	False ID	Sample Date/Time	QC Type	True ID
LNT 041	2079	12-10-2013/1200	Duplicate	0742
LNT 063	2251	12-10-2013/1444	Duplicate	0623
LNT 032	2711	12-10-2013/1230	Duplicate	0766

RIN Number Assigned: All samples were assigned to RIN 13125794.

Sample Shipment: Samples were shipped overnight via FedEx to ALS Laboratory Group, Fort Collins, CO, from Grand Junction, CO on 12/17/2013.

Water Level Measurements: Water levels were measured at all sampled monitoring wells and at monitoring well 0657.

Well Inspection Summary: All wells appeared to be in good condition.

Field Variance: None.

Equipment: All equipment functioned properly.

Institutional Controls:

Fences, Gates, Locks: All were in working condition.
Trespassing/Site Disturbances: None observed.

Site Issues:

Disposal Cell/Drainage Structure Integrity: N/A.
Vegetation/Noxious Weed Concerns: None observed.
Maintenance Requirements: None observed.
Access Issues: None.

Corrective Action Taken: N/A.

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

Stoller
Grand Junction Office
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Memorandum

DATE: May 14, 2014

TO: David Miller

FROM: Alison Kuhlman

SUBJECT: Trip Report

Site: Monument Valley Processing Site.

Dates of Sampling Event: April 21, 2014

Team Members: Jeff Price and Alison Kuhlman.

Number of Locations Sampled: Samples were collected at 1 monitoring well location.

Locations Not Sampled/Reason: All locations were sampled.

Location Specific Information: Nothing of note.

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

Ticket #	False ID	Sample Date/Time	QC Type	True ID
MFY 879	2603	4/21/2014/1200	Duplicate	0657

RIN Number Assigned: All samples were assigned to RIN 14046091.

Sample Shipment: Samples were shipped overnight via FedEx to ALS Laboratory Group, Fort Collins, CO, from Grand Junction, CO on 4/24/2014.

Water Level Measurements: The water level was measured at the sampled monitoring well.

Well Inspection Summary: The well appeared to be in good condition.

Field Variance: None.

Equipment: All equipment functioned properly.

Institutional Controls:

Fences, Gates, Locks: All were in working condition.
Trespassing/Site Disturbances: None observed.

Site Issues:

Disposal Cell/Drainage Structure Integrity: N/A.
Vegetation/Noxious Weed Concerns: None observed.
Maintenance Requirements: None observed.
Access Issues: None.

Corrective Action Taken: N/A.

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