

Data Validation Package

July 2012
Groundwater and Surface Water
Sampling at the
Naturita, Colorado, Processing
and Disposal Cell Sites

October 2012

This page intentionally left blank

Contents

Sampling Event Summary	1
Naturita, Colorado, Processing Site, Sample Location Map	2
Data Assessment Summary.....	3
Water Sampling Field Activities Verification Checklist.....	5
Laboratory Performance Assessment	7
Sampling Quality Control Assessment.....	14
Certification	16

Attachment 1—Assessment of Anomalous Data

Potential Outliers Report

Attachment 2—Data Presentation

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

Attachment 3—Sampling and Analysis Work Order

Attachment 4—Trip Report

This page intentionally left blank

Sampling Event Summary

Site: Naturita, Colorado, Processing Site

Sampling Period: July 24–25, 2012

This event includes sampling groundwater and surface water at the Naturita Processing Site. Sampling and analysis were conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites (LMS/PLN/S04351, continually updated)*. Duplicate samples were collected from location MAU08.

The 2002 *Ground Water Compliance Action Plan for the Naturita, Colorado, UMTRA Project Site* requires annual monitoring to observe the effectiveness of the groundwater compliance strategy at the site. The sampling conducted included monitoring wells DM1, MAU07, MAU08, NAT01-1, NAT02, NAT08, NAT26, 0715, and 0718, and surface locations 0531, 0533, SM2, and SM4. Well location NAT26 was not sampled due to insufficient water. The water level was measured at each sampled well.

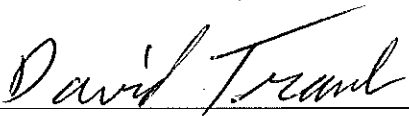
Time-concentration graphs show that uranium and vanadium concentrations in the wells sampled remain below the proposed alternate concentration limits.

Surface water results from San Miguel River locations downstream of and adjacent to the site were compared to statistical benchmark values derived using historical data from location 0531, which is located upstream of the site on the San Miguel River. As shown in Table 1, no benchmark values were exceeded during this event, which indicates that the site is having no measurable impact on river water quality.

Table 1. Comparison of San Miguel River July 2012 Concentrations to Benchmarks

Analyte	Benchmark Value for 0531 (mg/L)	0531 Concentration (mg/L)	SM2 Concentration (mg/L)	SM4 Concentration (mg/L)	0533 Concentration (mg/L)
Uranium	0.0057	0.0036	0.0034	0.0032	0.0040
Vanadium	0.00500	0.0014	0.0012	0.0011	0.0014

mg/L = milligrams per liter


 David Traub
 Site Lead, S.M. Stoller Corporation

10-24-12
 Date



Naturita, Colorado, Processing Site, Sample Location Map

Data Assessment Summary

This page intentionally left blank

Water Sampling Field Activities Verification Checklist

Project	<u>Naturita, Colorado</u>	Date(s) of Water Sampling	<u>July 24–25, 2012</u>
Date(s) of Verification	<u>October 3, 2012</u>	Name of Verifier	<u>Steve Donovan</u>

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures? List other documents, SOPs, instructions.	<u>Yes</u>	<u>Work Order letter dated June 26, 2012.</u>
2. Were the sampling locations specified in the planning documents sampled?	<u>No</u>	<u>Well location NAT26 was not sampled due to insufficient water.</u>
3. Was a pre-trip calibration conducted as specified in the above-named documents?	<u>Yes</u>	<u>Pre-trip calibration was performed on July 24, 2012. The pH–Eh probe was replaced on 7-25-2012, but not calibrated, affecting the data from locations DM1, 0715, and 0718.</u>
4. Was an operational check of the field equipment conducted daily? Did the operational checks meet criteria?	<u>Yes</u>	<u>The 7-24-2012 operational check data were not recorded, compliance with the criteria could not be verified.</u>
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	<u>Yes</u>	
6. Was the category of the well documented?	<u>Yes</u>	
7. Were the following conditions met when purging a Category I well: Was one pump/tubing volume purged prior to sampling?	<u>Yes</u>	
Did the water level stabilize prior to sampling?	<u>Yes</u>	
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	<u>Yes</u>	
Was the flow rate less than 500 mL/min?	<u>Yes</u>	
If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	<u>NA</u>	

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well: Was the flow rate less than 500 mL/min?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	A duplicate sample was collected at location MAU08.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	NA	Dedicated equipment was used for all sample collection.
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number? Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDCS) report?	Yes	
Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDCS) report?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Are field data sheets signed and dated by both team members (hardcopies) or are dates present for the "Date Signed" fields (FDCS)?	Yes	
18. Was all other pertinent information documented on the field data sheets?	Yes	
19. Was the presence or absence of ice in the cooler documented at every sample location?	Yes	
20. Were water levels measured at the locations specified in the planning documents?	Yes	

Laboratory Performance Assessment

General Information

Report Number (RIN): 12074714
Sample Event: July 24–25, 2012
Site(s): Naturita, Colorado, Processing Site
Laboratory: ALS Laboratory Group, Fort Collins, Colorado
Work Order No.: 1207325
Analysis: Metals and Wet Chemistry
Validator: Stephen Donovan
Review Date: October 2, 2012

This validation was performed according to the *Environmental Procedures Catalog*, (LMS/PRO/S04325, continually updated) “Standard Practice for Validation of Laboratory Data.” The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 2.

Table 2. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Total Dissolved Solids	WCH-A-033	EPA 160.1	EPA 160.1
Metals: Arsenic, Uranium, Vanadium	LMM-02	SW-846 3005A	SW-846 6020A

Data Qualifier Summary

Analytical results were qualified as listed in Table 3. Refer to the attached validation worksheets and the sections below for an explanation of the data qualifiers applied.

Table 3. Data Qualifiers

Sample Number	Location	Analyte	Flag	Reason
1207325-3	0715	pH	J	Measurement probe not calibrated
1207325-4	0718	pH	J	Measurement probe not calibrated
1207325-4	0718	ORP	J	Measurement probe not calibrated
1207325-6	DM1	pH	J	Measurement probe not calibrated
1207325-6	DM1	ORP	J	Measurement probe not calibrated

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received 16 water samples on July 27, 2012, accompanied by a Chain of Custody form. The Chain of Custody form was checked to confirm that all of the samples were listed with sample collection dates and times, and that signatures and

dates were present indicating sample relinquishment and receipt. The Chain of Custody form was complete with no errors or omissions. A copy of the air waybill was included with the receiving documentation.

Preservation and Holding Times

The sample shipment was received intact with the temperature inside the iced cooler at 1.8 °C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses and all samples were analyzed within the applicable holding times.

Detection and Quantitation Limits

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

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 160.1

There are no calibration requirements associated with the determination of total dissolved solids.

Method SW-846 6020

Calibrations were performed on July 31, 2012, using four calibration standards. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in four verification checks. All calibration checks met the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the PQL and all results were within the acceptance range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries associated with requested analytes were stable and within acceptable ranges.

Method 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 associated with the samples were below the PQL for all analytes. In cases where a blank concentration exceeds or equals the MDL, the associated sample results are qualified with a “U” flag (not detected) when the dilution-factor-corrected sample result is greater than the MDL but less than 5 times the blank concentration.

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) samples are used to measure method performance in the sample matrix. The spikes met the recovery and precision 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. The replicate results met these criteria, demonstrating acceptable laboratory 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. Method 6020 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.

Electronic Data Deliverable (EDD) File

The original EDD received on August 1, 2012, reported the incorrect filtration status for some of the samples, a revised EDD file arrived on August 1, 2012. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to

ensure all and only the requested data are delivered. The contents of the EDD 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: 12074714 Lab Code: PAR Validator: Stephen Donovan Validation Date: 10/2/2012
Project: Naturita Analysis Type: Metals General Chem Rad Organics
of Samples: 16 Matrix: WATER Requested Analysis Completed: Yes

Chain of Custody

Present: OK Signed: OK Dated: OK

Sample

Integrity: OK Preservation: OK Temperature: OK

Select Quality Parameters

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

All analyses were completed within the applicable holding times.

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

There was 1 duplicate evaluated.

SAMPLE MANAGEMENT SYSTEM
Metals Data Validation Worksheet

RIN: 12074714 Lab Code: PAR Date Due: 8/24/2012
 Matrix: Water Site Code: NAT Date Completed: 8/2/2012

Analyte	Method Type	Date Analyzed	CALIBRATION							Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
			Int.	R^2	ICV	CCV	ICB	CCB									
Arsenic	ICP/MS	07/31/2012	0.0000	1.0000	OK	OK	OK	OK	OK	105.0	106.0	102.0	4.0	105.0		108.0	
Molybdenum	ICP/MS	07/31/2012	0.0000	1.0000	OK	OK	OK	OK	OK	103.0	104.0	102.0	2.0	100.0	4.0	124.0	
Molybdenum	ICP/MS	07/31/2012											3.0				
Uranium	ICP/MS	07/31/2012	0.0000	1.0000	OK	OK	OK	OK	OK	108.0	91.0	75.0	1.0	104.0	0.0	120.0	
Uranium	ICP/MS	07/31/2012											1.0				
Vanadium	ICP/MS	07/31/2012	0.0000	1.0000	OK	OK	OK	OK	OK	103.0	107.0	104.0	3.0	104.0		100.0	

SAMPLE MANAGEMENT SYSTEM
Wet Chemistry Data Validation Worksheet

RIN: 12074714 Lab Code: PAR Date Due: 8/24/2012
 Matrix: Water Site Code: NAT Date Completed: 8/2/2012

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	ICV	CCV	ICB	CCB						
TOTAL DISSOLVED SOLIDS	07/28/2012							OK	97.00			2.00	
TOTAL DISSOLVED SOLIDS	07/28/2012											1.00	

Sampling Quality Control Assessment

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

Sampling Protocol

All wells were sampled with dedicated tubing using the low-flow purge procedure, meeting the Category I or II criteria. Sample results for all wells were qualified with an “F” flag in the database, indicating the wells were purged and sampled using the low-flow sampling method. Additionally, the results for wells BR95-1, BR95-2, and BR95-3 are qualified with a “Q” flag as Category II wells because of water level draw-down.

Surface water locations were sampled using container immersion or a peristaltic pump and tubing reel.

Field Measurements

The pH–Eh probe was replaced on 7-25-2012, but not calibrated before use, affecting the data from locations DM1, 0715, and 0718; the Eh data from location 0715 was not recorded. The pH and Eh data from these locations is qualified with a “J” flag as estimated values. The 7-24-2012 operational check was performed, but the data were not recorded and compliance with the acceptance criteria could not be verified. The field data collected on that date are accepted based on comparison to historical values.

Field Duplicate Analysis

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. A duplicate sample (field ID 2517) was collected from location MAU08. The duplicate results met the criteria, demonstrating acceptable overall precision.

SAMPLE MANAGEMENT SYSTEM
Validation Report: Field Duplicates

Page 1 of 1

RIN: 12074714 Lab Code: PAR Project: Naturita Validation Date: 10/2/2012

Duplicate: 2517

Sample: MAU08

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
Arsenic	0.7			1	0.66			1	5.88		UG/L
TOTAL DISSOLVED SOLIDS	1900			1	1800			1	5.41		MG/L
Uranium	710			50	690			50	2.86		UG/L
Vanadium	0.36			1	0.4			1	10.53		UG/L

Certification

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

Laboratory Coordinator: Stephen Donovan 10-24-2012
Stephen Donovan Date

Data Validation Lead: Stephen Donovan 10-24-2012
Stephen Donovan Date

Attachment 1
Assessment of Anomalous Data

This page intentionally left blank

Potential Outliers Report

This page intentionally left blank

Potential Outliers Report

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

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

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

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

Three results were identified as potentially anomalous. The concentrations of these analytes are trending upward or downward at the respective locations. The data for this RIN are acceptable as qualified.

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: ALS Laboratory Group

RIN: 12074714

Report Date: 10/5/2012

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current			Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Qualifiers Lab	Data	Result	Qualifiers Lab	Data	Result	Qualifiers Lab	Data	N	N Below Detect	
NAT01	0533	N001	07/24/2012	Total Dissolved Solids	730			710			200			30	0	No
NAT01	0715	N001	07/25/2012	Uranium	0.049	F		0.11	F		0.061	FQ		5	0	No
NAT01	0718	N001	07/25/2012	Arsenic	0.0044	F		0.004	F		0.0022			6	0	No
NAT01	0718	N001	07/25/2012	Total Dissolved Solids	640	F		1500	F		930			6	0	No
NAT01	0718	N001	07/25/2012	Vanadium	0.0025	F		0.0006	UF		0.00031			6	3	Yes
NAT01	DM1	N001	07/25/2012	Vanadium	0.00013	B	F	0.04	DIU		0.00018	B	F	21	11	No
NAT01	MAU07	N001	07/25/2012	Total Dissolved Solids	740	F		2300	F		1000	F		15	0	No
NAT01	MAU07	N001	07/25/2012	Uranium	0.16	F		0.906	DI		0.19	F		21	0	Yes
NAT01	NAT01-1	N001	07/25/2012	Uranium	0.52	F		1.31	DI		0.55	F		23	0	No
NAT01	NAT02	N001	07/25/2012	Total Dissolved Solids	630	F		897			690	F		12	0	No
NAT14	BR95-1	N001	07/24/2012	Uranium	0.12	FQ		0.117			0.1	JF		5	0	No
NAT14	BR95-2	N001	07/24/2012	Total Dissolved Solids	670	FQ		660	F		570			9	0	No
NAT14	BR95-2	N001	07/24/2012	Uranium	0.057	FQ		0.053	FQ		0.0338	L		13	0	No
NAT14	BR95-3	N001	07/24/2012	Arsenic	0.00091	FQ		0.0051	L		0.00094	F		10	1	No
NAT14	BR95-3	N001	07/24/2012	Uranium	0.039	FQ		0.032	F		0.0133			10	0	Yes

STATISTICAL TESTS:

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

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

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

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

Attachment 2
Data Presentation

This page intentionally left blank

Groundwater Quality Data

This page intentionally left blank

Groundwater Quality Data by Location (USEE100) FOR SITE NAT01, Naturita Processing Site

REPORT DATE: 10/5/2012

Location: 0715 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO ₃)	mg/L	07/25/2012	N001	5.49	- 10.42	264		F	#		
Arsenic	mg/L	07/25/2012	N001	5.49	- 10.42	0.005		F	#	0.000015	
pH	s.u.	07/25/2012	N001	5.49	- 10.42	7.23		FJ	#		
Specific Conductance	umhos /cm	07/25/2012	N001	5.49	- 10.42	967		F	#		
Temperature	C	07/25/2012	N001	5.49	- 10.42	16.75		F	#		
Total Dissolved Solids	mg/L	07/25/2012	N001	5.49	- 10.42	1200		F	#	40	
Turbidity	NTU	07/25/2012	N001	5.49	- 10.42	3.26		F	#		
Uranium	mg/L	07/25/2012	N001	5.49	- 10.42	0.049		F	#	0.0000029	
Vanadium	mg/L	07/25/2012	N001	5.49	- 10.42	0.00027	B	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE NAT01, Naturita Processing Site

REPORT DATE: 10/5/2012

Location: 0718 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO ₃)	mg/L	07/25/2012	N001	8.6	- 18.6	340		F	#		
Arsenic	mg/L	07/25/2012	N001	8.6	- 18.6	0.0044		F	#	0.000015	
Oxidation Reduction Potential	mV	07/25/2012	N001	8.6	- 18.6	-38.6		FJ	#		
pH	s.u.	07/25/2012	N001	8.6	- 18.6	6.92		FJ	#		
Specific Conductance	umhos /cm	07/25/2012	N001	8.6	- 18.6	1637		F	#		
Temperature	C	07/25/2012	N001	8.6	- 18.6	14.42		F	#		
Total Dissolved Solids	mg/L	07/25/2012	N001	8.6	- 18.6	640		F	#	20	
Turbidity	NTU	07/25/2012	N001	8.6	- 18.6	7.27		F	#		
Uranium	mg/L	07/25/2012	N001	8.6	- 18.6	0.066		F	#	0.000029	
Vanadium	mg/L	07/25/2012	N001	8.6	- 18.6	0.0025		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE NAT01, Naturita Processing Site

REPORT DATE: 10/5/2012

Location: DM1 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO ₃)	mg/L	07/25/2012	N001	2.67	- 7.67	203		F	#		
Arsenic	mg/L	07/25/2012	N001	2.67	- 7.67	0.0011		F	#	0.000015	
Oxidation Reduction Potential	mV	07/25/2012	N001	2.67	- 7.67	19.2		FJ	#		
pH	s.u.	07/25/2012	N001	2.67	- 7.67	6.96		FJ	#		
Specific Conductance	umhos/cm	07/25/2012	N001	2.67	- 7.67	767		F	#		
Temperature	C	07/25/2012	N001	2.67	- 7.67	19.87		F	#		
Total Dissolved Solids	mg/L	07/25/2012	N001	2.67	- 7.67	510		F	#	20	
Turbidity	NTU	07/25/2012	N001	2.67	- 7.67	2.17		F	#		
Uranium	mg/L	07/25/2012	N001	2.67	- 7.67	0.0033		F	#	0.000029	
Vanadium	mg/L	07/25/2012	N001	2.67	- 7.67	0.00013	B	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE NAT01, Naturita Processing Site

REPORT DATE: 10/5/2012

Location: MAU07 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO ₃)	mg/L	07/25/2012	N001	2.92	- 7.92	269		F	#		
Arsenic	mg/L	07/25/2012	N001	2.92	- 7.92	0.0049		F	#	0.000015	
Oxidation Reduction Potential	mV	07/25/2012	N001	2.92	- 7.92	-38.7		F	#		
pH	s.u.	07/25/2012	N001	2.92	- 7.92	7.07		F	#		
Specific Conductance	umhos/cm	07/25/2012	N001	2.92	- 7.92	1063		F	#		
Temperature	C	07/25/2012	N001	2.92	- 7.92	17.06		F	#		
Total Dissolved Solids	mg/L	07/25/2012	N001	2.92	- 7.92	740		F	#	20	
Turbidity	NTU	07/25/2012	N001	2.92	- 7.92	3.8		F	#		
Uranium	mg/L	07/25/2012	N001	2.92	- 7.92	0.16		F	#	0.000029	
Vanadium	mg/L	07/25/2012	N001	2.92	- 7.92	0.00026	B	F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE NAT01, Naturita Processing Site

REPORT DATE: 10/5/2012

Location: MAU08 WELL

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO ₃)	mg/L	07/25/2012	N001	6.17	- 11.17	469		F	#		
Arsenic	mg/L	07/25/2012	N001	6.17	- 11.17	0.0007		F	#	0.000015	
Arsenic	mg/L	07/25/2012	N002	6.17	- 11.17	0.00066		F	#	0.000015	
Oxidation Reduction Potential	mV	07/25/2012	N001	6.17	- 11.17	89.3		F	#		
pH	s.u.	07/25/2012	N001	6.17	- 11.17	7		F	#		
Specific Conductance	umhos /cm	07/25/2012	N001	6.17	- 11.17	2638		F	#		
Temperature	C	07/25/2012	N001	6.17	- 11.17	16.7		F	#		
Total Dissolved Solids	mg/L	07/25/2012	N001	6.17	- 11.17	1900		F	#	80	
Total Dissolved Solids	mg/L	07/25/2012	N002	6.17	- 11.17	1800		F	#	80	
Turbidity	NTU	07/25/2012	N001	6.17	- 11.17	7.27		F	#		
Uranium	mg/L	07/25/2012	N001	6.17	- 11.17	0.71		F	#	0.00015	
Uranium	mg/L	07/25/2012	N002	6.17	- 11.17	0.69		F	#	0.00015	
Vanadium	mg/L	07/25/2012	N001	6.17	- 11.17	0.00036		F	#	0.000015	
Vanadium	mg/L	07/25/2012	N002	6.17	- 11.17	0.0004		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE NAT01, Naturita Processing Site

REPORT DATE: 10/5/2012

Location: NAT01-1 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO ₃)	mg/L	07/25/2012	N001	17 - 17.5	314		F	#		
Arsenic	mg/L	07/25/2012	N001	17 - 17.5	0.0093		F	#	0.000074	
Oxidation Reduction Potential	mV	07/25/2012	N001	17 - 17.5	-40.9		F	#		
pH	s.u.	07/25/2012	N001	17 - 17.5	7.12		F	#		
Specific Conductance	umhos/cm	07/25/2012	N001	17 - 17.5	1861		F	#		
Temperature	C	07/25/2012	N001	17 - 17.5	17.7		F	#		
Total Dissolved Solids	mg/L	07/25/2012	N001	17 - 17.5	1400		F	#	40	
Turbidity	NTU	07/25/2012	N001	17 - 17.5	7.47		F	#		
Uranium	mg/L	07/25/2012	N001	17 - 17.5	0.52		F	#	0.00015	
Vanadium	mg/L	07/25/2012	N001	17 - 17.5	0.0028		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE NAT01, Naturita Processing Site

REPORT DATE: 10/5/2012

Location: NAT02 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO ₃)	mg/L	07/25/2012	N001	6.42	- 11.42	224		F	#		
Arsenic	mg/L	07/25/2012	N001	6.42	- 11.42	0.0071		F	#	0.00015	
Oxidation Reduction Potential	mV	07/25/2012	N001	6.42	- 11.42	-30.2		F	#		
pH	s.u.	07/25/2012	N001	6.42	- 11.42	7.21		F	#		
Specific Conductance	umhos /cm	07/25/2012	N001	6.42	- 11.42	943		F	#		
Temperature	C	07/25/2012	N001	6.42	- 11.42	16.32		F	#		
Total Dissolved Solids	mg/L	07/25/2012	N001	6.42	- 11.42	630		F	#	20	
Turbidity	NTU	07/25/2012	N001	6.42	- 11.42	6.77		F	#		
Uranium	mg/L	07/25/2012	N001	6.42	- 11.42	0.14		F	#	0.000029	
Vanadium	mg/L	07/25/2012	N001	6.42	- 11.42	0.56		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE NAT01, Naturita Processing Site

REPORT DATE: 10/5/2012

Location: NAT08 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO ₃)	mg/L	07/25/2012	N001	6.3	- 11.3	293		F	#		
Arsenic	mg/L	07/25/2012	N001	6.3	- 11.3	0.024		F	#	0.00074	
Oxidation Reduction Potential	mV	07/25/2012	N001	6.3	- 11.3	-30.3		F	#		
pH	s.u.	07/25/2012	N001	6.3	- 11.3	7.07		F	#		
Specific Conductance	umhos /cm	07/25/2012	N001	6.3	- 11.3	1625		F	#		
Temperature	C	07/25/2012	N001	6.3	- 11.3	16.18		F	#		
Total Dissolved Solids	mg/L	07/25/2012	N001	6.3	- 11.3	1200		F	#	40	
Turbidity	NTU	07/25/2012	N001	6.3	- 11.3	2.73		F	#		
Uranium	mg/L	07/25/2012	N001	6.3	- 11.3	0.34		F	#	0.00015	
Vanadium	mg/L	07/25/2012	N001	6.3	- 11.3	2.1		F	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE NAT14, Naturita Disposal Site

REPORT DATE: 10/5/2012

Location: BR95-1 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Qualifiers		Detection Limit	Uncertainty
							Lab	Data QA		
Alkalinity, Total (As CaCO ₃)	mg/L	07/24/2012	N001	221	- 241	419		FQ #		
Arsenic	mg/L	07/24/2012	N001	221	- 241	0.00038		FQ #	0.000015	
Molybdenum	mg/L	07/24/2012	N001	221	- 241	0.0051		FQ #	0.000032	
Oxidation Reduction Potential	mV	07/24/2012	N001	221	- 241	142.7		FQ #		
pH	s.u.	07/24/2012	N001	221	- 241	7.86		FQ #		
Specific Conductance	umhos /cm	07/24/2012	N001	221	- 241	950		FQ #		
Temperature	C	07/24/2012	N001	221	- 241	25.25		FQ #		
Total Dissolved Solids	mg/L	07/24/2012	N001	221	- 241	590		FQ #	20	
Turbidity	NTU	07/24/2012	N001	221	- 241	1.62		FQ #		
Uranium	mg/L	07/24/2012	N001	221	- 241	0.12		FQ #	0.0000029	
Vanadium	mg/L	07/24/2012	N001	221	- 241	0.00015	B	FQ #	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE NAT14, Naturita Disposal Site

REPORT DATE: 10/5/2012

Location: BR95-2 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO ₃)	mg/L	07/24/2012	N001	163	- 183	569		FQ	#		
Arsenic	mg/L	07/24/2012	N001	163	- 183	0.00042		FQ	#	0.000015	
Molybdenum	mg/L	07/24/2012	N001	163	- 183	0.0022		FQ	#	0.000032	
Oxidation Reduction Potential	mV	07/24/2012	N001	163	- 183	118.2		FQ	#		
pH	s.u.	07/24/2012	N001	163	- 183	7.11		FQ	#		
Specific Conductance	umhos/cm	07/24/2012	N001	163	- 183	1148		FQ	#		
Temperature	C	07/24/2012	N001	163	- 183	15.83		FQ	#		
Total Dissolved Solids	mg/L	07/24/2012	N001	163	- 183	670		FQ	#	20	
Turbidity	NTU	07/24/2012	N001	163	- 183	1.56		FQ	#		
Uranium	mg/L	07/24/2012	N001	163	- 183	0.057		FQ	#	0.0000029	
Vanadium	mg/L	07/24/2012	N001	163	- 183	0.0042		FQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE NAT14, Naturita Disposal Site

REPORT DATE: 10/5/2012

Location: BR95-3 WELL

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO ₃)	mg/L	07/24/2012	N001	194 - 214	497		FQ	#		
Arsenic	mg/L	07/24/2012	N001	194 - 214	0.00091		FQ	#	0.000015	
Molybdenum	mg/L	07/24/2012	N001	194 - 214	0.012		FQ	#	0.000032	
Oxidation Reduction Potential	mV	07/24/2012	N001	194 - 214	128.6		FQ	#		
pH	s.u.	07/24/2012	N001	194 - 214	7.19		FQ	#		
Specific Conductance	umhos/cm	07/24/2012	N001	194 - 214	1278		FQ	#		
Temperature	C	07/24/2012	N001	194 - 214	16.75		FQ	#		
Total Dissolved Solids	mg/L	07/24/2012	N001	194 - 214	800		FQ	#	40	
Turbidity	NTU	07/24/2012	N001	194 - 214	1.14		FQ	#		
Uranium	mg/L	07/24/2012	N001	194 - 214	0.039		FQ	#	0.0000029	
Vanadium	mg/L	07/24/2012	N001	194 - 214	0.00043		FQ	#	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

This page intentionally left blank

Surface Water Quality Data by Location (USEE102) FOR SITE NAT01, Naturita Processing Site

REPORT DATE: 10/5/2012

Location: 0531 SURFACE LOCATION SURFACE WATER LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data		
Alkalinity, Total (As CaCO ₃)	mg/L	07/24/2012	N001	167		#		
Arsenic	mg/L	07/24/2012	N001	0.0019		#	0.000015	
Oxidation Reduction Potential	mV	07/24/2012	N001	114.2		#		
pH	s.u.	07/24/2012	N001	8.44		#		
Specific Conductance	umhos/cm	07/24/2012	N001	984		#		
Temperature	C	07/24/2012	N001	25.7		#		
Total Dissolved Solids	mg/L	07/24/2012	N001	700		#	20	
Turbidity	NTU	07/24/2012	N001	9.85		#		
Uranium	mg/L	07/24/2012	N001	0.0036		#	0.0000029	
Vanadium	mg/L	07/24/2012	N001	0.0014		#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE NAT01, Naturita Processing Site

REPORT DATE: 10/5/2012

Location: 0533 SURFACE LOCATION SURFACE WATER LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Alkalinity, Total (As CaCO ₃)	mg/L	07/24/2012	N001	151		#		
Arsenic	mg/L	07/24/2012	N001	0.0019		#	0.000015	
Oxidation Reduction Potential	mV	07/24/2012	N001	115.2		#		
pH	s.u.	07/24/2012	N001	8.3		#		
Specific Conductance	umhos/cm	07/24/2012	N001	1004		#		
Temperature	C	07/24/2012	N001	25.85		#		
Total Dissolved Solids	mg/L	07/24/2012	N001	730		#	20	
Turbidity	NTU	07/24/2012	N001	5.9		#		
Uranium	mg/L	07/24/2012	N001	0.004		#	0.0000029	
Vanadium	mg/L	07/24/2012	N001	0.0014		#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE NAT01, Naturita Processing Site

REPORT DATE: 10/5/2012

Location: SM2 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data		
Alkalinity, Total (As CaCO ₃)	mg/L	07/25/2012	0001	254		#		
Arsenic	mg/L	07/25/2012	0001	0.0018		#	0.000015	
Oxidation Reduction Potential	mV	07/25/2012	N001	198.7		#		
pH	s.u.	07/25/2012	N001	7.94		#		
Specific Conductance	umhos/cm	07/25/2012	N001	897		#		
Temperature	C	07/25/2012	N001	27.3		#		
Total Dissolved Solids	mg/L	07/25/2012	0001	650		#	20	
Turbidity	NTU	07/25/2012	N001	15.2		#		
Uranium	mg/L	07/25/2012	0001	0.0034		#	0.0000029	
Vanadium	mg/L	07/25/2012	0001	0.0012		#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE NAT01, Naturita Processing Site

REPORT DATE: 10/5/2012

Location: SM4 SURFACE LOCATION

Parameter	Units	Sample		Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID		Lab	Data QA		
Alkalinity, Total (As CaCO ₃)	mg/L	07/25/2012	0001	177		#		
Arsenic	mg/L	07/25/2012	0001	0.0017		#	0.000015	
Oxidation Reduction Potential	mV	07/25/2012	N001	19		#		
pH	s.u.	07/25/2012	N001	7.77		#		
Specific Conductance	umhos/cm	07/25/2012	N001	936		#		
Temperature	C	07/25/2012	N001	23.94		#		
Total Dissolved Solids	mg/L	07/25/2012	0001	680		#	20	
Turbidity	NTU	07/25/2012	N001	21.94		#		
Uranium	mg/L	07/25/2012	0001	0.0032		#	0.0000029	
Vanadium	mg/L	07/25/2012	0001	0.0011		#	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.

This page intentionally left blank

Static Water Level Data

This page intentionally left blank

STATIC WATER LEVELS (USEE700) FOR SITE NAT01, Naturita Processing Site
REPORT DATE: 10/5/2012

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)	Water Level Flag
0715			07/25/2012	15:10:01	5.89	NA	E
0718			07/25/2012	14:30:25	11.99	NA	E
DM1		5310.81	07/25/2012	13:45:39	8.74	5302.07	
MAU07		5280.88	07/25/2012	11:10:45	7.68	5273.2	
MAU08		5291.19	07/25/2012	10:40:53	12.41	5278.78	
NAT01-1		5295.46	07/25/2012	11:50:34	12.52	5282.94	
NAT02		5294.09	07/25/2012	12:55:27	7.94	5286.15	
NAT08		5292.73	07/25/2012	12:30:30	8.32	5284.41	
BR95-1	O		07/24/2012	14:05:59	210.15	NA	E
BR95-2	O		07/24/2012	12:05:49	173.03	NA	E
BR95-3	O		07/24/2012	12:50:29	210.82	NA	E

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

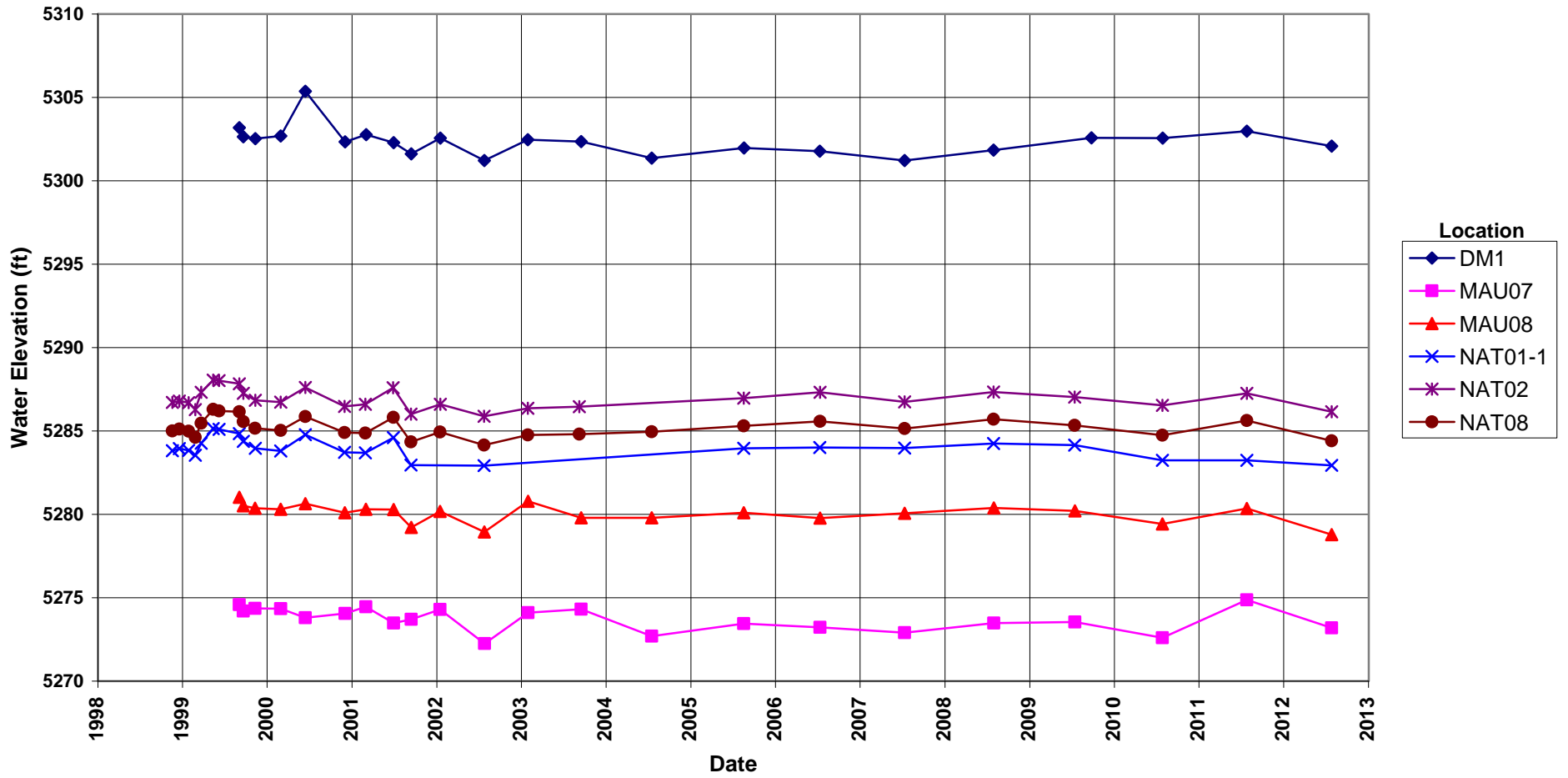
WATER LEVEL FLAGS: E TOP OF CASING ELEVATION DATA NOT AVAILABLE

This page intentionally left blank

Hydrograph

This page intentionally left blank

Naturita Processing Site Hydrograph



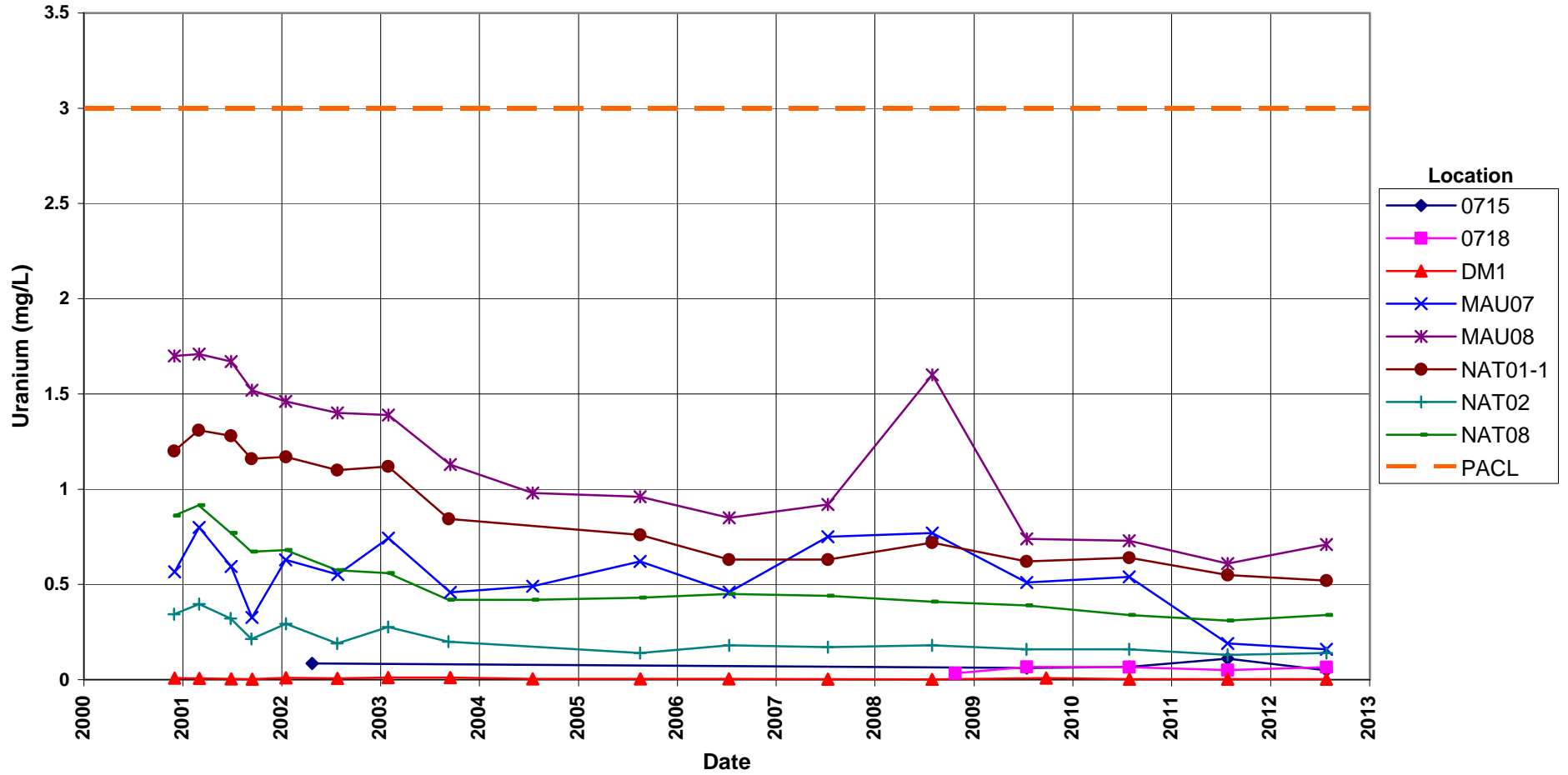
This page intentionally left blank

Time-Concentration Graphs

This page intentionally left blank

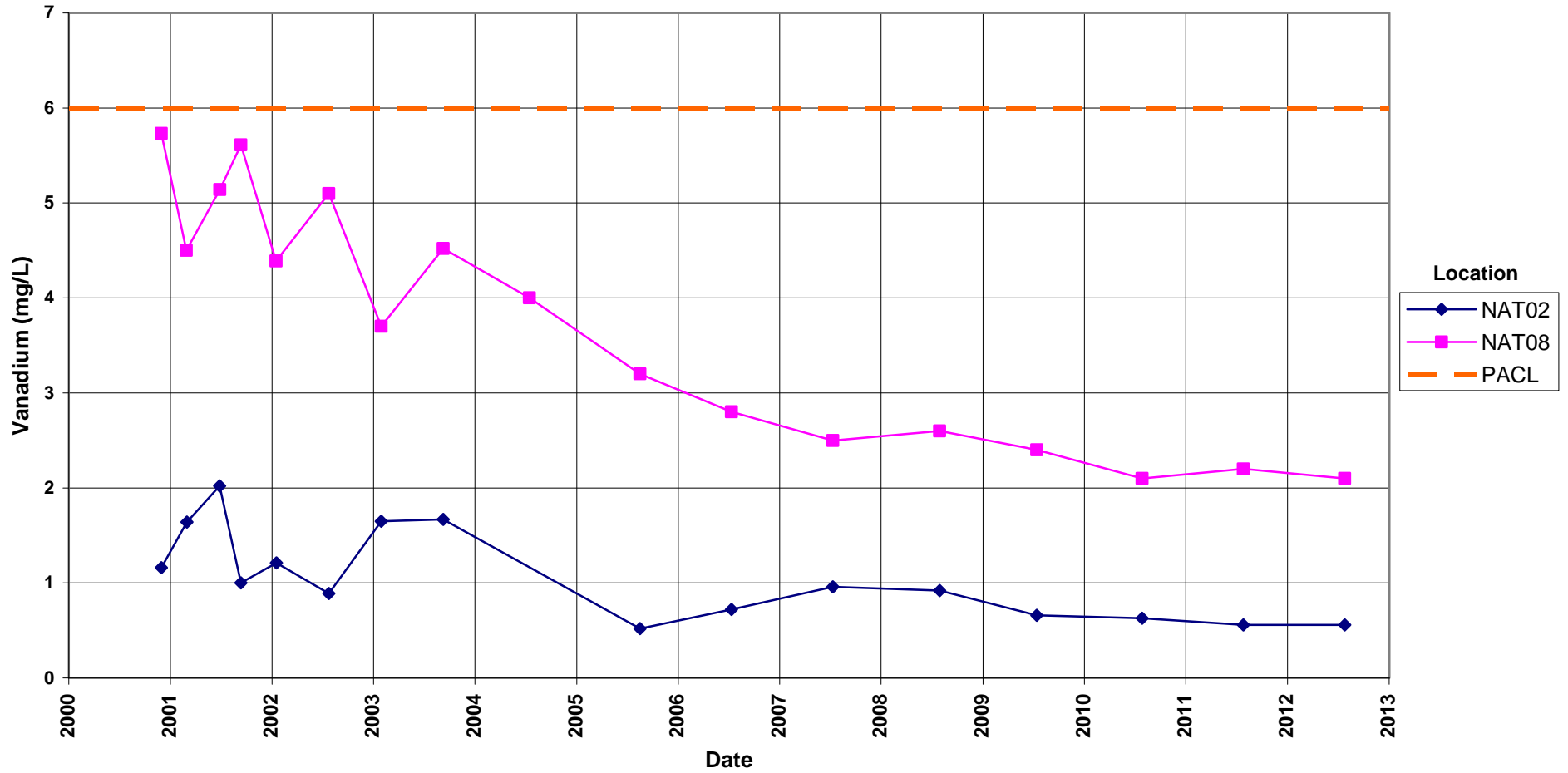
Naturita Processing Site Uranium Concentration

Proposed Alternate Concentration Limit (PACL) = 3.0 mg/L



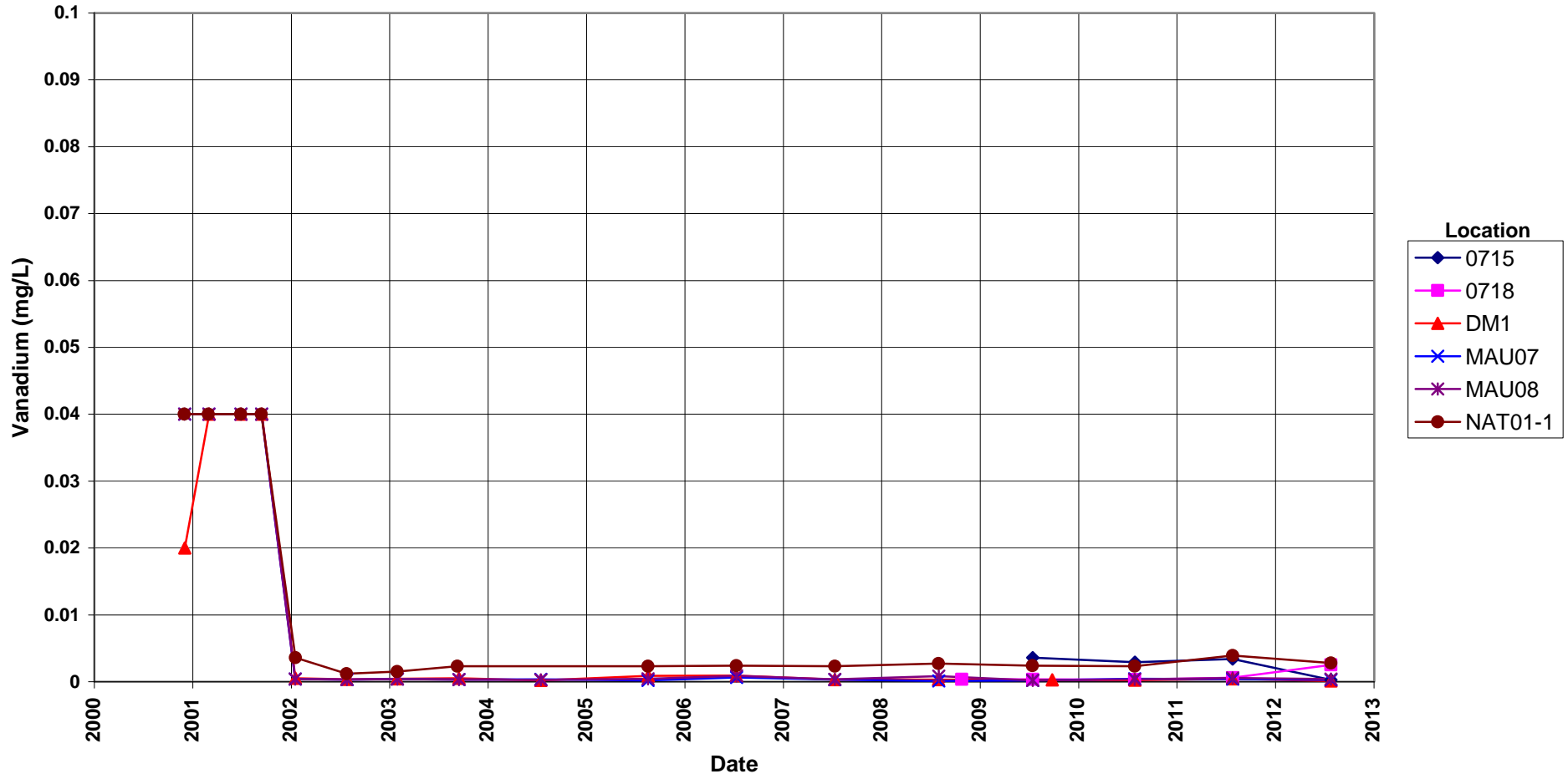
Naturita Processing Site Vanadium Concentration

Proposed Alternate Concentration Limit (PACL) = 6.0 mg/L



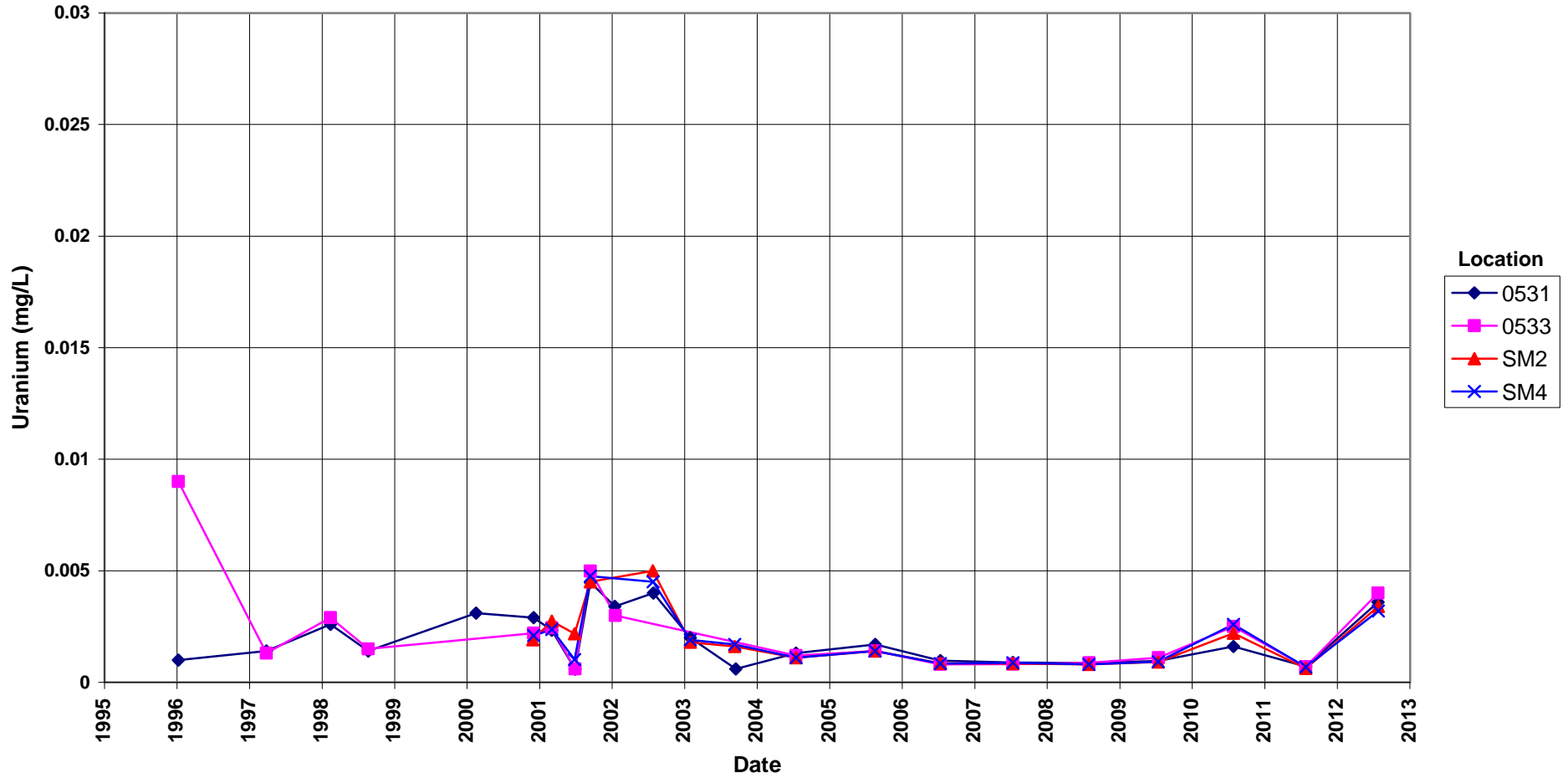
Naturita Processing Site Vanadium Concentration

Proposed Alternate Concentration Limit (PACL) = 6.0 mg/L



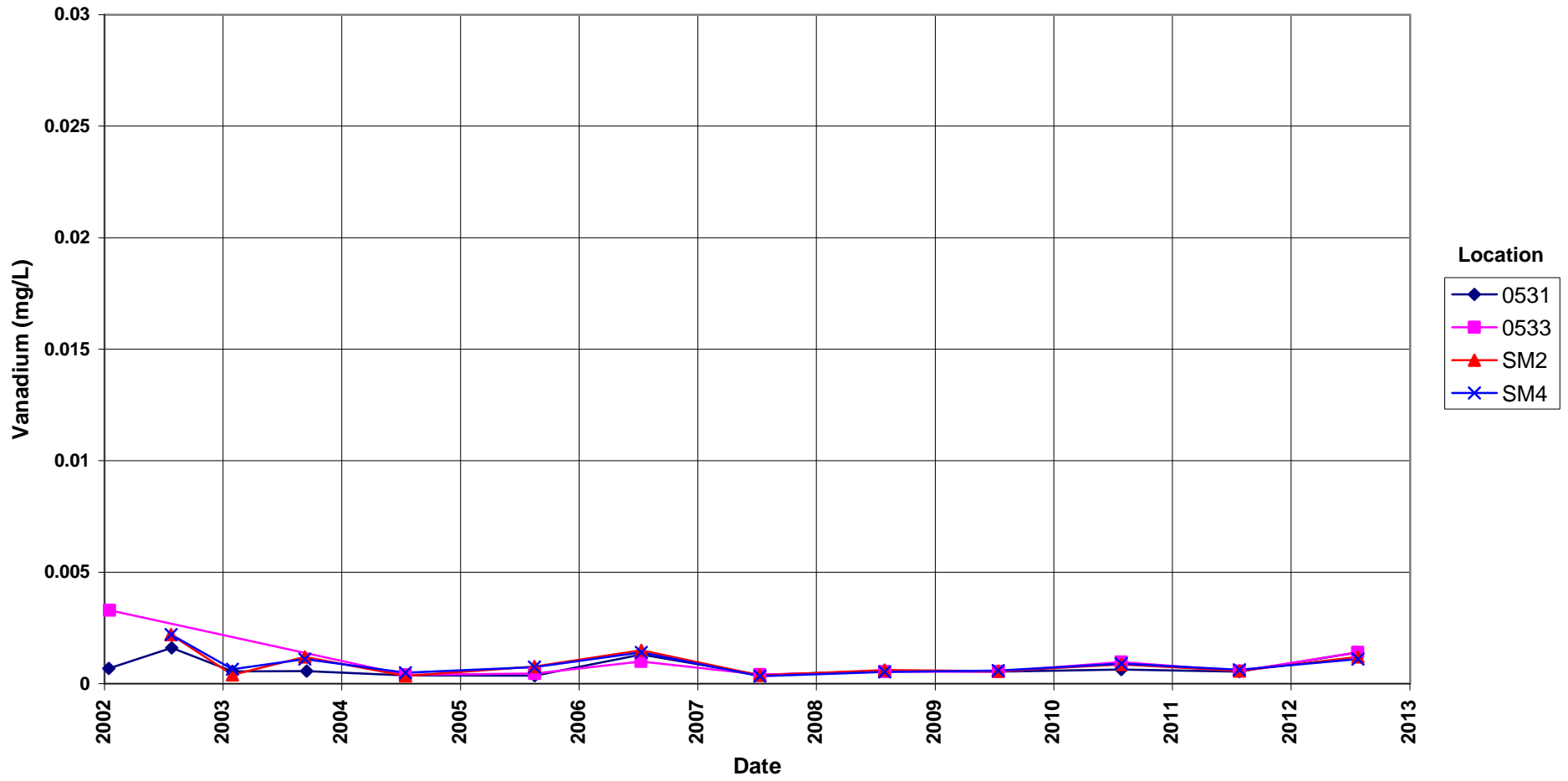
Naturita Processing Site--Surface Water Locations Uranium Concentration

Proposed Alternate Concentration Limit (PACL) = 3.0 mg/L



Naturita Processing Site--Surface Water Locations Vanadium Concentration

Proposed Alternate Concentration Limit (PACL) = 6.0 mg/L



This page intentionally left blank

Attachment 3
Sampling and Analysis Work Order

This page intentionally left blank



established 1959

Task Order LM00-501
Control Number 12-0713

June 26, 2012

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

SUBJECT: Contract No. DE-AM01-07LM00060, S.M. Stoller Corporation (Stoller)
July 2012 Environmental Sampling at the Naturita, Colorado, Processing and
Disposal Sites

REFERENCE: Task Order LM00-501-02-115-402, Naturita, Colorado, Sites

Dear Mr. Kautsky:

The purpose of this letter is to inform you of the upcoming sampling event at Naturita, Colorado. Enclosed are the maps and tables specifying sample locations and analytes for monitoring at the Naturita sites. Water quality data will be collected from monitoring wells and surface locations at these sites as part of the routine environmental sampling currently scheduled to begin the week of July 23, 2012.

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

Monitoring Wells*

Processing Site

NAT01-1 AI	NAT 02 AI	NAT08 AI	NAT26 AI	0718 AI
MAU07 AI	MAU08 AI	DMI AI	0715 AI	

Disposal Site

BR95-1 Ju/Jv	BR95-2 Ju/Jv	BR95-3 Ju/Jv
--------------	--------------	--------------

*NOTE: AI = Alluvium; Ju/Jv = Jurassic Morrison/Summerville Formation;

Surface Locations (filtered)

0531	0533	SM2	SM4
------	------	-----	-----

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 being reviewed and are expected to be complete by the beginning of fieldwork.

Mark Kautsky
Control Number 12-0713
Page 2

Please contact me at (970) 248-6557 if you have any questions.

Sincerely,



David Traub
Site Lead

DT/lcg/lb

Enclosures (3)

cc: (electronic)

Karl Stoeckle, DOE
Steve Donovan, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
David Traub, Stoller
EDD Delivery
rc-grand.junction
File: NAP410.02(A)
NAD410.02(A)

Sampling Frequencies for Locations at Naturita, Colorado

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
Monitoring Wells						
NAT01						
715			X			
718			X			
NAT01-1			X			
NAT02			X			
NAT08			X			
NAT26			X			
MAU07			X			
MAU08			X			
DM1			X			
NAT14						
BR95-1				Even year		Next in 7/2012
BR95-2				Even year		Next in 7/2012
BR95-3				Even year		Next in 7/2012
Surface Locations						
531			X			
533			X			
SM2			X			
SM4			X			

Annual sampling conducted in July
 Biennial sampling conducted in July

Sampling Frequencies for Locations at Naturita, Colorado

Site	Naturita				
Analyte	Groundwater	Surface Water	Required Detection Limit (mg/L)	Analytical Method	Line Item Code
Approx. No. Samples/yr	14	5			
Field Measurements					
Alkalinity	X	X			
Dissolved Oxygen					
Redox Potential	X	X			
pH	X	X			
Specific Conductance	X	X			
Turbidity	X				
Temperature	X	X			
Laboratory Measurements					
Aluminum					
Ammonia as N (NH ₃ -N)					
Arsenic	X	X	0.0001	SW-846 6020	LMM-02
Calcium					
Chloride					
Chromium					
Gross Alpha					
Gross Beta					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum	BR and CM wells only		0.003	SW-846 6020	LMM-02
Nickel					
Nickel-63					
Nitrate + Nitrite as N (NO ₃ +NO ₂)-N					
Potassium					
Radium-226					
Radium-228					
Selenium					
Silica					
Sodium					
Strontium					
Sulfate					
Sulfide					
Total Dissolved Solids	X	X	10	SM2540 C	WCH-A-033
Total Organic Carbon					
Uranium	X	X	0.0001	SW-846 6020	LMM-02
Vanadium	X	X	0.0003	SW-846 6020	LMM-02
Zinc					
Total No. of Analytes	5	4			

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

Attachment 4
Trip Report

This page intentionally left blank

Memorandum

Control Number N/A

DATE: August 14, 2012

TO: David Traub

FROM: Dan Sellers

SUBJECT: Trip Report

Site: Naturita, CO. Processing and Disposal Sites

Dates of Sampling Event: July 24-25, 2011.

Team Members: Joe Trevino and Dan Sellers

Number of Locations Sampled: 8 monitoring wells and 4 surface water locations at the Processing site were sampled for As, U, V, and TDS. At the Disposal site, 3 well locations were sampled for As, MO, U, V, and TDS.

Locations Not Sampled/Reason: Well location NAT01-NAT26 at the Processing site was not sampled due to insufficient water.

Location Specific Information: At the Disposal site, all three wells (BR95-1, BR95-2, and BR95-3) are all CAT II wells. BR95-1 location is very difficult to access from road above. In the future this location should be accessed from below using ATV's.

At the Processing site, Eh readings at all wells were negative values except for well DM1. The Eh and pH probe was replaced prior to sampling the last three wells (DM1, 0715, and 0718). Probe was replaced after comparing last sampling Eh values to current values. The Eh values from last sampling event were all positive. However, once compared to database for history of Eh readings for these same wells, negative readings are considered the normal. The initial probe used is considered good and readings can be considered correct. At the last three wells sampled (DM1, 0715, and 0718) the Eh and pH values are considered suspect and should be flagged. The newly installed probe was only checked with calibration solutions (Zobell and 7 pH buffer) and not calibrated per Sampling Plan, however, actual values were within 10 percent.

Field Variance: Water level in NAT01-01 was measured from one of the two ¾" PVC well casings (one marked as "2"); the other casing (marked as "1") was purged and sampled. Water levels from both casings were identical (12.52') prior to purging. Water level in "2" did fluctuate while purge continued and stabilized at 12.58'. This well is considered CAT I and was sampled after three readings and parameters were stable.

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

False ID	True ID	Sample Type	Ticket Number	Matrix
2517	NAT01-MAU08	Duplicate	KIS 427	Groundwater

Requisition Number Assigned: All samples were assigned to requisition identification number (RIN) 12074714. All samples were shipped from Grand Junction via Fed-Ex to ALS Laboratory Group on July 26, 2012.

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

Well Inspection Summary: All wells sampled were in good condition. One well that was not sampled (MAU05) had the outer casing with concrete exposed above ground and bent over.

Equipment: All wells are equipped with dedicated tubing and all were sampled with a peristaltic or dedicated bladder pump. The surface water locations were sampled by container immersion.

Regulatory: N/A

Institutional Controls

Fences, Gates, Locks: No issues observed.

Signs: Not applicable.

Trespassing/Site Disturbances: None observed.

Site Issues: None observed

Disposal Cell/Drainage Structure Integrity: Not applicable.

Vegetation/Noxious Weed Concerns: Not applicable.

Maintenance Requirements: None.

Access Issues: None. Landowner where well 0715 is located asked to be called prior to sampling: 970-864-7913. Call was made but no answer. Access to the property was successful and an effort was made to contact the owner at the trailer house but no one was home.

A fence has been built across the Processing site that prevents vehicle access to wells MAU07, MAU04, and MAU03.

Corrective Action Required/Taken: Well BR95-1 at the Disposal site needs a drop tube installed. Consider eliminating Eh readings at both sites.

(DLS/lcg)

cc: (electronic)
Mark Kautsky, DOE
Steve Donivan, Stoller
EDD Delivery