Data Validation Package

November 2011
Groundwater and Surface Water Sampling at the Old and New Rifle, Colorado, Processing Sites

February 2012

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Sampling Event Summary

Site: Old and New Rifle, Colorado, Processing Sites

Sampling Period: November 15-21, 2011

Forty-four water samples were collected at New Rifle and Old Rifle, Colorado, Processing Sites. Old Rifle monitoring well locations 0742-1 and 0743-1 were dry and could not be sampled. Duplicate samples were collected from New Rifle locations 0323 and 0620, and Old Rifle location 0305. One equipment blank was collected. 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).

New Rifle Site

Samples were collected at the New Rifle site from 17 monitoring wells and 7 surface locations in compliance with the 2008 *Ground Water Compliance Action Plan for the New Rifle, Colorado, Processing Site*. Water levels were measured at each sampled well.

The contaminants of concern (COCs) at the New Rifle site are arsenic, molybdenum, nitrate + nitrite as nitrogen, selenium, uranium, and vanadium. All COCs except vanadium have a remedial action goal of the U.S. Environmental Protection Agency (EPA) groundwater standard or background concentration; an alternate concentration limit (ACL) of 50 milligrams per liter (mg/L) has been proposed for vanadium. The groundwater monitoring wells were sampled to monitor plume movement and natural flushing. Wells with sample concentrations that exceeded either the EPA groundwater standards or the maximum background concentration, whichever is greater, are listed in Table 1.

Table 1. New Rifle Monitoring Wells that Exceed Standards

Analyte	Standard[a]	MBC[b]	Location	Concentration (mg/L)
Arsenic	**0.05 mg/L**	0.03 mg/L	0658	0.083
			0855	0.51
Molybdenum	**0.10 mg/L**	0.03 mg/L	0201	1.9
			0217	1.4
			0590	1.8
			0635	0.37
			0658	1.5
			0659	1.6
			0664	0.44
			0669	1.2
			0670	0.23
			0855	1.0

Table 1 (continued). New Rifle Monitoring Wells that Exceed Standards

Analyte	Standard[a]	MBC[b]	Location	Concentration (mg/L)
Nitrate + Nitrite as Nitrogen	**10 mg/L**	5.22 mg/L	0170	11
			0201	35
			0590	34
			0620	24
			0635	17
			0664	20
			0670	19
			0855	14
Selenium	0.01 mg/L	**0.041 mg/L**	0590	0.052
			0658	1.2
			0659	0.062
			0664	0.084
			0670	0.24
			0855	1.1
Uranium	0.044 mg/L	**0.067 mg/L**	0172	0.068
			0201	0.089
			0217	0.14
			0590	0.073
			0635	0.08
			0659	0.098
			0664	0.074
			0669	0.11
			0670	0.072
Vanadium	Proposed ACL[b] = 50 mg/L		NA	NA

[a] Standards are listed in 40 CFR 192.02 Table 1 to Subpart A.
[b] Maximum background concentrations (MBCs) are from historical results at location RFO01 0658.
[c] ACLs listed in *Ground Water Compliance Action Plan for the New Rifle, Colorado, Processing Site*.

Time-concentration graphs from the locations sampled are included with the analytical data. Concentrations of the COCs are stable or decreasing at most locations. The concentrations of arsenic, molybdenum, selenium, and vanadium in well 0855 returned to historical levels after spiking in 2009.

Ammonia is not a COC; it is monitored as an indicator for nitrate reduction. Well 0590 had shown an increase in ammonia concentration from 2008 thru mid-2010, but ammonia has been decreasing in that well since mid-2010, as shown on the included time-concentration graph.

The surface water locations were sampled to monitor the impact of groundwater discharge. No large variations in the data were noted. Contaminant concentrations at the two Colorado River surface water locations (0322 and 0324) remain low, indicating no impact due to groundwater discharge.

Old Rifle Site

Samples were collected at the Old Rifle site from 11 monitoring wells and 5 surface locations as specified in the 2001 *Ground Water Compliance Action Plan for the Old Rifle, Colorado, UMTRA Project Site*. Water levels were measured at each sampled well.

The COCs at the Old Rifle site are selenium, uranium, and vanadium. Locations with sample concentrations that exceeded EPA groundwater standards or ACLs are listed in Table 2.

Table 2. Old Rifle Locations that Exceed Standards or ACLs

Analyte	Standard[a]	ACL or MBC	Location	Concentration (mg/L)
Selenium	0.01 mg/L	0.05 mg/L[b]	0305	0.023
			0655	0.012
			0656	0.017
			0743-2	0.16
			0743-3	0.022
Uranium	0.044 mg/L	0.067 mg/L[c]	0304	0.044
			0305	0.059
			0310	0.16
			0655	0.093
			0656	0.21
			0743-2	0.18
			0743-3	0.14
			0744-1	0.055
			0744-2	0.27
			0744-3	0.27
Vanadium	NA	POC: 1.0 mg/L[b] POE: 0.33 mg/L[b]	0743-3	2.6
			0743-2	3.2

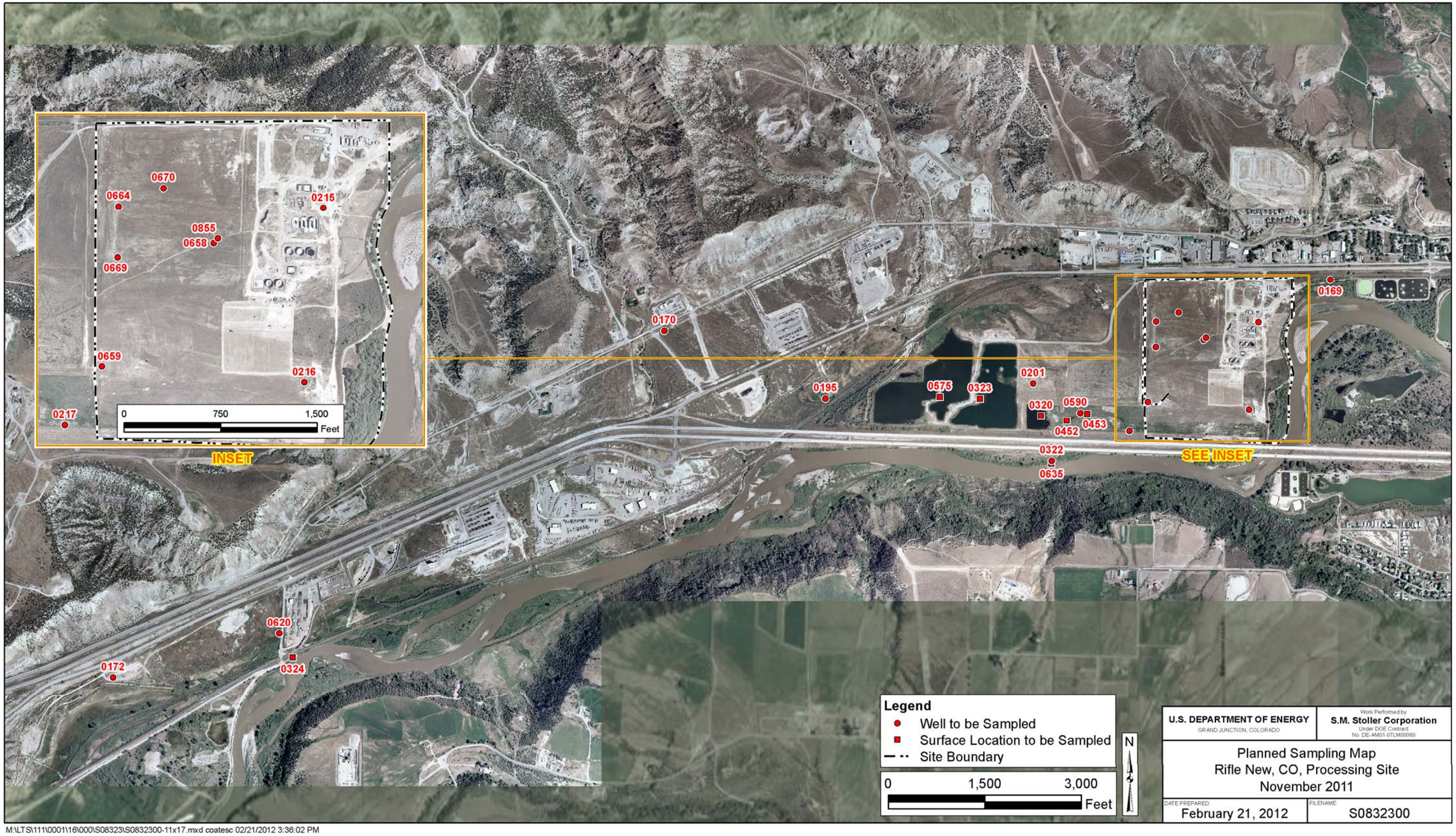
[a] Groundwater standards are listed in 40 CFR 192.02 Table 1 to Subpart A.
[b] ACL proposed in *Ground Water Compliance Action Plan for the Old Rifle, Colorado, UMTRA Project Site*. A concentration of 1.0 mg/L is proposed as the ACL for vanadium at the point of compliance (POC for any on-site DOE monitoring well). A concentration of 0.33 mg/L is proposed as the concentration limit for the point of exposure (POE), which is the Colorado River.
[c] Maximum background concentrations (MBCs) are from historical results at location RFO01 0658.

Time-concentration graphs from the locations sampled are included with the analytical data and indicate that the concentrations of the COCs are decreasing at many locations with the following notable exceptions. The uranium in well 0656 continues to show an upward trend since 2005. The selenium concentrations in well 0655 increased to levels above the ACL after 2009; for this event, however, the selenium concentration was well below the ACL. Three new 3-port Continuous Multichannel Tubing (CMT) wells were sampled in this event. Some COCs exceeded limits at the 0743 and 0744 CMT wells but all COCs were below the limits at the 0742 CMT well.

Analytical results for surface locations 0396 and 0741 that are adjacent to and downgradient of the site along the Colorado River remain low, indicating no impact due to groundwater discharge.

Richard Dayvault
Site Lead, S. M. Stoller Corporation

2/17/12
Date



Rifle New, Colorado, Processing Site Sample Location Map

Rifle Old, Colorado, Processing Site Sample Location Map

Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	Rifle, CO	**Date(s) of Water Sampling**	November 15-21, 2011
Date(s) of Verification	January 25, 2012	**Name of Verifier**	Gretchen Baer

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures?	Yes	
List other documents, SOPs, instructions.		Work Order letter dated October 17, 2011.
2. Were the sampling locations specified in the planning documents sampled?	No	The CMT ports 0742-1 and 0743-1 were dry.
3. Was a pre-trip calibration conducted as specified in the above-named documents?	Yes	Pre-trip calibrations were performed on November 11, 2011.
4. Was an operational check of the field equipment conducted daily?	Yes	
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. Was the category of the well documented?	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 stabilize prior to sampling?	No	The pH at 0664 slightly exceeded stability criteria. However, the final 2 measurements were close, indicating that the purge was nearing stability. No data qualification is necessary.
Was the flow rate less than 500 mL/min?	Yes	
If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	NA	

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 New Rifle locations 0323 and 0620, and Old Rifle location 0305.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	Yes	
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number?	Yes	
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): 11114182
Sample Event: November 15-21, 2011
Site(s): Rifle Processing Sites, Colorado
Laboratory: ALS Laboratory Group, Fort Collins, Colorado
Work Order No.: 1111332
Analysis: Metals and Wet Chemistry
Validator: Gretchen Baer
Review Date: January 25, 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 3.

Table 3. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Ammonia as N	WCH-A-005	MCAWW 350.2	MCAWW 350.1
Arsenic, Molybdenum, Selenium, Uranium, Vanadium	LMM-02	SW-846 3005A	SW-846 3005/6020
Nitrate + Nitrite as N	WCH-A-022	MCAWW 353.2	MCAWW 353.2

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(s)	Flag	Reason
1111332-1	0169	Ammonia as N	J	Matrix spike failure
1111332-1	0169	Nitrate + Nitrite as N	J	Matrix spike failure
1111332-1	0169	Vanadium	U	Less than 5 times the calibration blank
1111332-1	0169	Vanadium	J	Intercept greater than 3 times MDL
1111332-2	0170	Vanadium	J	Intercept greater than 3 times MDL
1111332-3	0172	Vanadium	J	Intercept greater than 3 times MDL
1111332-4	0195	Vanadium	J	Intercept greater than 3 times MDL
1111332-5	0201	Vanadium	J	Intercept greater than 3 times MDL
1111332-9	0292A	Vanadium	J	Intercept greater than 3 times MDL
1111332-10	0294	Vanadium	J	Intercept greater than 3 times MDL
1111332-13	0309	Vanadium	J	Intercept greater than 3 times MDL
1111332-14	0310	Vanadium	J	Intercept greater than 3 times MDL
1111332-16	0322	Vanadium	J	Intercept greater than 3 times MDL

Table 4 (continued). Data Qualifier Summary

Sample Number	Location	Analyte(s)	Flag	Reason
1111332-17	0323	Vanadium	J	Intercept greater than 3 times MDL
1111332-18	0324	Vanadium	J	Intercept greater than 3 times MDL
1111332-19	0395	Vanadium	J	Intercept greater than 3 times MDL
1111332-20	0396	Vanadium	J	Intercept greater than 3 times MDL
1111332-24	0575	Vanadium	J	Intercept greater than 3 times MDL
1111332-26	0620	Vanadium	J	Intercept greater than 3 times MDL
1111332-27	0635	Vanadium	J	Intercept greater than 3 times MDL
1111332-31	0658	Vanadium	J	Intercept greater than 3 times MDL
1111332-36	0741	Vanadium	J	Intercept greater than 3 times MDL
1111332-46	Equip Blank, 2238	Vanadium	J	Intercept greater than 3 times MDL
1111332-47	0323 Dup, 2948	Vanadium	J	Intercept greater than 3 times MDL
1111332-48	0620 Dup, 2949	Vanadium	J	Intercept greater than 3 times MDL

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received 48 water samples on November 23, 2011, accompanied 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 receiving documentation included copies of the air bills. The Chain of Custody form was complete with no errors or omissions.

Preservation and Holding Times

The sample shipments were received intact with the temperature inside the iced cooler at 0.6 °C, which complies with requirements. All samples were analyzed within the applicable holding times. All samples were received in the correct container types and had been preserved correctly for the requested analyses with one exception. The metals bottle for sample RFN01 0172 was received with a pH of 2.2, which is slightly above the acceptance limit of 2. The laboratory adjusted the pH of the sample upon receipt. No data qualification or further corrective action is required.

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. 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 MCAWW 350.1
Calibrations for ammonia as N were performed using six calibration standards on December 12, 2011. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in eight verification checks. All calibration check results were within the acceptance criteria.

Method MCAWW 353.2
Calibrations for nitrate + nitrite as N were performed using seven calibration standards on December 5, 2011. 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 seven verification checks. All calibration check results were within the acceptance criteria.

Method SW-846 6020
Calibrations were performed on December 7, 2011, using four calibration standards. The calibration curve correlation coefficient values were greater than 0.995 and—with the exception of vanadium—the absolute values of the intercepts were less than 3 times the MDL. For vanadium, all associated results less than 3 times the intercept are qualified with a "J" flag (estimated). Initial and continuing calibration verification checks were made at the required frequency resulting in nine verification checks. All calibration checks met the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the PQL and all results were within the acceptance range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries associated with requested analytes were stable and within acceptable ranges.

Method 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 PQLs. In cases where a blank concentration exceeds the MDL, the associated sample results are qualified with a "U" flag (not detected) when the sample result is greater than the MDL but less than 5 times the blank concentration.

Inductively Coupled Plasma Interference Check Sample Analysis

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

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) samples are used to measure method performance in the sample matrix. The MS/MSD data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike concentration. The spike results met the recovery and precision criteria for all analytes evaluated with the following exception. Spike recoveries of nitrate + nitrite as N and ammonia as N were below the acceptance range. The affected results are qualified with a "J" flag (estimated).

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 100 times the PQL. All evaluated serial dilution data were acceptable.

Completeness

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

Arsenic and molybdenum were reported for location RFO01 0398 although these analytes were not requested. These data were loaded into SEEPro and were validated in this review.

Electronic Data Deliverable (EDD) File

The EDD file arrived on December 21, 2011. 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: 11114182 **Lab Code:** PAR **Validator:** Gretchen Baer **Validation Date:** 1/25/2012

Project: Rifle Disposal/Processing Site (old/new) **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	There was 1 trip/equipment blank evaluated.
☑ Field Duplicates	There were 3 duplicates evaluated.

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 11114182 **Lab Code:** PAR **Date Due:** 12/21/2011

Matrix: Water **Site Code:** RFL **Date Completed:** 12/21/2011

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	12/07/2011	-0.0830	1.0000	OK	OK	OK	OK	OK	93.0	92.0	92.0	0.0	102.0		92.0
Arsenic	ICP/MS	12/07/2011	-0.0620	1.0000	OK	OK	OK	OK	OK	91.0	93.0	93.0	0.0	97.0		92.0
Arsenic	ICP/MS	12/07/2011							OK	91.0			3.0		2.0	108.0
Molybdenum	ICP/MS	12/07/2011	-0.0080	1.0000	OK	OK	OK	OK	OK	91.0	91.0	93.0	1.0	94.0	0.0	105.0
Molybdenum	ICP/MS	12/07/2011	-0.0120	1.0000	OK	OK	OK	OK	OK	88.0	92.0	91.0	0.0	93.0	4.0	97.0
Molybdenum	ICP/MS	12/07/2011							OK	91.0			1.0		1.0	90.0
Selenium	ICP/MS	12/07/2011	-0.0770	1.0000	OK	OK	OK	OK	OK	97.0	92.0	93.0	1.0	102.0		108.0
Selenium	ICP/MS	12/07/2011	-0.0910	1.0000	OK	OK	OK	OK	OK	92.0	94.0	93.0	1.0	95.0		112.0
Selenium	ICP/MS	12/07/2011							OK	96.0	101.0	76.0	2.0		1.0	105.0
Uranium	ICP/MS	12/07/2011	0.0000	1.0000	OK	OK	OK	OK	OK	94.0	89.0	93.0	1.0	103.0	2.0	90.0
Uranium	ICP/MS	12/07/2011	-0.0010	1.0000	OK	OK	OK	OK	OK	92.0	100.0	99.0	0.0	105.0	1.0	100.0
Uranium	ICP/MS	12/07/2011							OK	98.0	108.0	103.0	1.0		5.0	100.0
Vanadium	ICP/MS	12/07/2011	-0.3850	1.0000	OK	OK	OK	OK	OK	90.0	98.0	97.0	1.0	99.0		87.0
Vanadium	ICP/MS	12/07/2011	-0.7950	1.0000	OK	OK	OK	OK	OK	88.0	95.0	95.0	0.0	100.0		96.0
Vanadium	ICP/MS	12/07/2011							OK	90.0			1.0		10.0	83.0

SAMPLE MANAGEMENT SYSTEM

Wet Chemistry Data Validation Worksheet

RIN: 11114182 **Lab Code:** PAR **Date Due:** 12/21/2011

Matrix: Water **Site Code:** RFL **Date Completed:** 12/21/2011

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	ICV	CCV	ICB	CCB						
AMMONIA AS N	12/12/2011	-0.005	1.0000	OK	OK	OK	OK	OK	98.00	62.0	64.0	4.00	
AMMONIA AS N	12/12/2011							OK	98.00				
Nitrate+Nitrite as N	12/05/2011	-0.003	0.9999	OK	OK	OK	OK	OK	101.00	97.0	71.0	7.00	
Nitrate+Nitrite as N	12/05/2011							OK	102.00				

Sampling Quality Control Assessment

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

Sampling Protocol

Sample results for all monitoring wells were qualified with an "F" flag in the database, indicating the wells were purged and sampled using the low-flow sampling method. All wells met the Category I criteria with the following exceptions: wells RFN01 0669 and RFN01 0670 were classified as Category II. The sample results for these wells were qualified with a "Q" flag, indicating the data are qualitative because of the sampling technique.

Equipment Blank Assessment

An equipment blank (field ID 2238) was collected after decontamination of the tubing reel used to collect some surface water samples. Arsenic, uranium, and vanadium were detected in this blank. Sample results that are less than 5 times the equipment blank concentration are qualified with a "J" flag (estimated). The equipment blank results indicate adequate decontamination of the sampling 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 at locations RFO01 0305, RFN01 0323, and RFN01 0620. All duplicate results met the acceptance criteria, demonstrating acceptable overall precision.

SAMPLE MANAGEMENT SYSTEM

Validation Report: Equipment/Trip Blanks

RIN: 11114182 **Lab Code:** PAR **Project:** Rifle Disposal/Processing Site (old/new) **Validation Date:** 1/25/2012

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1111332-46	SW6020	Arsenic	0.017	B	0.015	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1111332-15	JMV 547	0320	4.8	5		
1111332-18	JMV 514	0324	0.36	1		
1111332-22	JMV 549	0452	6.3	5		

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1111332-46	SW6020	Uranium	0.047		0.0029	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1111332-15	JMV 547	0320	53	5		
1111332-18	JMV 514	0324	2.3	1		
1111332-19	JMV 533	0395	25	1		
1111332-20	JMV 535	0396	2.3	1		
1111332-22	JMV 549	0452	160	5		

Blank Data

Blank Type	Lab Sample ID	Lab Method	Analyte Name	Result	Qualifier	MDL	Units
Equipment Blank	1111332-46	SW6020	Vanadium	0.26	B	0.015	UG/L

Sample ID	Sample Ticket	Location	Result	Dilution Factor	Lab Qualifier	Validation Qualifier
1111332-15	JMV 547	0320	26	5		
1111332-18	JMV 514	0324	0.54	1		J
1111332-19	JMV 533	0395	1.1	1		J
1111332-20	JMV 535	0396	0.94	1		J
1111332-22	JMV 549	0452	280	5		

SAMPLE MANAGEMENT SYSTEM

Validation Report: Field Duplicates

RIN: 11114182 **Lab Code:** PAR **Project:** Rifle Disposal/Processing Site (old/new) **Validation Date:** 1/25/2012

Duplicate: 2237 **Sample:** 0305

Analyte	Sample Result	Flag	Error	Dilution	Duplicate Result	Flag	Error	Dilution	RPD	RER	Units
Selenium	23			5	24			5	4.26		UG/L
Uranium	59			5	62			5	4.96		UG/L
Vanadium	410			5	400			5	2.47		UG/L

Duplicate: 2948 **Sample:** 0323

Analyte	Sample Result	Flag	Error	Dilution	Duplicate Result	Flag	Error	Dilution	RPD	RER	Units
AMMONIA AS N	24			10	25			10	4.08		MG/L
Arsenic	1.4			10	1.2			10	15.38		UG/L
Molybdenum	2300			10	2400			10	4.26		UG/L
Nitrate+Nitrite as N	58			50	57			50	1.74		MG/L
Selenium	10			10	11			10	9.52		UG/L
Uranium	260			10	270			10	3.77		UG/L
Vanadium	4.9			10	5.1			10	4.00		UG/L

Duplicate: 2949 **Sample:** 0620

Analyte	Sample Result	Flag	Error	Dilution	Duplicate Result	Flag	Error	Dilution	RPD	RER	Units
AMMONIA AS N	0.1	U		1	0.1	U		1			MG/L
Arsenic	0.6			1	0.59			1	1.68		UG/L
Molybdenum	8.6			1	8.5			1	1.17		UG/L
Nitrate+Nitrite as N	24			20	25			20	4.08		MG/L
Selenium	31			1	31			1	0		UG/L
Uranium	61			1	61			1	0		UG/L
Vanadium	1.7			1	1.7			1	0		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: Steve Donivan — Date: 2-15-2012

Data Validation Lead: Gretchen Baer — Date: 2-15-2012

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Attachment 1
Assessment of Anomalous Data

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Potential Outliers Report

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Potential Outliers Report

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

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

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

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

One result was identified as potentially anomalous. The vanadium concentration at location RFN01 0215 is following an upward trend. No analytical errors were noted during the review of the vanadium data. At this time, all data from this sampling event may be treated as validated results.

Data Validation Outliers Report - No Field Parameters
Comparison: All Historical Data
Laboratory: ALS Laboratory Group
RIN: 11114182
Report Date: 1/26/2012

					Current			Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
						Qualifiers			Qualifiers			Qualifiers				
Site Code	Location Code	Sample ID	Sample Date	Analyte	Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
RFN01	0170	N001	11/21/2011	Nitrate + Nitrite as Nitrogen	11		F	37		F	13		F	8	0	No
RFN01	0170	N001	11/21/2011	Uranium	0.053		F	0.08		FJ	0.0553			18	0	No
RFN01	0195	N001	11/17/2011	Ammonia Total as N	0.1	U	F	46		F	0.23		F	10	0	No
RFN01	0195	N001	11/17/2011	Molybdenum	0.017		F	0.6		FJ	0.021		F	19	0	No
RFN01	0201	N001	11/16/2011	Ammonia Total as N	79		F	130		F	82		F	12	0	No
RFN01	0201	N001	11/16/2011	Nitrate + Nitrite as Nitrogen	35		F	130		F	38		F	12	0	No
RFN01	0215	N001	11/21/2011	Vanadium	0.011		F	0.0059	U		0.000028	U	F	38	18	Yes
RFN01	0216	N001	11/18/2011	Ammonia Total as N	4.5		F	8.7		F	4.7		F	12	0	No
RFN01	0320	N001	11/17/2011	Ammonia Total as N	2.4			110			10		J	8	0	No
RFN01	0320	N001	11/17/2011	Molybdenum	0.5			3.01			1.09			12	0	No
RFN01	0320	N001	11/17/2011	Nitrate + Nitrite as Nitrogen	0.01	U		250			4.3			8	0	No
RFN01	0320	N001	11/17/2011	Selenium	0.0036			0.033			0.0083			9	0	No
RFN01	0320	N001	11/17/2011	Uranium	0.053			0.321			0.132			12	0	No
RFN01	0323	N001	11/16/2011	Nitrate + Nitrite as Nitrogen	58			130			76			11	0	No
RFN01	0323	N002	11/16/2011	Nitrate + Nitrite as Nitrogen	57			130			76			11	0	No
RFN01	0452	N001	11/17/2011	Nitrate + Nitrite as Nitrogen	0.75			250			30			8	0	No
RFN01	0452	N001	11/17/2011	Selenium	0.0071			0.0695	N		0.011			7	0	No
RFN01	0453	N001	11/17/2011	Arsenic	0.005			0.094			0.0098			8	0	No
RFN01	0453	N001	11/17/2011	Molybdenum	1.6			12.5			2.2			11	0	No
RFN01	0453	N001	11/17/2011	Nitrate + Nitrite as Nitrogen	3			210			28			8	0	No

Data Validation Outliers Report - No Field Parameters
Comparison: All Historical Data
Laboratory: ALS Laboratory Group
RIN: 11114182
Report Date: 1/26/2012

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current Result	Current Qualifiers Lab	Current Qualifiers Data	Historical Maximum Result	Historical Maximum Qualifiers Lab	Historical Maximum Qualifiers Data	Historical Minimum Result	Historical Minimum Qualifiers Lab	Historical Minimum Qualifiers Data	Number of Data Points N	Number of Data Points N Below Detect	Statistical Outlier
RFN01	0453	N001	11/17/2011	Vanadium	0.24			4.63			0.89		J	11	0	No
RFN01	0620	N002	11/16/2011	Molybdenum	0.0085		F	0.07			0.0088		F	28	2	No
RFN01	0620	N001	11/16/2011	Molybdenum	0.0086		F	0.07			0.0088		F	28	2	No
RFN01	0620	N002	11/16/2011	Selenium	0.031		F	0.0237	N	F	0.0001	U		26	17	No
RFN01	0620	N001	11/16/2011	Selenium	0.031		F	0.0237	N	F	0.0001	U		26	17	No
RFN01	0658	N001	11/18/2011	Nitrate + Nitrite as Nitrogen	3.9		F	75		F	4.1		F	10	0	No
RFN01	0659	N001	11/18/2011	Ammonia Total as N	31		F	92		F	32.3		F	15	0	No
RFN01	0659	N001	11/18/2011	Molybdenum	1.6		F	7.7			1.7		F	31	0	No
RFN01	0664	N001	11/21/2011	Nitrate + Nitrite as Nitrogen	20		F	19		FQ	1.6		F	14	0	No
RFN01	0855	N001	11/18/2011	Molybdenum	1		F	18		FQ	1.1		F	18	0	No
RFO01	0292A	N001	11/15/2011	Uranium	0.025		F	0.04	E	F	0.027		F	12	0	No
RFO01	0305	N001	11/15/2011	Selenium	0.023		F	0.122			0.024		F	32	0	No
RFO01	0310	N001	11/15/2011	Uranium	0.16		F	0.36		F	0.169			36	0	No
RFO01	0395	0001	11/15/2011	Vanadium	0.0011		J	0.003	U		0.0014			9	1	No
RFO01	0655	N001	11/15/2011	Uranium	0.093		F	0.182			0.108		L	34	0	No
RFO01	0656	N001	11/15/2011	Selenium	0.017		F	0.0152			0.00026		F	34	1	No
RFO01	0658	N001	11/15/2011	Uranium	0.01		F	0.067		FJ	0.012		F	24	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.

Data Validation Outliers Report - Field Parameters Only
Comparison: All Historical Data
Laboratory: Field Measurements
RIN: 11114182
Report Date: 1/26/2012

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current	Qualifiers		Historical Maximum	Qualifiers		Historical Minimum	Qualifiers		Number of Data Points		Statistical Outlier
					Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
RFN01	0320	N001	11/17/2011	Oxidation Reduction Potential	75			260			98.1			13	0	No
RFN01	0323	N001	11/16/2011	Oxidation Reduction Potential	245.5			234.5			13			12	0	No
RFN01	0324	N001	11/16/2011	Turbidity	4.4			83.5			4.51			6	0	No
RFN01	0452	N001	11/17/2011	Alkalinity, Total (as $CaCO_3$)	296			265			135			9	0	No
RFN01	0452	N001	11/17/2011	Oxidation Reduction Potential	80.8			220.3			107			9	0	No
RFN01	0452	N001	11/17/2011	Specific Conductance	4575			10210			5540			9	0	No
RFN01	0453	N001	11/17/2011	Oxidation Reduction Potential	111.9			283			116			10	0	No
RFN01	0453	N001	11/17/2011	Specific Conductance	4451			19000			4488			10	0	No
RFN01	0664	N001	11/21/2011	Oxidation Reduction Potential	240		F	232			-108		F	25	0	No
RFN01	0669	N001	11/18/2011	Specific Conductance	3039		FQ	5620			3599			23	0	No
RFO01	0292A	N001	11/15/2011	Turbidity	0.79		F	114		FQ	1.23		F	11	0	No
RFO01	0656	N001	11/15/2011	Specific Conductance	2269		F	2228		F	1427		F	32	0	No

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

Attachment 2
Data Presentation

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New Rifle
Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0169 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/18/2011	N001	3.13	-	18.13	468		F	#		
Ammonia Total as N	mg/L	11/18/2011	N001	3.13	-	18.13	0.1	UN	JF	#	0.1	
Arsenic	mg/L	11/18/2011	N001	3.13	-	18.13	0.00049		F	#	0.000015	
Molybdenum	mg/L	11/18/2011	N001	3.13	-	18.13	0.007		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2011	N001	3.13	-	18.13	1.2	N	JF	#	0.01	
Oxidation Reduction Potential	mV	11/18/2011	N001	3.13	-	18.13	17.5		F	#		
pH	s.u.	11/18/2011	N001	3.13	-	18.13	6.97		F	#		
Selenium	mg/L	11/18/2011	N001	3.13	-	18.13	0.0046	E	F	#	0.000032	
Specific Conductance	umhos /cm	11/18/2011	N001	3.13	-	18.13	2117		F	#		
Temperature	C	11/18/2011	N001	3.13	-	18.13	15		F	#		
Turbidity	NTU	11/18/2011	N001	3.13	-	18.13	1.1		F	#		
Uranium	mg/L	11/18/2011	N001	3.13	-	18.13	0.019		F	#	0.0000029	
Vanadium	mg/L	11/18/2011	N001	3.13	-	18.13	0.00088	E	UJF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0170 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/21/2011	N001	92.23 - 112.23	510		F	#		
Ammonia Total as N	mg/L	11/21/2011	N001	92.23 - 112.23	0.1		F	#	0.1	
Arsenic	mg/L	11/21/2011	N001	92.23 - 112.23	0.00026		F	#	0.000015	
Molybdenum	mg/L	11/21/2011	N001	92.23 - 112.23	0.003		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/21/2011	N001	92.23 - 112.23	11		F	#	0.2	
Oxidation Reduction Potential	mV	11/21/2011	N001	92.23 - 112.23	120		F	#		
pH	s.u.	11/21/2011	N001	92.23 - 112.23	6.99		F	#		
Selenium	mg/L	11/21/2011	N001	92.23 - 112.23	0.011		F	#	0.000032	
Specific Conductance	umhos /cm	11/21/2011	N001	92.23 - 112.23	3100		F	#		
Temperature	C	11/21/2011	N001	92.23 - 112.23	13.8		F	#		
Turbidity	NTU	11/21/2011	N001	92.23 - 112.23	1.38		F	#		
Uranium	mg/L	11/21/2011	N001	92.23 - 112.23	0.053		F	#	0.0000029	
Vanadium	mg/L	11/21/2011	N001	92.23 - 112.23	0.0008		JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0172 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/16/2011	N001	6.98	-	31.98	798		F	#		
Ammonia Total as N	mg/L	11/16/2011	N001	6.98	-	31.98	0.1	U	F	#	0.1	
Arsenic	mg/L	11/16/2011	N001	6.98	-	31.98	0.0054		F	#	0.000015	
Molybdenum	mg/L	11/16/2011	N001	6.98	-	31.98	0.0046		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/16/2011	N001	6.98	-	31.98	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	11/16/2011	N001	6.98	-	31.98	-36.6		F	#		
pH	s.u.	11/16/2011	N001	6.98	-	31.98	6.92		F	#		
Selenium	mg/L	11/16/2011	N001	6.98	-	31.98	0.00032		F	#	0.000032	
Specific Conductance	umhos /cm	11/16/2011	N001	6.98	-	31.98	18531		F	#		
Temperature	C	11/16/2011	N001	6.98	-	31.98	14.23		F	#		
Turbidity	NTU	11/16/2011	N001	6.98	-	31.98	1.83		F	#		
Uranium	mg/L	11/16/2011	N001	6.98	-	31.98	0.068		F	#	0.0000029	
Vanadium	mg/L	11/16/2011	N001	6.98	-	31.98	0.00057		JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0195 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/17/2011	N001	5.29	-	25.29	530		F	#		
Ammonia Total as N	mg/L	11/17/2011	N001	5.29	-	25.29	0.1	U	F	#	0.1	
Arsenic	mg/L	11/17/2011	N001	5.29	-	25.29	0.00098		F	#	0.000015	
Molybdenum	mg/L	11/17/2011	N001	5.29	-	25.29	0.017		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2011	N001	5.29	-	25.29	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	11/17/2011	N001	5.29	-	25.29	6		F	#		
pH	s.u.	11/17/2011	N001	5.29	-	25.29	6.94		F	#		
Selenium	mg/L	11/17/2011	N001	5.29	-	25.29	0.00024		F	#	0.000032	
Specific Conductance	umhos /cm	11/17/2011	N001	5.29	-	25.29	1438		F	#		
Temperature	C	11/17/2011	N001	5.29	-	25.29	13.49		F	#		
Turbidity	NTU	11/17/2011	N001	5.29	-	25.29	2.39		F	#		
Uranium	mg/L	11/17/2011	N001	5.29	-	25.29	0.018		F	#	0.0000029	
Vanadium	mg/L	11/17/2011	N001	5.29	-	25.29	0.00062		JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0201 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/16/2011	N001	7.35	-	22.35	266		F	#		
Ammonia Total as N	mg/L	11/16/2011	N001	7.35	-	22.35	79		F	#	10	
Arsenic	mg/L	11/16/2011	N001	7.35	-	22.35	0.00054		F	#	0.000015	
Molybdenum	mg/L	11/16/2011	N001	7.35	-	22.35	1.9		F	#	0.00016	
Nitrate + Nitrite as Nitrogen	mg/L	11/16/2011	N001	7.35	-	22.35	35		F	#	0.2	
Oxidation Reduction Potential	mV	11/16/2011	N001	7.35	-	22.35	233.1		F	#		
pH	s.u.	11/16/2011	N001	7.35	-	22.35	6.84		F	#		
Selenium	mg/L	11/16/2011	N001	7.35	-	22.35	0.036		F	#	0.00016	
Specific Conductance	umhos /cm	11/16/2011	N001	7.35	-	22.35	4589		F	#		
Temperature	C	11/16/2011	N001	7.35	-	22.35	14.03		F	#		
Turbidity	NTU	11/16/2011	N001	7.35	-	22.35	1.67		F	#		
Uranium	mg/L	11/16/2011	N001	7.35	-	22.35	0.089		F	#	0.000015	
Vanadium	mg/L	11/16/2011	N001	7.35	-	22.35	0.00039		JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0215 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/21/2011	N001	6.84	-	21.84	330		F	#		
Ammonia Total as N	mg/L	11/21/2011	N001	6.84	-	21.84	1.5		F	#	0.1	
Arsenic	mg/L	11/21/2011	N001	6.84	-	21.84	0.00057		F	#	0.000015	
Molybdenum	mg/L	11/21/2011	N001	6.84	-	21.84	0.013		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/21/2011	N001	6.84	-	21.84	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	11/21/2011	N001	6.84	-	21.84	120		F	#		
pH	s.u.	11/21/2011	N001	6.84	-	21.84	7.2		F	#		
Selenium	mg/L	11/21/2011	N001	6.84	-	21.84	0.002		F	#	0.000032	
Specific Conductance	umhos /cm	11/21/2011	N001	6.84	-	21.84	1435		F	#		
Temperature	C	11/21/2011	N001	6.84	-	21.84	14.7		F	#		
Turbidity	NTU	11/21/2011	N001	6.84	-	21.84	2.82		F	#		
Uranium	mg/L	11/21/2011	N001	6.84	-	21.84	0.024		F	#	0.0000029	
Vanadium	mg/L	11/21/2011	N001	6.84	-	21.84	0.011		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0216 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/18/2011	N001	5.5	-	20.5	174		F	#		
Ammonia Total as N	mg/L	11/18/2011	N001	5.5	-	20.5	4.5		F	#	0.1	
Arsenic	mg/L	11/18/2011	N001	5.5	-	20.5	0.033		F	#	0.000074	
Molybdenum	mg/L	11/18/2011	N001	5.5	-	20.5	0.058		F	#	0.00016	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2011	N001	5.5	-	20.5	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	11/18/2011	N001	5.5	-	20.5	45.8		F	#		
pH	s.u.	11/18/2011	N001	5.5	-	20.5	7.46		F	#		
Selenium	mg/L	11/18/2011	N001	5.5	-	20.5	0.00032		F	#	0.000032	
Specific Conductance	umhos /cm	11/18/2011	N001	5.5	-	20.5	826		F	#		
Temperature	C	11/18/2011	N001	5.5	-	20.5	13.26		F	#		
Turbidity	NTU	11/18/2011	N001	5.5	-	20.5	4.48		F	#		
Uranium	mg/L	11/18/2011	N001	5.5	-	20.5	0.016		F	#	0.000015	
Vanadium	mg/L	11/18/2011	N001	5.5	-	20.5	0.17		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0217 WELL Ground elevation was calculated as surveyed TOC elevation minus stick up height reported in the Borehole Summary

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/17/2011	N001	7.4	-	22.4	199		F	#		
Ammonia Total as N	mg/L	11/17/2011	N001	7.4	-	22.4	47		F	#	5	
Arsenic	mg/L	11/17/2011	N001	7.4	-	22.4	0.00087		F	#	0.000074	
Molybdenum	mg/L	11/17/2011	N001	7.4	-	22.4	1.4		F	#	0.0016	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2011	N001	7.4	-	22.4	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	11/17/2011	N001	7.4	-	22.4	110		F	#		
pH	s.u.	11/17/2011	N001	7.4	-	22.4	6.81		F	#		
Selenium	mg/L	11/17/2011	N001	7.4	-	22.4	0.012		F	#	0.0016	
Specific Conductance	umhos /cm	11/17/2011	N001	7.4	-	22.4	3440		F	#		
Temperature	C	11/17/2011	N001	7.4	-	22.4	10.28		F	#		
Turbidity	NTU	11/17/2011	N001	7.4	-	22.4	1.74		F	#		
Uranium	mg/L	11/17/2011	N001	7.4	-	22.4	0.14		F	#	0.00015	
Vanadium	mg/L	11/17/2011	N001	7.4	-	22.4	1.8		F	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0590 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/17/2011	N001	5.21	-	19.21	295		F	#		
Ammonia Total as N	mg/L	11/17/2011	N001	5.21	-	19.21	150		F	#	10	
Arsenic	mg/L	11/17/2011	N001	5.21	-	19.21	0.0011		F	#	0.000074	
Molybdenum	mg/L	11/17/2011	N001	5.21	-	19.21	1.8		F	#	0.00016	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2011	N001	5.21	-	19.21	34		F	#	0.2	
Oxidation Reduction Potential	mV	11/17/2011	N001	5.21	-	19.21	116.2		F	#		
pH	s.u.	11/17/2011	N001	5.21	-	19.21	6.7		F	#		
Selenium	mg/L	11/17/2011	N001	5.21	-	19.21	0.052		F	#	0.00016	
Specific Conductance	umhos /cm	11/17/2011	N001	5.21	-	19.21	5248		F	#		
Temperature	C	11/17/2011	N001	5.21	-	19.21	13.45		F	#		
Turbidity	NTU	11/17/2011	N001	5.21	-	19.21	0.98		F	#		
Uranium	mg/L	11/17/2011	N001	5.21	-	19.21	0.073		F	#	0.000015	
Vanadium	mg/L	11/17/2011	N001	5.21	-	19.21	0.54		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0620 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/16/2011	N001	6.7	-	10.7	574		F	#		
Ammonia Total as N	mg/L	11/16/2011	N001	6.7	-	10.7	0.1	U	F	#	0.1	
Ammonia Total as N	mg/L	11/16/2011	N002	6.7	-	10.7	0.1	U	F	#	0.1	
Arsenic	mg/L	11/16/2011	N001	6.7	-	10.7	0.0006		F	#	0.000015	
Arsenic	mg/L	11/16/2011	N002	6.7	-	10.7	0.00059		F	#	0.000015	
Molybdenum	mg/L	11/16/2011	N001	6.7	-	10.7	0.0086		F	#	0.000032	
Molybdenum	mg/L	11/16/2011	N002	6.7	-	10.7	0.0085		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/16/2011	N001	6.7	-	10.7	24		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	11/16/2011	N002	6.7	-	10.7	25		F	#	0.2	
Oxidation Reduction Potential	mV	11/16/2011	N001	6.7	-	10.7	208.4		F	#		
pH	s.u.	11/16/2011	N001	6.7	-	10.7	7.12		F	#		
Selenium	mg/L	11/16/2011	N001	6.7	-	10.7	0.031		F	#	0.000032	
Selenium	mg/L	11/16/2011	N002	6.7	-	10.7	0.031		F	#	0.000032	
Specific Conductance	umhos /cm	11/16/2011	N001	6.7	-	10.7	6703		F	#		
Temperature	C	11/16/2011	N001	6.7	-	10.7	13.5		F	#		
Turbidity	NTU	11/16/2011	N001	6.7	-	10.7	1.97		F	#		
Uranium	mg/L	11/16/2011	N001	6.7	-	10.7	0.061		F	#	0.0000029	
Uranium	mg/L	11/16/2011	N002	6.7	-	10.7	0.061		F	#	0.0000029	
Vanadium	mg/L	11/16/2011	N001	6.7	-	10.7	0.0017		JF	#	0.000015	
Vanadium	mg/L	11/16/2011	N002	6.7	-	10.7	0.0017		JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0635 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/17/2011	N001	12	-	17	292		F	#		
Ammonia Total as N	mg/L	11/17/2011	N001	12	-	17	96		F	#	10	
Arsenic	mg/L	11/17/2011	N001	12	-	17	0.00031		F	#	0.000015	
Molybdenum	mg/L	11/17/2011	N001	12	-	17	0.37		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2011	N001	12	-	17	17		F	#	0.2	
Oxidation Reduction Potential	mV	11/17/2011	N001	12	-	17	248.2		F	#		
pH	s.u.	11/17/2011	N001	12	-	17	6.77		F	#		
Selenium	mg/L	11/17/2011	N001	12	-	17	0.0064		F	#	0.000032	
Specific Conductance	umhos /cm	11/17/2011	N001	12	-	17	3959		F	#		
Temperature	C	11/17/2011	N001	12	-	17	10.77		F	#		
Turbidity	NTU	11/17/2011	N001	12	-	17	1.89		F	#		
Uranium	mg/L	11/17/2011	N001	12	-	17	0.08		F	#	0.0000029	
Vanadium	mg/L	11/17/2011	N001	12	-	17	0.00039		JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0658 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/18/2011	N001	.5	-	5.5	285		F	#		
Ammonia Total as N	mg/L	11/18/2011	N001	.5	-	5.5	52		F	#	5	
Arsenic	mg/L	11/18/2011	N001	.5	-	5.5	0.083		F	#	0.0015	
Molybdenum	mg/L	11/18/2011	N001	.5	-	5.5	1.5		F	#	0.0032	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2011	N001	.5	-	5.5	3.9		F	#	0.05	
Oxidation Reduction Potential	mV	11/18/2011	N001	.5	-	5.5	125		F	#		
pH	s.u.	11/18/2011	N001	.5	-	5.5	6.79		F	#		
Selenium	mg/L	11/18/2011	N001	.5	-	5.5	1.2		F	#	0.0032	
Specific Conductance	umhos /cm	11/18/2011	N001	.5	-	5.5	2896		F	#		
Temperature	C	11/18/2011	N001	.5	-	5.5	12.88		F	#		
Turbidity	NTU	11/18/2011	N001	.5	-	5.5	4.4		F	#		
Uranium	mg/L	11/18/2011	N001	.5	-	5.5	0.053		F	#	0.00029	
Vanadium	mg/L	11/18/2011	N001	.5	-	5.5	31		F	#	0.0015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0659 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/18/2011	N001	.5	-	10.5	185		F	#		
Ammonia Total as N	mg/L	11/18/2011	N001	.5	-	10.5	31		F	#	2	
Arsenic	mg/L	11/18/2011	N001	.5	-	10.5	0.047		F	#	0.00074	
Molybdenum	mg/L	11/18/2011	N001	.5	-	10.5	1.6		F	#	0.0016	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2011	N001	.5	-	10.5	7.8		F	#	0.2	
Oxidation Reduction Potential	mV	11/18/2011	N001	.5	-	10.5	95.2		F	#		
pH	s.u.	11/18/2011	N001	.5	-	10.5	6.93		F	#		
Selenium	mg/L	11/18/2011	N001	.5	-	10.5	0.062		F	#	0.0016	
Specific Conductance	umhos /cm	11/18/2011	N001	.5	-	10.5	3467		F	#		
Temperature	C	11/18/2011	N001	.5	-	10.5	12.6		F	#		
Turbidity	NTU	11/18/2011	N001	.5	-	10.5	2.65		F	#		
Uranium	mg/L	11/18/2011	N001	.5	-	10.5	0.098		F	#	0.00015	
Vanadium	mg/L	11/18/2011	N001	.5	-	10.5	2.9		F	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0664 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/21/2011	N001	7.7	-	14.7	393		F	#		
Ammonia Total as N	mg/L	11/21/2011	N001	7.7	-	14.7	26		F	#	1	
Arsenic	mg/L	11/21/2011	N001	7.7	-	14.7	0.0017		F	#	0.000074	
Molybdenum	mg/L	11/21/2011	N001	7.7	-	14.7	0.44		F	#	0.00016	
Nitrate + Nitrite as Nitrogen	mg/L	11/21/2011	N001	7.7	-	14.7	20		F	#	0.2	
Oxidation Reduction Potential	mV	11/21/2011	N001	7.7	-	14.7	240		F	#		
pH	s.u.	11/21/2011	N001	7.7	-	14.7	6.69		F	#		
Selenium	mg/L	11/21/2011	N001	7.7	-	14.7	0.084		F	#	0.00016	
Specific Conductance	umhos /cm	11/21/2011	N001	7.7	-	14.7	2660		F	#		
Temperature	C	11/21/2011	N001	7.7	-	14.7	13.4		F	#		
Turbidity	NTU	11/21/2011	N001	7.7	-	14.7	7.77		F	#		
Uranium	mg/L	11/21/2011	N001	7.7	-	14.7	0.074		F	#	0.000015	
Vanadium	mg/L	11/21/2011	N001	7.7	-	14.7	0.88		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0669 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/18/2011	0001	4	-	10.6	357		FQ	#		
Ammonia Total as N	mg/L	11/18/2011	0001	4	-	10.6	92		FQ	#	10	
Arsenic	mg/L	11/18/2011	0001	4	-	10.6	0.0083		FQ	#	0.00074	
Molybdenum	mg/L	11/18/2011	0001	4	-	10.6	1.2		FQ	#	0.0016	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2011	0001	4	-	10.6	2.8		FQ	#	0.05	
Oxidation Reduction Potential	mV	11/18/2011	N001	4	-	10.6	111.6		FQ	#		
pH	s.u.	11/18/2011	N001	4	-	10.6	6.89		FQ	#		
Selenium	mg/L	11/18/2011	0001	4	-	10.6	0.037		FQ	#	0.0016	
Specific Conductance	umhos /cm	11/18/2011	N001	4	-	10.6	3039		FQ	#		
Temperature	C	11/18/2011	N001	4	-	10.6	13.7		FQ	#		
Turbidity	NTU	11/18/2011	N001	4	-	10.6	23.1		FQ	#		
Uranium	mg/L	11/18/2011	0001	4	-	10.6	0.11		FQ	#	0.00015	
Vanadium	mg/L	11/18/2011	0001	4	-	10.6	3.6		FQ	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0670 WELL For Organics Study.

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/21/2011	N001	5.2	-	12.2	385		FQ	#		
Ammonia Total as N	mg/L	11/21/2011	N001	5.2	-	12.2	15		FQ	#	0.5	
Arsenic	mg/L	11/21/2011	N001	5.2	-	12.2	0.0044		FQ	#	0.000074	
Molybdenum	mg/L	11/21/2011	N001	5.2	-	12.2	0.23		FQ	#	0.0016	
Nitrate + Nitrite as Nitrogen	mg/L	11/21/2011	N001	5.2	-	12.2	19		FQ	#	0.2	
Oxidation Reduction Potential	mV	11/21/2011	N001	5.2	-	12.2	210		FQ	#		
pH	s.u.	11/21/2011	N001	5.2	-	12.2	6.89		FQ	#		
Selenium	mg/L	11/21/2011	N001	5.2	-	12.2	0.24		FQ	#	0.0016	
Specific Conductance	umhos /cm	11/21/2011	N001	5.2	-	12.2	2380		FQ	#		
Temperature	C	11/21/2011	N001	5.2	-	12.2	13.8		FQ	#		
Turbidity	NTU	11/21/2011	N001	5.2	-	12.2	9.64		FQ	#		
Uranium	mg/L	11/21/2011	N001	5.2	-	12.2	0.072		FQ	#	0.00015	
Vanadium	mg/L	11/21/2011	N001	5.2	-	12.2	1.9		FQ	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0855 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/18/2011	N001	6	-	11	272		F	#		
Ammonia Total as N	mg/L	11/18/2011	N001	6	-	11	43		F	#	5	
Arsenic	mg/L	11/18/2011	N001	6	-	11	0.51		F	#	0.0015	
Molybdenum	mg/L	11/18/2011	N001	6	-	11	1		F	#	0.0032	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2011	N001	6	-	11	14		F	#	0.2	
Oxidation Reduction Potential	mV	11/18/2011	N001	6	-	11	119.2		F	#		
pH	s.u.	11/18/2011	N001	6	-	11	6.7		F	#		
Selenium	mg/L	11/18/2011	N001	6	-	11	1.1		F	#	0.0032	
Specific Conductance	umhos /cm	11/18/2011	N001	6	-	11	2741		F	#		
Temperature	C	11/18/2011	N001	6	-	11	13.57		F	#		
Turbidity	NTU	11/18/2011	N001	6	-	11	7.65		F	#		
Uranium	mg/L	11/18/2011	N001	6	-	11	0.034		F	#	0.00029	
Vanadium	mg/L	11/18/2011	N001	6	-	11	21		F	#	0.0015	

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.

Old Rifle
Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0292A WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2011	N001	10.5	-	20.5	479		F	#		
Oxidation Reduction Potential	mV	11/15/2011	N001	10.5	-	20.5	121		F	#		
pH	s.u.	11/15/2011	N001	10.5	-	20.5	7.02		F	#		
Selenium	mg/L	11/15/2011	N001	10.5	-	20.5	0.00028		F	#	0.000032	
Specific Conductance	umhos /cm	11/15/2011	N001	10.5	-	20.5	2087		F	#		
Temperature	C	11/15/2011	N001	10.5	-	20.5	13.83		F	#		
Turbidity	NTU	11/15/2011	N001	10.5	-	20.5	0.79		F	#		
Uranium	mg/L	11/15/2011	N001	10.5	-	20.5	0.025		F	#	0.0000029	
Vanadium	mg/L	11/15/2011	N001	10.5	-	20.5	0.00021	B	JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0304 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2011	N001	13.2	-	18.2	329		F	#		
Oxidation Reduction Potential	mV	11/15/2011	N001	13.2	-	18.2	74.5		F	#		
pH	s.u.	11/15/2011	N001	13.2	-	18.2	7.02		F	#		
Selenium	mg/L	11/15/2011	N001	13.2	-	18.2	0.0022		F	#	0.000032	
Specific Conductance	umhos /cm	11/15/2011	N001	13.2	-	18.2	2285		F	#		
Temperature	C	11/15/2011	N001	13.2	-	18.2	13.82		F	#		
Turbidity	NTU	11/15/2011	N001	13.2	-	18.2	0.73		F	#		
Uranium	mg/L	11/15/2011	N001	13.2	-	18.2	0.044		F	#	0.0000029	
Vanadium	mg/L	11/15/2011	N001	13.2	-	18.2	0.043		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0305 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2011	N001	13.76	-	18.76	347		F	#		
Oxidation Reduction Potential	mV	11/15/2011	N001	13.76	-	18.76	103		F	#		
pH	s.u.	11/15/2011	N001	13.76	-	18.76	7.22		F	#		
Selenium	mg/L	11/15/2011	N001	13.76	-	18.76	0.023		F	#	0.00016	
Selenium	mg/L	11/15/2011	N002	13.76	-	18.76	0.024		F	#	0.00016	
Specific Conductance	umhos /cm	11/15/2011	N001	13.76	-	18.76	1866		F	#		
Temperature	C	11/15/2011	N001	13.76	-	18.76	14.57		F	#		
Turbidity	NTU	11/15/2011	N001	13.76	-	18.76	1.85		F	#		
Uranium	mg/L	11/15/2011	N001	13.76	-	18.76	0.059		F	#	0.000015	
Uranium	mg/L	11/15/2011	N002	13.76	-	18.76	0.062		F	#	0.000015	
Vanadium	mg/L	11/15/2011	N001	13.76	-	18.76	0.41		F	#	0.000076	
Vanadium	mg/L	11/15/2011	N002	13.76	-	18.76	0.4		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0309 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2011	N001	16.93	-	21.93	379		F	#		
Oxidation Reduction Potential	mV	11/15/2011	N001	16.93	-	21.93	15.2		F	#		
pH	s.u.	11/15/2011	N001	16.93	-	21.93	7.04		F	#		
Selenium	mg/L	11/15/2011	N001	16.93	-	21.93	0.00017		F	#	0.000032	
Specific Conductance	umhos /cm	11/15/2011	N001	16.93	-	21.93	2481		F	#		
Temperature	C	11/15/2011	N001	16.93	-	21.93	14.35		F	#		
Turbidity	NTU	11/15/2011	N001	16.93	-	21.93	1.17		F	#		
Uranium	mg/L	11/15/2011	N001	16.93	-	21.93	0.017		F	#	0.0000029	
Vanadium	mg/L	11/15/2011	N001	16.93	-	21.93	0.000074	B	JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0310 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2011	N001	17.93	-	22.93	460		F	#		
Oxidation Reduction Potential	mV	11/15/2011	N001	17.93	-	22.93	10.6		F	#		
pH	s.u.	11/15/2011	N001	17.93	-	22.93	7.04		F	#		
Selenium	mg/L	11/15/2011	N001	17.93	-	22.93	0.00055		F	#	0.00016	
Specific Conductance	umhos /cm	11/15/2011	N001	17.93	-	22.93	2715		F	#		
Temperature	C	11/15/2011	N001	17.93	-	22.93	14.62		F	#		
Turbidity	NTU	11/15/2011	N001	17.93	-	22.93	6.96		F	#		
Uranium	mg/L	11/15/2011	N001	17.93	-	22.93	0.16		F	#	0.000015	
Vanadium	mg/L	11/15/2011	N001	17.93	-	22.93	0.011		JF	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0655 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2011	N001	13.6	-	23.6	468		F	#		
Oxidation Reduction Potential	mV	11/15/2011	N001	13.6	-	23.6	72.5		F	#		
pH	s.u.	11/15/2011	N001	13.6	-	23.6	6.9		F	#		
Selenium	mg/L	11/15/2011	N001	13.6	-	23.6	0.012		F	#	0.00016	
Specific Conductance	umhos /cm	11/15/2011	N001	13.6	-	23.6	2070		F	#		
Temperature	C	11/15/2011	N001	13.6	-	23.6	14.27		F	#		
Turbidity	NTU	11/15/2011	N001	13.6	-	23.6	0.56		F	#		
Uranium	mg/L	11/15/2011	N001	13.6	-	23.6	0.093		F	#	0.000015	
Vanadium	mg/L	11/15/2011	N001	13.6	-	23.6	0.31		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0656 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2011	N001	6.35	-	21.35	380		F	#		
Oxidation Reduction Potential	mV	11/15/2011	N001	6.35	-	21.35	103		F	#		
pH	s.u.	11/15/2011	N001	6.35	-	21.35	7.01		F	#		
Selenium	mg/L	11/15/2011	N001	6.35	-	21.35	0.017		F	#	0.00016	
Specific Conductance	umhos /cm	11/15/2011	N001	6.35	-	21.35	2269		F	#		
Temperature	C	11/15/2011	N001	6.35	-	21.35	16.53		F	#		
Turbidity	NTU	11/15/2011	N001	6.35	-	21.35	0.95		F	#		
Uranium	mg/L	11/15/2011	N001	6.35	-	21.35	0.21		F	#	0.000015	
Vanadium	mg/L	11/15/2011	N001	6.35	-	21.35	0.022		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0658 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2011	N001	2.3	-	17.3	427		F	#		
Oxidation Reduction Potential	mV	11/15/2011	N001	2.3	-	17.3	83		F	#		
pH	s.u.	11/15/2011	N001	2.3	-	17.3	7		F	#		
Selenium	mg/L	11/15/2011	N001	2.3	-	17.3	0.00042		F	#	0.000032	
Specific Conductance	umhos /cm	11/15/2011	N001	2.3	-	17.3	1399		F	#		
Temperature	C	11/15/2011	N001	2.3	-	17.3	10.31		F	#		
Turbidity	NTU	11/15/2011	N001	2.3	-	17.3	2.19		F	#		
Uranium	mg/L	11/15/2011	N001	2.3	-	17.3	0.01		F	#	0.0000029	
Vanadium	mg/L	11/15/2011	N001	2.3	-	17.3	0.0007		JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0742-2 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/18/2011	N001	14.05	-	14.55	349		F	#		
Oxidation Reduction Potential	mV	11/18/2011	N001	14.05	-	14.55	181		F	#		
pH	s.u.	11/18/2011	N001	14.05	-	14.55	7.11		F	#		
Selenium	mg/L	11/18/2011	N001	14.05	-	14.55	0.0073		F	#	0.00016	
Specific Conductance	umhos /cm	11/18/2011	N001	14.05	-	14.55	1500		F	#		
Temperature	C	11/18/2011	N001	14.05	-	14.55	12.33		F	#		
Turbidity	NTU	11/18/2011	N001	14.05	-	14.55	1.84		F	#		
Uranium	mg/L	11/18/2011	N001	14.05	-	14.55	0.036		F	#	0.000015	
Vanadium	mg/L	11/18/2011	N001	14.05	-	14.55	0.48		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0742-3 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/18/2011	N001	18.05	-	18.55	284		F	#		
Oxidation Reduction Potential	mV	11/18/2011	N001	18.05	-	18.55	85.2		F	#		
pH	s.u.	11/18/2011	N001	18.05	-	18.55	7.33		F	#		
Selenium	mg/L	11/18/2011	N001	18.05	-	18.55	0.00091		F	#	0.00016	
Specific Conductance	umhos /cm	11/18/2011	N001	18.05	-	18.55	1546		F	#		
Temperature	C	11/18/2011	N001	18.05	-	18.55	12.43		F	#		
Turbidity	NTU	11/18/2011	N001	18.05	-	18.55	1.46		F	#		
Uranium	mg/L	11/18/2011	N001	18.05	-	18.55	0.026		F	#	0.000015	
Vanadium	mg/L	11/18/2011	N001	18.05	-	18.55	0.29		F	#	0.000076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0743-2 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/18/2011	N001	12.2	-	12.7	419		F	#		
Oxidation Reduction Potential	mV	11/18/2011	N001	12.2	-	12.7	69.4		F	#		
pH	s.u.	11/18/2011	N001	12.2	-	12.7	6.81		F	#		
Selenium	mg/L	11/18/2011	N001	12.2	-	12.7	0.16		F	#	0.0016	
Specific Conductance	umhos /cm	11/18/2011	N001	12.2	-	12.7	2482		F	#		
Temperature	C	11/18/2011	N001	12.2	-	12.7	14.23		F	#		
Turbidity	NTU	11/18/2011	N001	12.2	-	12.7	8.98		F	#		
Uranium	mg/L	11/18/2011	N001	12.2	-	12.7	0.18		F	#	0.00015	
Vanadium	mg/L	11/18/2011	N001	12.2	-	12.7	3.2		F	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0743-3 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/18/2011	N001	16.2	-	16.7	424		F	#		
Oxidation Reduction Potential	mV	11/18/2011	N001	16.2	-	16.7	52.8		F	#		
pH	s.u.	11/18/2011	N001	16.2	-	16.7	6.98		F	#		
Selenium	mg/L	11/18/2011	N001	16.2	-	16.7	0.022		F	#	0.0016	
Specific Conductance	umhos /cm	11/18/2011	N001	16.2	-	16.7	2605		F	#		
Temperature	C	11/18/2011	N001	16.2	-	16.7	14.43		F	#		
Turbidity	NTU	11/18/2011	N001	16.2	-	16.7	5.56		F	#		
Uranium	mg/L	11/18/2011	N001	16.2	-	16.7	0.14		F	#	0.00015	
Vanadium	mg/L	11/18/2011	N001	16.2	-	16.7	2.6		F	#	0.00076	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0744-1 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/18/2011	N001	11.2	-	11.7	629		F	#		
Oxidation Reduction Potential	mV	11/18/2011	N001	11.2	-	11.7	-34.7		F	#		
pH	s.u.	11/18/2011	N001	11.2	-	11.7	6.66		F	#		
Selenium	mg/L	11/18/2011	N001	11.2	-	11.7	0.0011		F	#	0.000032	
Specific Conductance	umhos /cm	11/18/2011	N001	11.2	-	11.7	2928		F	#		
Temperature	C	11/18/2011	N001	11.2	-	11.7	14.59		F	#		
Turbidity	NTU	11/18/2011	N001	11.2	-	11.7	6.8		F	#		
Uranium	mg/L	11/18/2011	N001	11.2	-	11.7	0.055		F	#	0.0000029	
Vanadium	mg/L	11/18/2011	N001	11.2	-	11.7	0.0055		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0744-2 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/18/2011	N001	15.2	-	15.7	488		F	#		
Oxidation Reduction Potential	mV	11/18/2011	N001	15.2	-	15.7	-38.9		F	#		
pH	s.u.	11/18/2011	N001	15.2	-	15.7	6.95		F	#		
Selenium	mg/L	11/18/2011	N001	15.2	-	15.7	0.001		F	#	0.000065	
Specific Conductance	umhos /cm	11/18/2011	N001	15.2	-	15.7	2419		F	#		
Temperature	C	11/18/2011	N001	15.2	-	15.7	14.45		F	#		
Turbidity	NTU	11/18/2011	N001	15.2	-	15.7	7.35		F	#		
Uranium	mg/L	11/18/2011	N001	15.2	-	15.7	0.27		F	#	0.000029	
Vanadium	mg/L	11/18/2011	N001	15.2	-	15.7	0.056		F	#	0.00015	

Groundwater Quality Data by Location (USEE100) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0744-3 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/18/2011	N001	19.2	-	19.7	472			#		
Oxidation Reduction Potential	mV	11/18/2011	N001	19.2	-	19.7	-23.1			#		
pH	s.u.	11/18/2011	N001	19.2	-	19.7	6.94			#		
Selenium	mg/L	11/18/2011	N001	19.2	-	19.7	0.00093			#	0.000065	
Specific Conductance	umhos /cm	11/18/2011	N001	19.2	-	19.7	2418			#		
Temperature	C	11/18/2011	N001	19.2	-	19.7	14.59			#		
Turbidity	NTU	11/18/2011	N001	19.2	-	19.7	2.59			#		
Uranium	mg/L	11/18/2011	N001	19.2	-	19.7	0.27			#	0.000029	
Vanadium	mg/L	11/18/2011	N001	19.2	-	19.7	0.076			#	0.00015	

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

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

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

QA QUALIFIER:
- # Validated according to quality assurance guidelines.

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New Rifle
Surface Water Quality Data

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Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0320 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/17/2011	N001	154			#		
Ammonia Total as N	mg/L	11/17/2011	N001	2.4			#	0.1	
Arsenic	mg/L	11/17/2011	N001	0.0048			#	0.000074	
Molybdenum	mg/L	11/17/2011	N001	0.5			#	0.00016	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2011	N001	0.01	U		#	0.01	
Oxidation Reduction Potential	mV	11/17/2011	N001	75			#		
pH	s.u.	11/17/2011	N001	7.54			#		
Selenium	mg/L	11/17/2011	N001	0.0036			#	0.00016	
Specific Conductance	umhos/cm	11/17/2011	N001	3626			#		
Temperature	C	11/17/2011	N001	6.27			#		
Turbidity	NTU	11/17/2011	N001	6.91			#		
Uranium	mg/L	11/17/2011	N001	0.053			#	0.000015	
Vanadium	mg/L	11/17/2011	N001	0.026			#	0.000076	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0322 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/17/2011	N001	153			#		
Ammonia Total as N	mg/L	11/17/2011	N001	0.14			#	0.1	
Arsenic	mg/L	11/17/2011	N001	0.0004			#	0.000015	
Molybdenum	mg/L	11/17/2011	N001	0.004			#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2011	N001	0.096			#	0.01	
Oxidation Reduction Potential	mV	11/17/2011	N001	205.5			#		
pH	s.u.	11/17/2011	N001	8.01			#		
Selenium	mg/L	11/17/2011	N001	0.00062			#	0.000032	
Specific Conductance	umhos/cm	11/17/2011	N001	1126			#		
Temperature	C	11/17/2011	N001	3.01			#		
Turbidity	NTU	11/17/2011	N001	3.89			#		
Uranium	mg/L	11/17/2011	N001	0.0026			#	0.0000029	
Vanadium	mg/L	11/17/2011	N001	0.00096		J	#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0323 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/16/2011	N001	150			#		
Ammonia Total as N	mg/L	11/16/2011	N001	24			#	1	
Ammonia Total as N	mg/L	11/16/2011	N002	25			#	1	
Arsenic	mg/L	11/16/2011	N001	0.0014			#	0.00015	
Arsenic	mg/L	11/16/2011	N002	0.0012			#	0.00015	
Molybdenum	mg/L	11/16/2011	N001	2.3			#	0.00032	
Molybdenum	mg/L	11/16/2011	N002	2.4			#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	11/16/2011	N001	58			#	0.5	
Nitrate + Nitrite as Nitrogen	mg/L	11/16/2011	N002	57			#	0.5	
Oxidation Reduction Potential	mV	11/16/2011	N001	245.5			#		
pH	s.u.	11/16/2011	N001	8.11			#		
Selenium	mg/L	11/16/2011	N001	0.01			#	0.00032	
Selenium	mg/L	11/16/2011	N002	0.011			#	0.00032	
Specific Conductance	umhos/cm	11/16/2011	N001	8052			#		
Temperature	C	11/16/2011	N001	6.49			#		
Turbidity	NTU	11/16/2011	N001	3.44			#		
Uranium	mg/L	11/16/2011	N001	0.26			#	0.000029	
Uranium	mg/L	11/16/2011	N002	0.27			#	0.000029	
Vanadium	mg/L	11/16/2011	N001	0.0049		J	#	0.00015	
Vanadium	mg/L	11/16/2011	N002	0.0051		J	#	0.00015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0324 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/16/2011	N001	133			#		
Ammonia Total as N	mg/L	11/16/2011	N001	0.1	U		#	0.1	
Arsenic	mg/L	11/16/2011	N001	0.00036			#	0.000015	
Molybdenum	mg/L	11/16/2011	N001	0.003			#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/16/2011	N001	0.087			#	0.01	
Oxidation Reduction Potential	mV	11/16/2011	N001	161.2			#		
pH	s.u.	11/16/2011	N001	8.27			#		
Selenium	mg/L	11/16/2011	N001	0.00055			#	0.000032	
Specific Conductance	umhos/cm	11/16/2011	N001	1047			#		
Temperature	C	11/16/2011	N001	6.07			#		
Turbidity	NTU	11/16/2011	N001	4.4			#		
Uranium	mg/L	11/16/2011	N001	0.0023			#	0.0000029	
Vanadium	mg/L	11/16/2011	N001	0.00054		J	#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0452 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/17/2011	N001	296			#		
Ammonia Total as N	mg/L	11/17/2011	N001	49			#	5	
Arsenic	mg/L	11/17/2011	N001	0.0063			#	0.000074	
Molybdenum	mg/L	11/17/2011	N001	1.5			#	0.00016	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2011	N001	0.75			#	0.01	
Oxidation Reduction Potential	mV	11/17/2011	N001	80.8			#		
pH	s.u.	11/17/2011	N001	7.71			#		
Selenium	mg/L	11/17/2011	N001	0.0071			#	0.00016	
Specific Conductance	umhos/cm	11/17/2011	N001	4575			#		
Temperature	C	11/17/2011	N001	7.16			#		
Turbidity	NTU	11/17/2011	N001	6.45			#		
Uranium	mg/L	11/17/2011	N001	0.16			#	0.000015	
Vanadium	mg/L	11/17/2011	N001	0.28			#	0.000076	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0453 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/17/2011	N001	270			#		
Ammonia Total as N	mg/L	11/17/2011	N001	65			#	5	
Arsenic	mg/L	11/17/2011	N001	0.005			#	0.000074	
Molybdenum	mg/L	11/17/2011	N001	1.6			#	0.00016	
Nitrate + Nitrite as Nitrogen	mg/L	11/17/2011	N001	3			#	0.05	
Oxidation Reduction Potential	mV	11/17/2011	N001	111.9			#		
pH	s.u.	11/17/2011	N001	7.29			#		
Selenium	mg/L	11/17/2011	N001	0.014			#	0.00016	
Specific Conductance	umhos/cm	11/17/2011	N001	4451			#		
Temperature	C	11/17/2011	N001	8.23			#		
Turbidity	NTU	11/17/2011	N001	2.8			#		
Uranium	mg/L	11/17/2011	N001	0.13			#	0.000015	
Vanadium	mg/L	11/17/2011	N001	0.24			#	0.000076	

Surface Water Quality Data by Location (USEE102) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012
Location: 0575 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/16/2011	N001	160			#		
Ammonia Total as N	mg/L	11/16/2011	N001	0.72			#	0.1	
Arsenic	mg/L	11/16/2011	N001	0.0026			#	0.000015	
Molybdenum	mg/L	11/16/2011	N001	0.17			#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	11/16/2011	N001	1.2			#	0.01	
Oxidation Reduction Potential	mV	11/16/2011	N001	228			#		
pH	s.u.	11/16/2011	N001	8.44			#		
Selenium	mg/L	11/16/2011	N001	0.00051			#	0.000032	
Specific Conductance	umhos/cm	11/16/2011	N001	2650			#		
Temperature	C	11/16/2011	N001	6.7			#		
Turbidity	NTU	11/16/2011	N001	7.87			#		
Uranium	mg/L	11/16/2011	N001	0.029			#	0.0000029	
Vanadium	mg/L	11/16/2011	N001	0.002		J	#	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.

Old Rifle
Surface Water Quality Data

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Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0294 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2011	N001	130			#		
Oxidation Reduction Potential	mV	11/15/2011	N001	95			#		
pH	s.u.	11/15/2011	N001	8.07			#		
Selenium	mg/L	11/15/2011	N001	0.00051			#	0.000032	
Specific Conductance	umhos/cm	11/15/2011	N001	1059			#		
Temperature	C	11/15/2011	N001	4.7			#		
Turbidity	NTU	11/15/2011	N001	3.41			#		
Uranium	mg/L	11/15/2011	N001	0.0022			#	0.0000029	
Vanadium	mg/L	11/15/2011	N001	0.00038		J	#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0395 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2011	0001	299			#		
Oxidation Reduction Potential	mV	11/15/2011	N001	16.9			#		
pH	s.u.	11/15/2011	N001	7.76			#		
Selenium	mg/L	11/15/2011	0001	0.0047			#	0.000032	
Specific Conductance	umhos/cm	11/15/2011	N001	1298			#		
Temperature	C	11/15/2011	N001	11.61			#		
Turbidity	NTU	11/15/2011	N001	20			#		
Uranium	mg/L	11/15/2011	0001	0.025			#	0.0000029	
Vanadium	mg/L	11/15/2011	0001	0.0011		J	#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0396 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2011	N001	127			#		
Oxidation Reduction Potential	mV	11/15/2011	N001	20.9			#		
pH	s.u.	11/15/2011	N001	8.47			#		
Selenium	mg/L	11/15/2011	N001	0.00066			#	0.000032	
Specific Conductance	umhos/cm	11/15/2011	N001	1036			#		
Temperature	C	11/15/2011	N001	6.86			#		
Turbidity	NTU	11/15/2011	N001	5.33			#		
Uranium	mg/L	11/15/2011	N001	0.0023			#	0.0000029	
Vanadium	mg/L	11/15/2011	N001	0.00094		J	#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0398 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2011	N001	248			#		
Arsenic	mg/L	11/15/2011	N001	0.00053			#	0.000015	
Molybdenum	mg/L	11/15/2011	N001	0.008			#	0.000032	
Oxidation Reduction Potential	mV	11/15/2011	N001	92			#		
pH	s.u.	11/15/2011	N001	8.07			#		
Selenium	mg/L	11/15/2011	N001	0.0023	E		#	0.000032	
Specific Conductance	umhos/cm	11/15/2011	N001	1356			#		
Temperature	C	11/15/2011	N001	8.7			#		
Uranium	mg/L	11/15/2011	N001	0.015			#	0.0000029	
Vanadium	mg/L	11/15/2011	N001	0.0032	E		#	0.000015	

Surface Water Quality Data by Location (USEE102) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012
Location: 0741 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (as $CaCO_3$)	mg/L	11/15/2011	N001	137			#		
Oxidation Reduction Potential	mV	11/15/2011	N001	-10.8			#		
pH	s.u.	11/15/2011	N001	8.38			#		
Selenium	mg/L	11/15/2011	N001	0.00052			#	0.000032	
Specific Conductance	umhos/cm	11/15/2011	N001	1034			#		
Temperature	C	11/15/2011	N001	5.69			#		
Turbidity	NTU	11/15/2011	N001	4.13			#		
Uranium	mg/L	11/15/2011	N001	0.0023			#	0.0000029	
Vanadium	mg/L	11/15/2011	N001	0.00054		J	#	0.000015	

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

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

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

QA QUALIFIER:
- # Validated according to quality assurance guidelines.

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Equipment Blank Data

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BLANKS REPORT
LAB: PARAGON/ALS LABORATORY GROUP (Fort Collins, CO)
RIN: 11114182
Report Date: 1/30/2012

Parameter	Site Code	Location ID	Sample Date	Sample ID	Units	Result	Qualifiers Lab	Qualifiers Data	Detection Limit	Uncertainty	Sample Type
Ammonia Total as N	RFO01	0999	11/21/2011	N001	mg/L	0.1	U		0.1		E
Arsenic	RFO01	0999	11/21/2011	N001	mg/L	0.000017	B		0.000015		E
Molybdenum	RFO01	0999	11/21/2011	N001	mg/L	0.000032	U		0.000032		E
Nitrate + Nitrite as Nitrogen	RFO01	0999	11/21/2011	N001	mg/L	0.01	U		0.01		E
Selenium	RFO01	0999	11/21/2011	N001	mg/L	0.000032	U		0.000032		E
Uranium	RFO01	0999	11/21/2011	N001	mg/L	0.000047			0.0000029		E
Vanadium	RFO01	0999	11/21/2011	N001	mg/L	0.00026	B	J	0.000015		E

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.

SAMPLE TYPES:
- E Equipment Blank.

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Static Water Level Data

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STATIC WATER LEVELS (USEE700) FOR SITE RFN01, Rifle New Processing Site
REPORT DATE: 1/30/2012

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
0169	U	5275.47	11/18/2011	13:15:54	8.97	5266.5	
0170	D	5332.97	11/21/2011	14:30:12	93.36	5239.61	
0172	D	5229.45	11/16/2011	15:00:51	15.44	5214.01	
0195	D	5253.1	11/17/2011	11:05:17	8.82	5244.28	
0201	D	5261.07	11/16/2011	13:15:48	11.86	5249.21	
0215	O	5271.42	11/21/2011	13:05:35	11.93	5259.49	
0216	O	5265.41	11/18/2011	13:50:18	7.35	5258.06	
0217	D	5256.98	11/17/2011	15:25:14	4.34	5252.64	
0590	D	5256.37	11/17/2011	12:40:26	6.13	5250.24	
0620	D	5231.22	11/16/2011	14:20:54	9.44	5221.78	
0635	D	5256.12	11/17/2011	10:10:36	8.46	5247.66	
0658	O	5265.91	11/18/2011	15:15:52	6.78	5259.13	
0659	O	5261.33	11/18/2011	14:15:00	6.69	5254.64	
0664	O	5270.17	11/21/2011	12:20:37	13.11	5257.06	
0669	O	5266.56	11/18/2011	14:30:29	9.65	5256.91	
0670	O	5270.94	11/21/2011	12:35:49	12.81	5258.13	
0855	O	5267.24	11/18/2011	14:55:37	8.09	5259.15	

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

WATER LEVEL FLAGS: D Dry F FLOWING

STATIC WATER LEVELS (USEE700) FOR SITE RFO01, Rifle Old Processing Site
REPORT DATE: 1/30/2012

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
0292A		5323.08	11/15/2011	09:50:56	14.75	5308.33	
0304	O	5310.63	11/15/2011	12:15:50	10.92	5299.71	
0305	O	5312.08	11/15/2011	12:00:17	11.8	5300.28	
0309	O	5313.37	11/15/2011	14:30:17	14.91	5298.46	
0310	O	5311.64	11/15/2011	13:45:08	12.8	5298.84	
0655	O	5312.87	11/15/2011	13:15:29	12.88	5299.99	
0656	O	5313.28	11/15/2011	11:10:37	12.89	5300.39	
0658	U	5323.07	11/15/2011	10:45:22	8.27	5314.8	
0742-1		5313.28	11/18/2011	09:34:00			D
0743-1		5310.43	11/18/2011	10:27:00			D

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

WATER LEVEL FLAGS: D Dry F FLOWING

New Rifle Hydrographs

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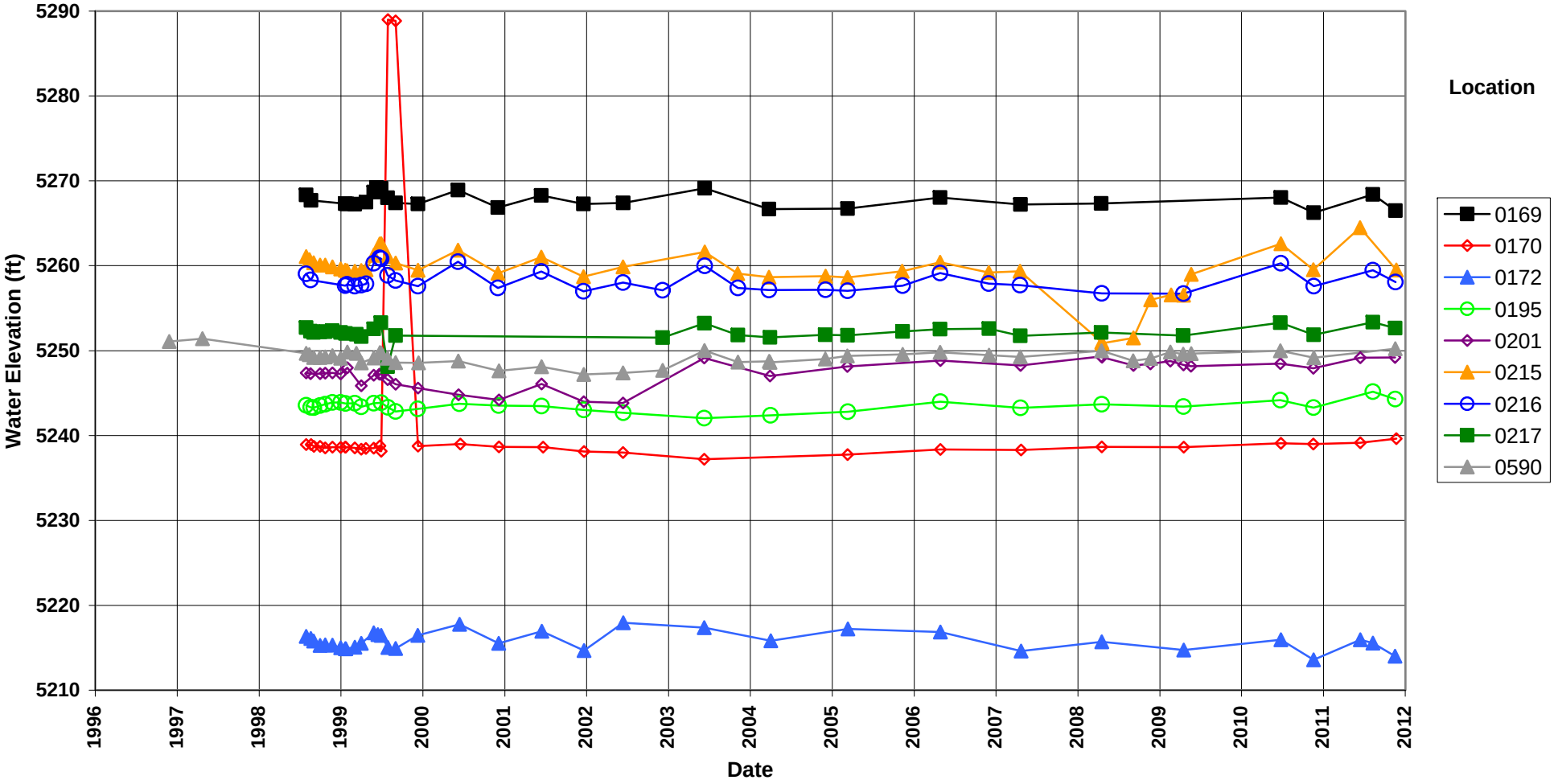
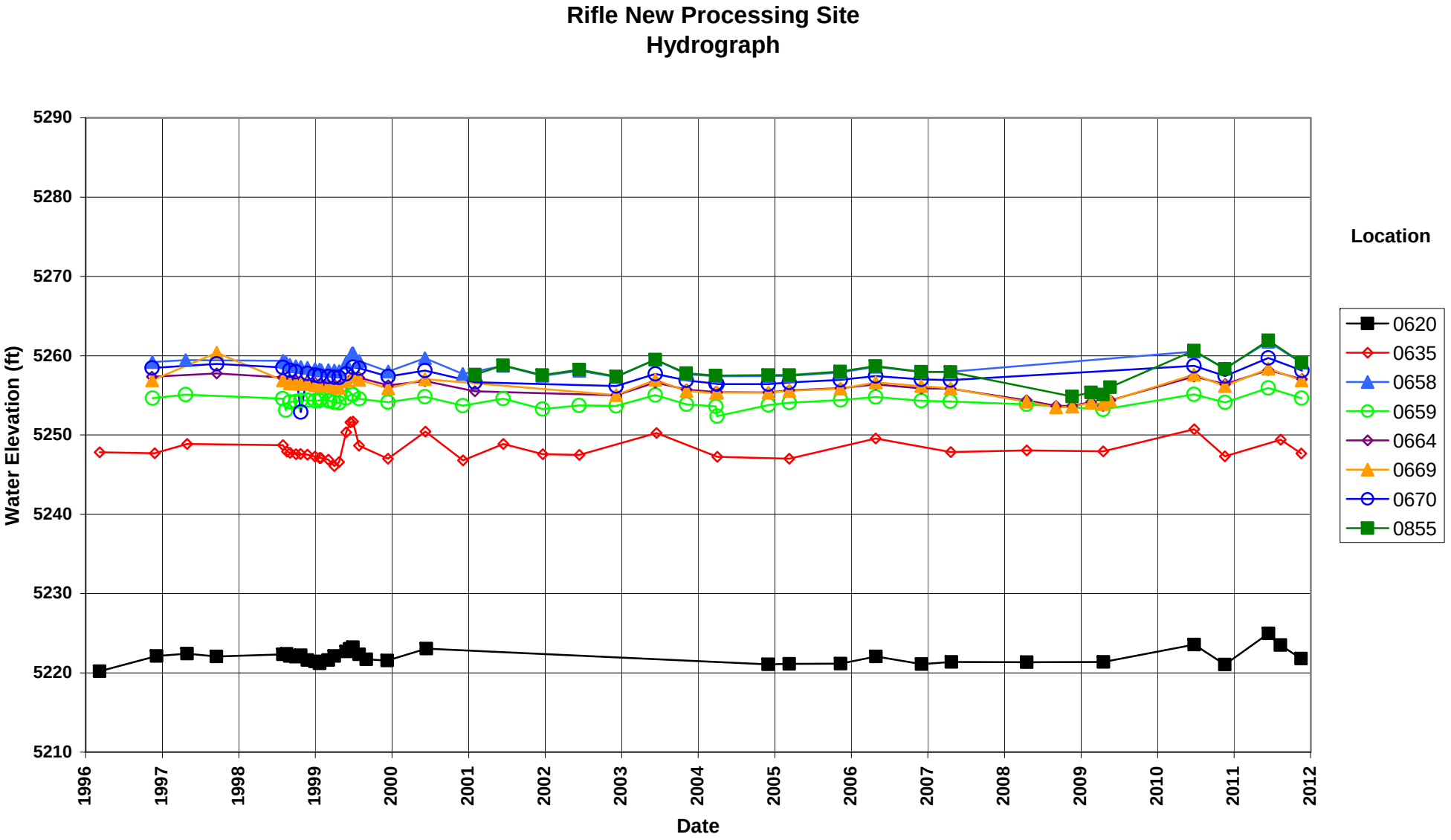
Rifle New Processing Site
Hydrograph




Rifle New Processing Site
Hydrograph
Water Elevation (ft)
5290
5280
5270
5260
5250
5240
5230
5220
5210
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Date
Location
0620
0635
0658
0659
0664
0669
0670
0855

Old Rifle Hydrographs

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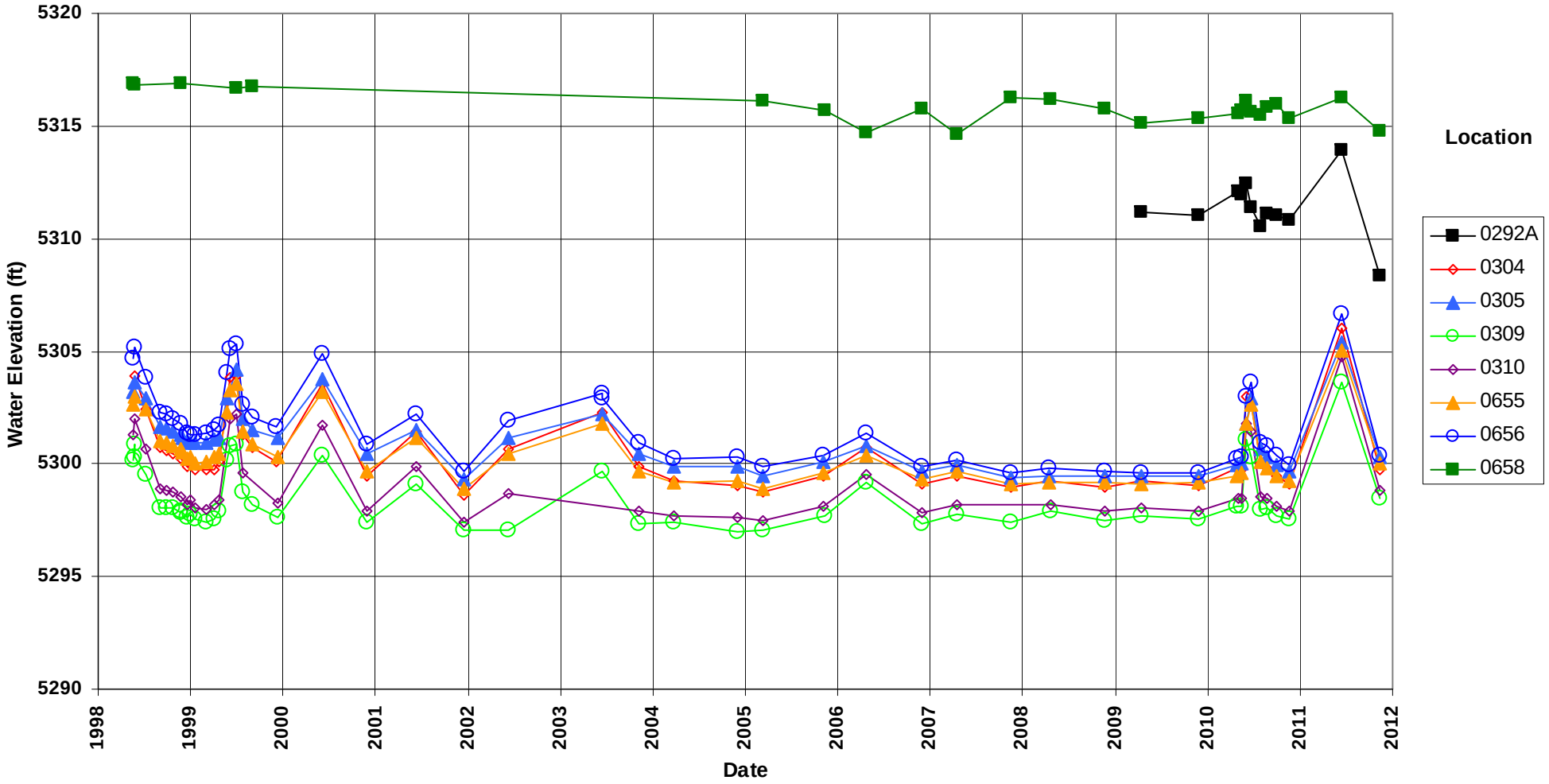
Rifle Old Processing Site
Hydrograph



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New Rifle Groundwater
Time-Concentration Graphs

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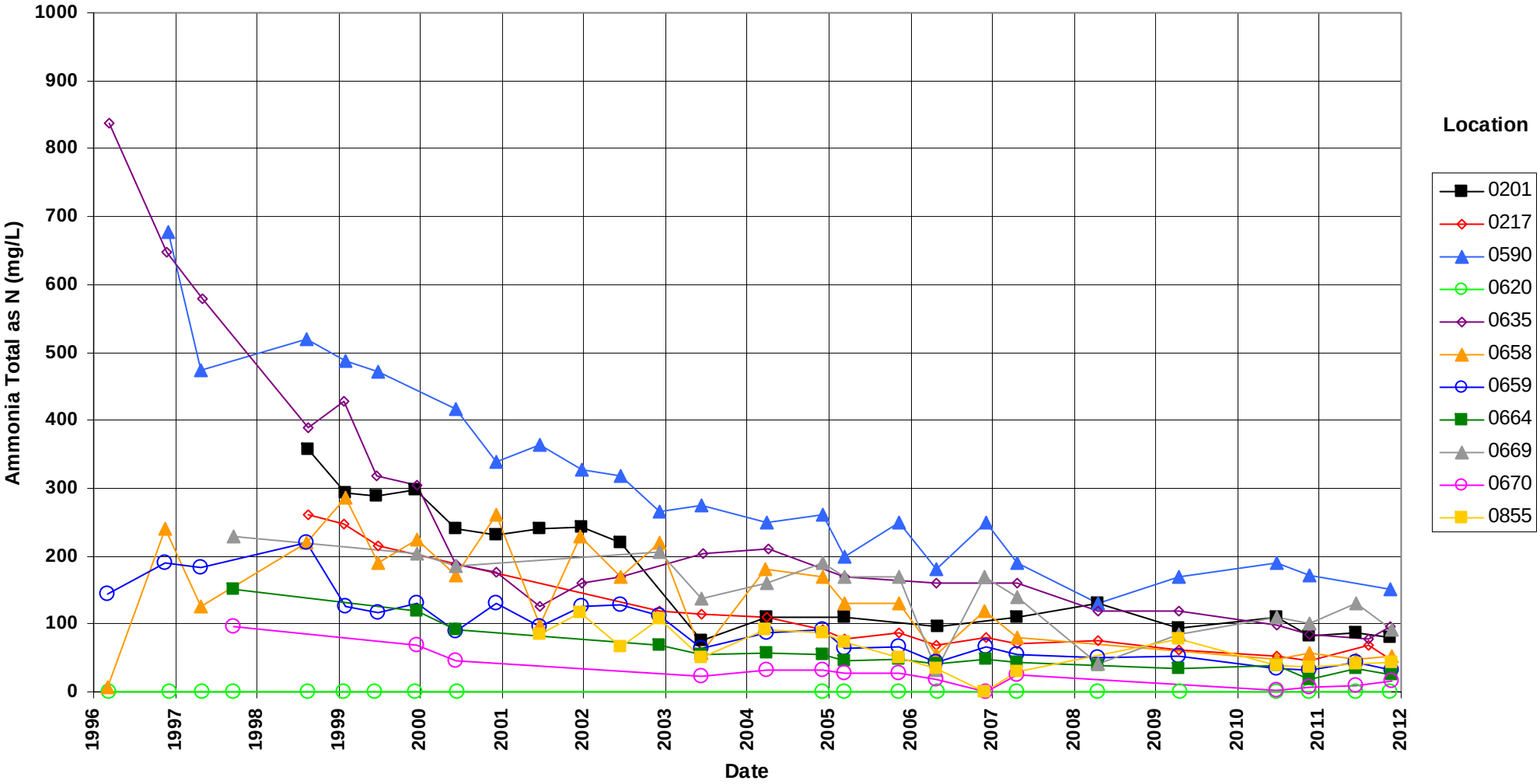
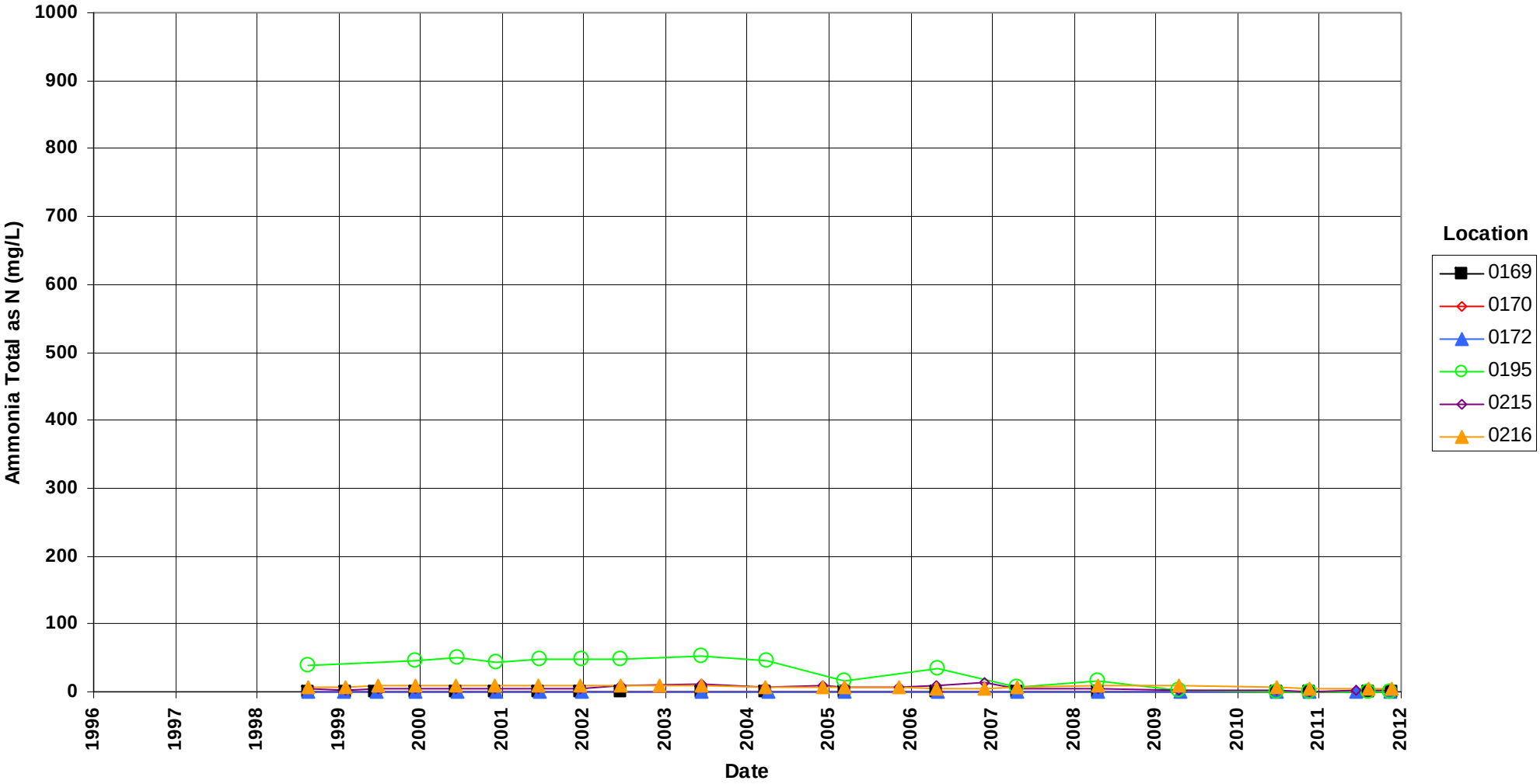
Rifle New Processing Site
Ammonia Total as N Concentration

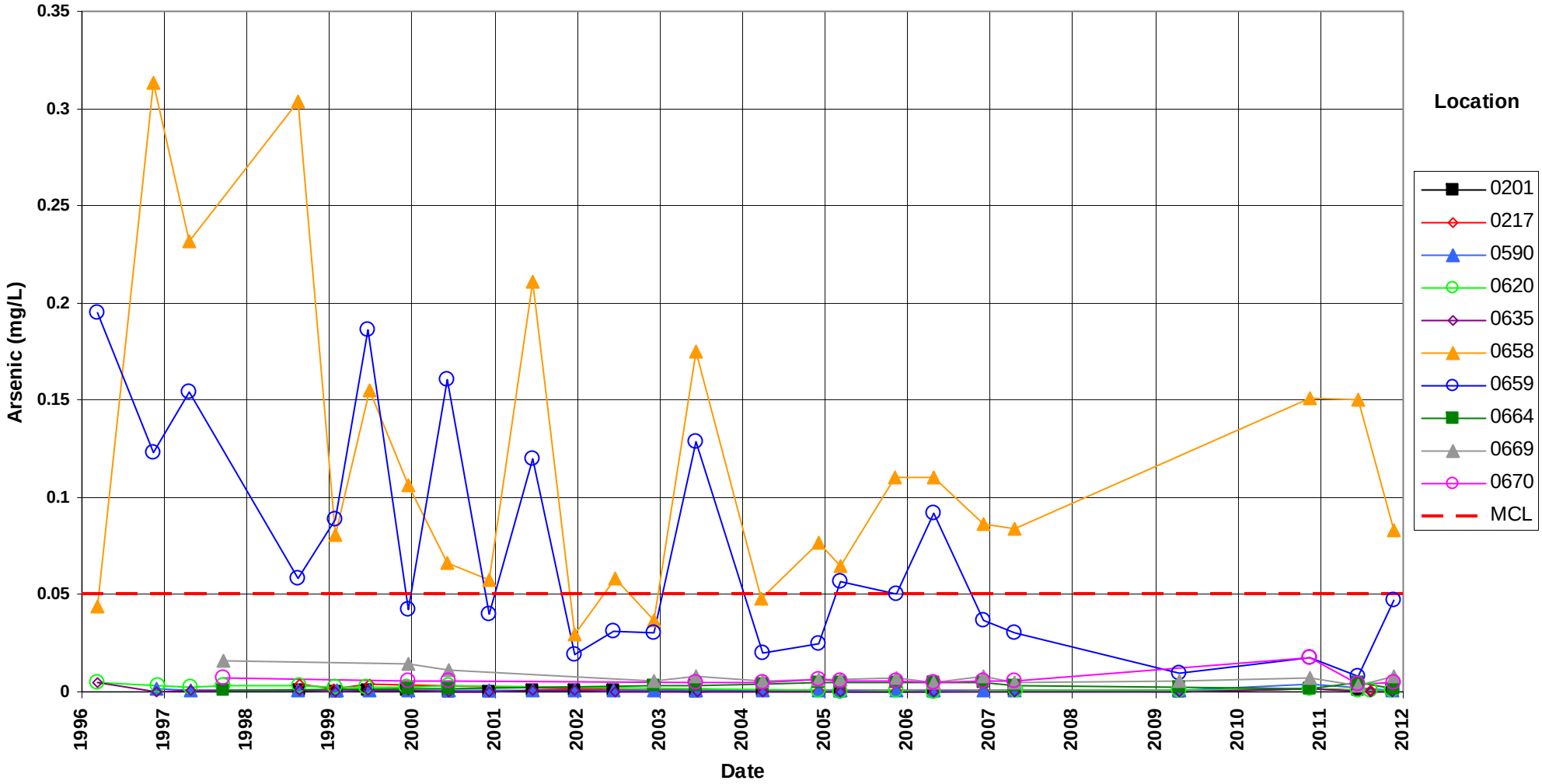


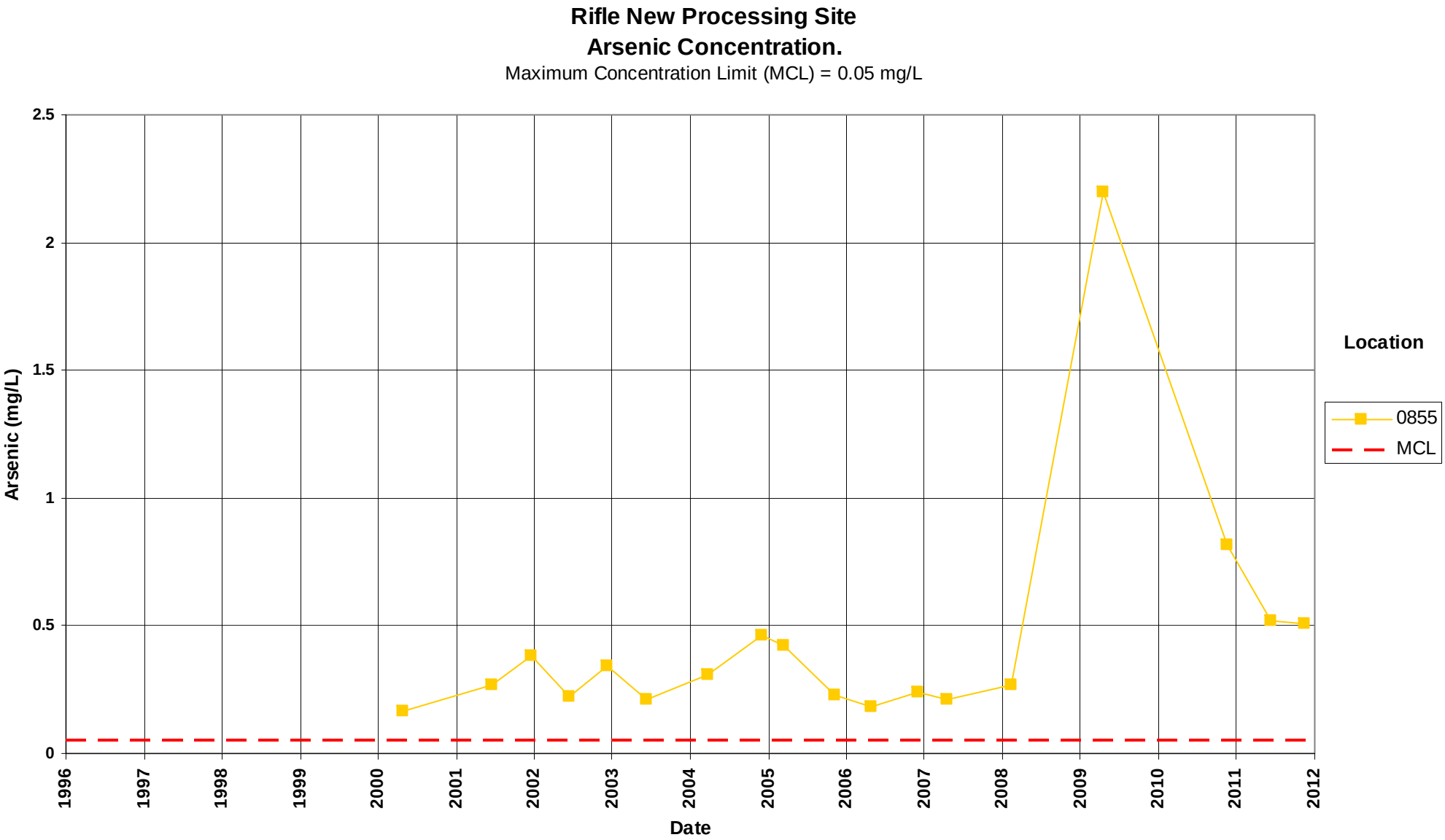
Rifle New Processing Site
Ammonia Total as N Concentration



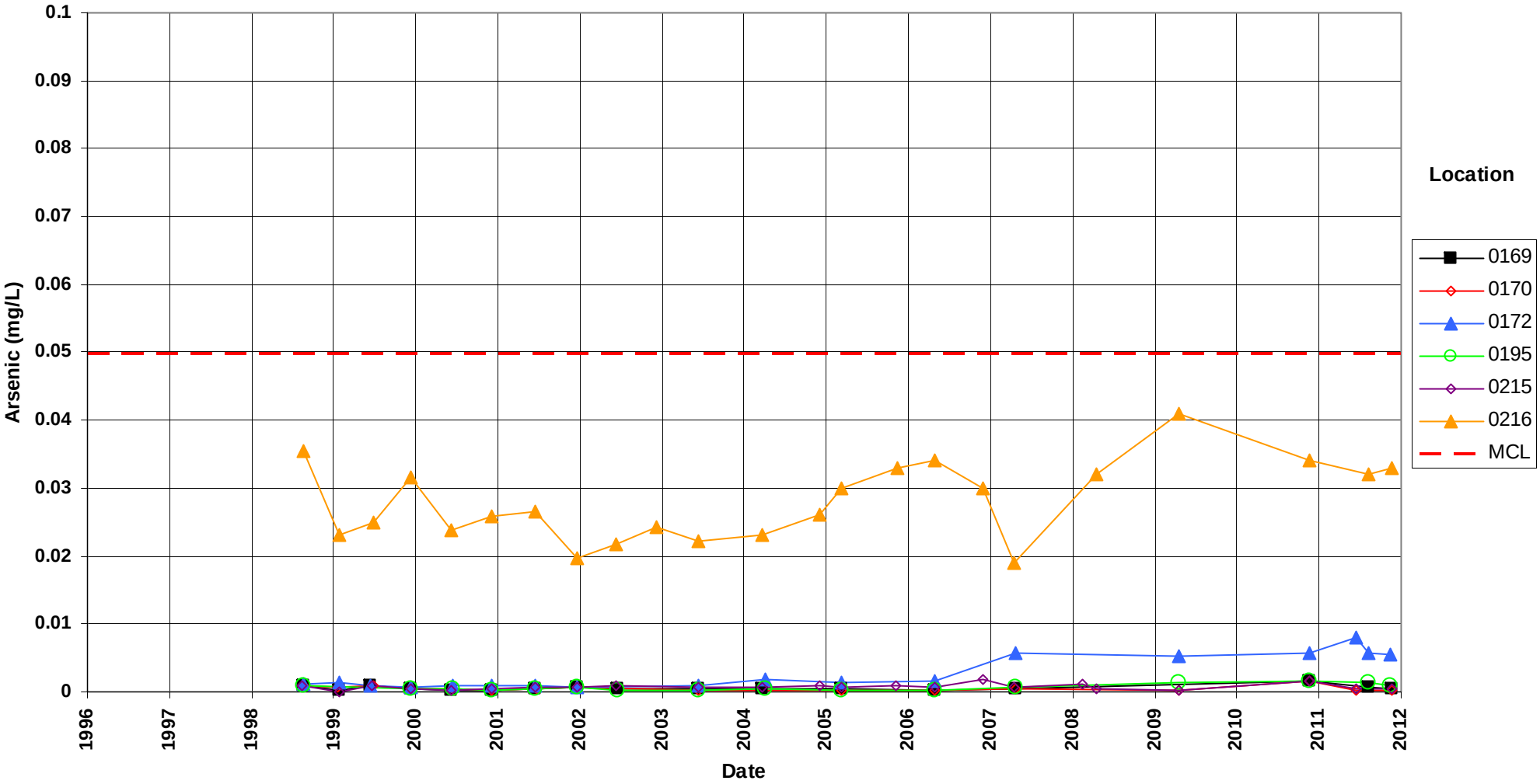
Rifle New Processing Site
Arsenic Concentration.

Maximum Concentration Limit (MCL) = 0.05 mg/L



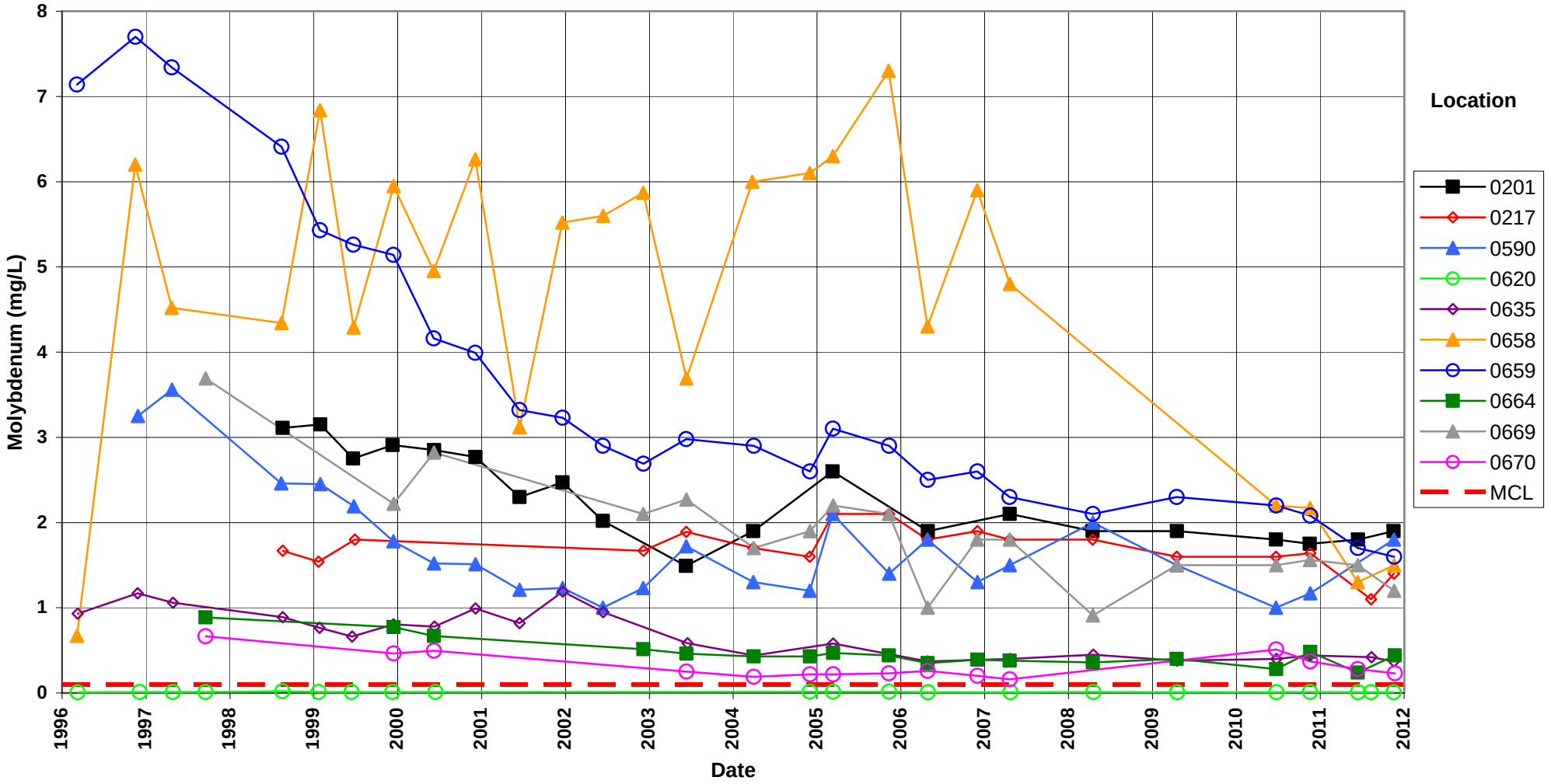

Rifle New Processing Site
Arsenic Concentration.
Maximum Concentration Limit (MCL) = 0.05 mg/L
Arsenic (mg/L)
2.5
2
1.5
1
0.5
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Date
Location
0855
MCL

Rifle New Processing Site
Arsenic Concentration
Maximum Concentration Limit (MCL) = 0.05 mg/L

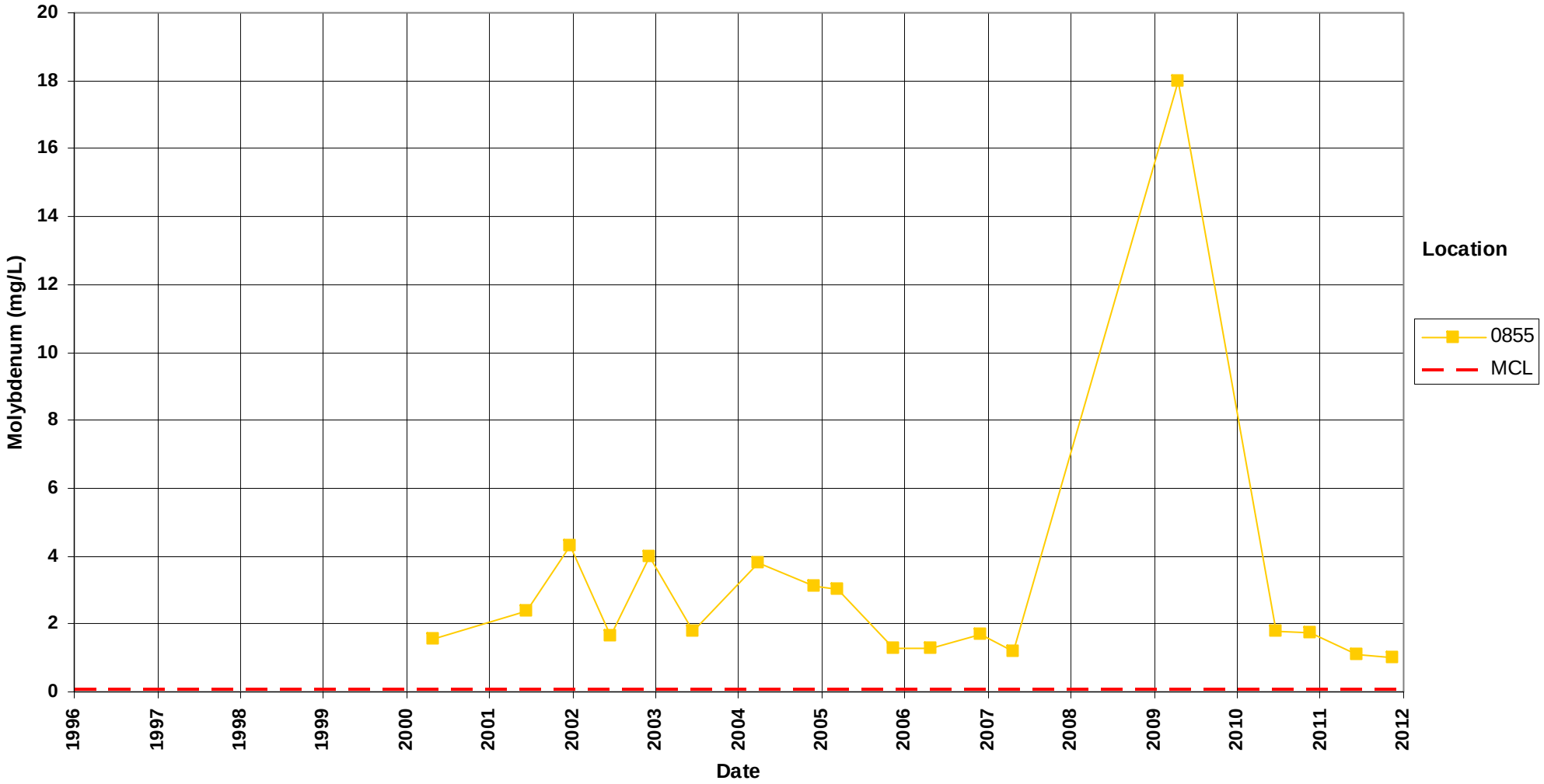


Rifle New Processing Site
Molybdenum Concentration

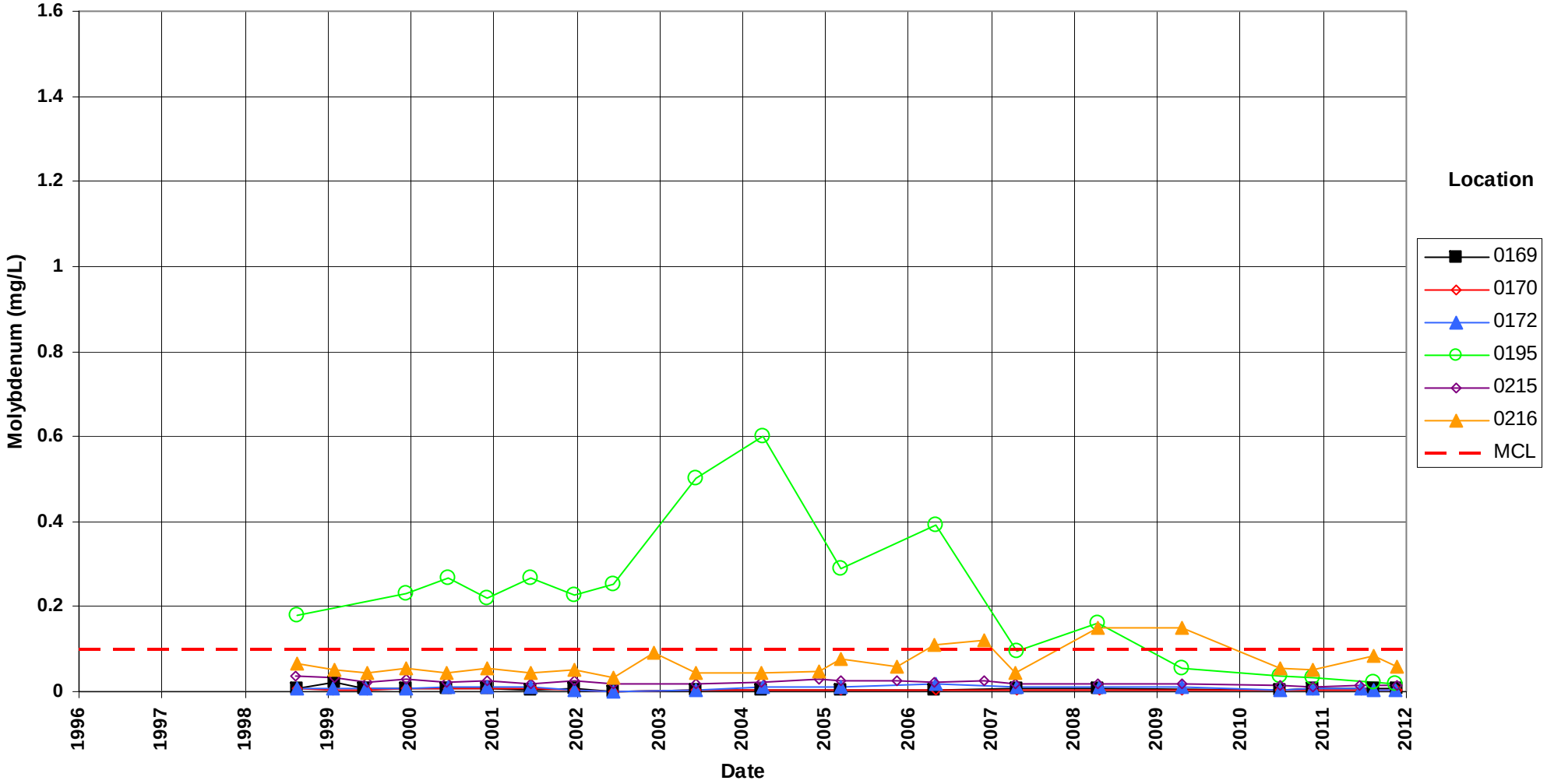
Maximum Concentration Limit (MCL) = 0.1 mg/L



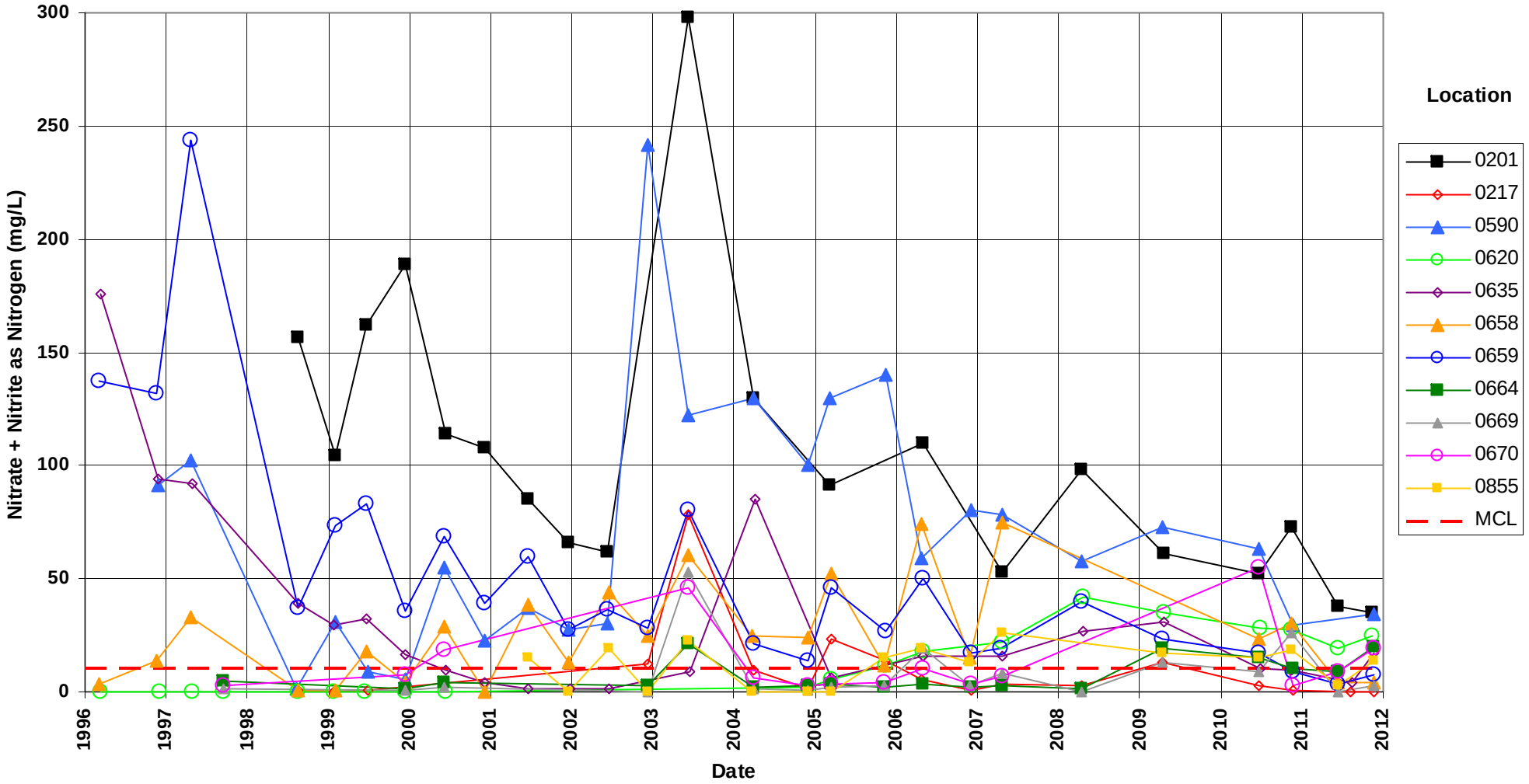
Rifle New Processing Site
Molybdenum Concentration
Maximum Concentration Limit (MCL) = 0.1 mg/L



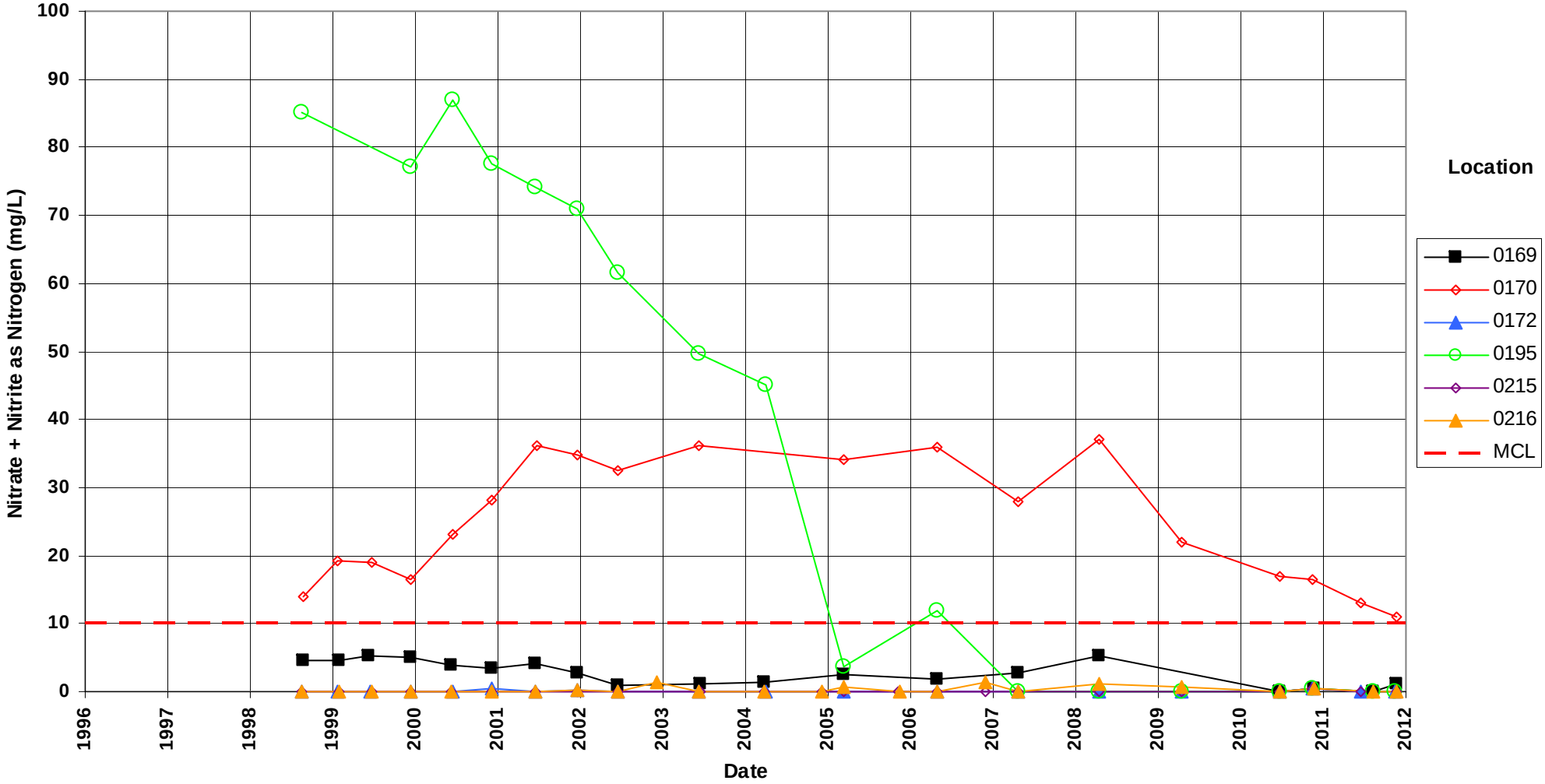
Rifle New Processing Site
Molybdenum Concentration
Maximum Concentration Limit (MCL) = 0.1 mg/L



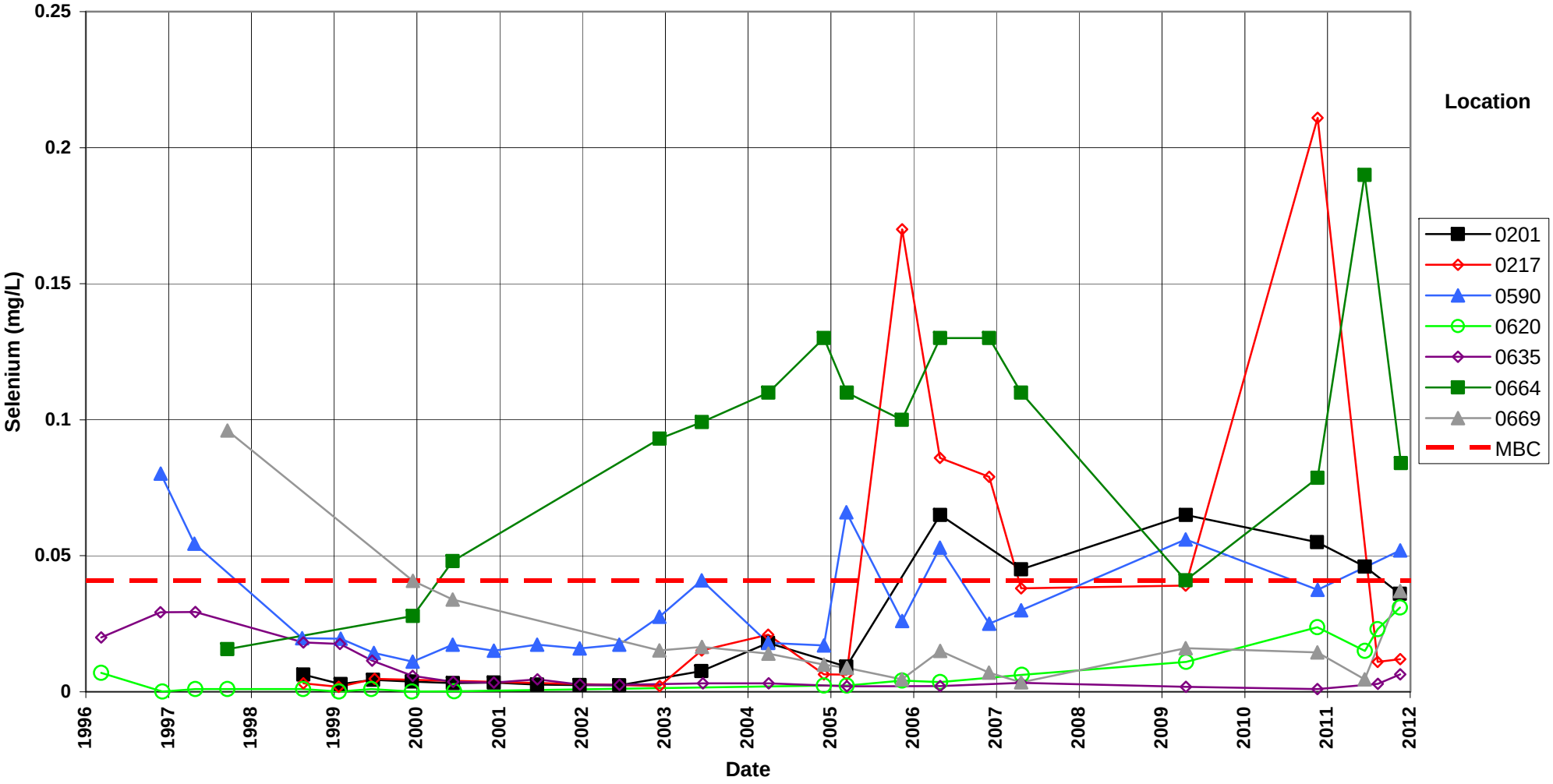
Rifle New Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit (MCL) = 10.0 mg/L



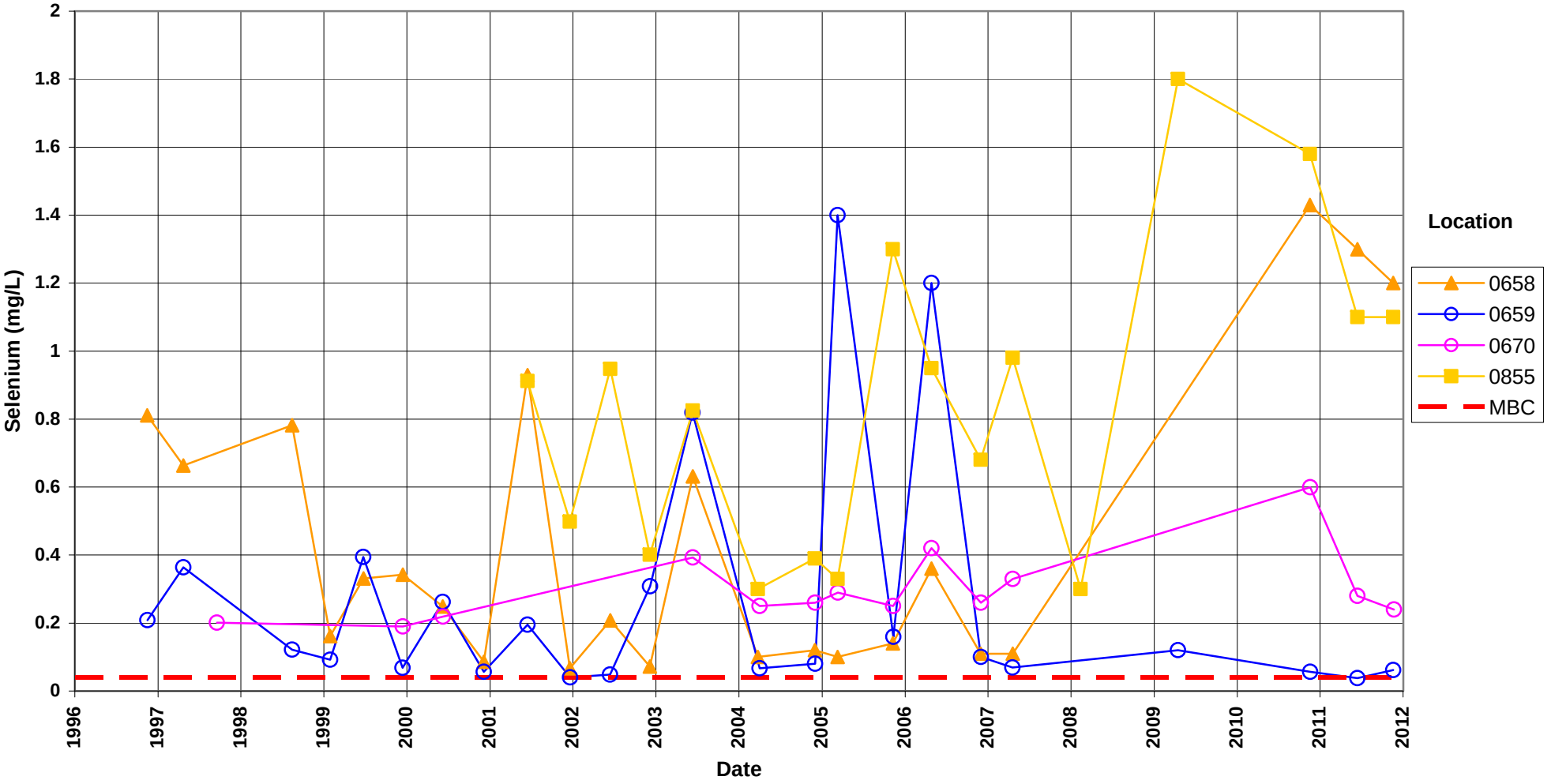
Rifle New Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit (MCL) = 10.0 mg/L



Rifle New Processing Site
Selenium Concentration
Maximum Background Concentration (MBC) = 0.041 mg/L

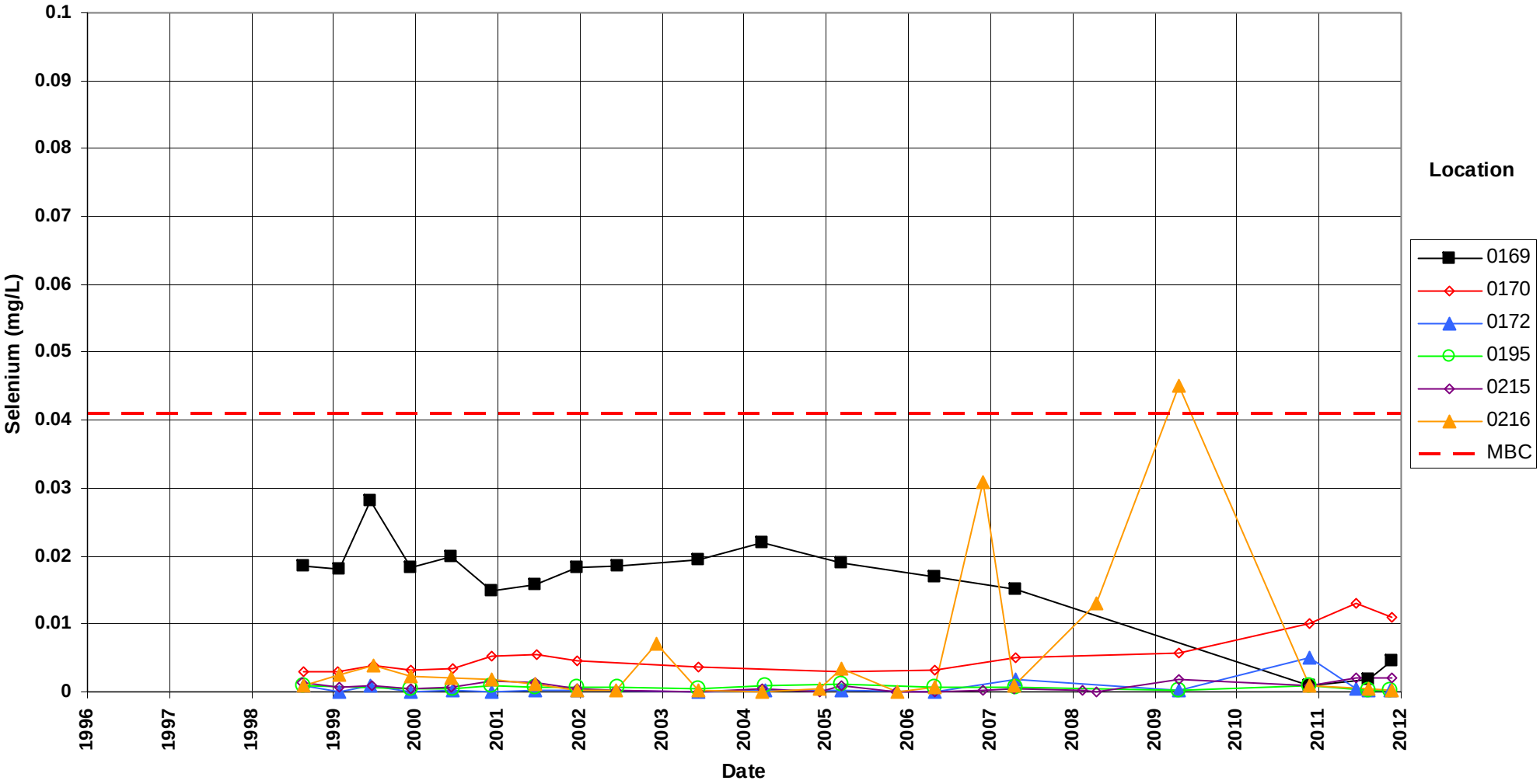


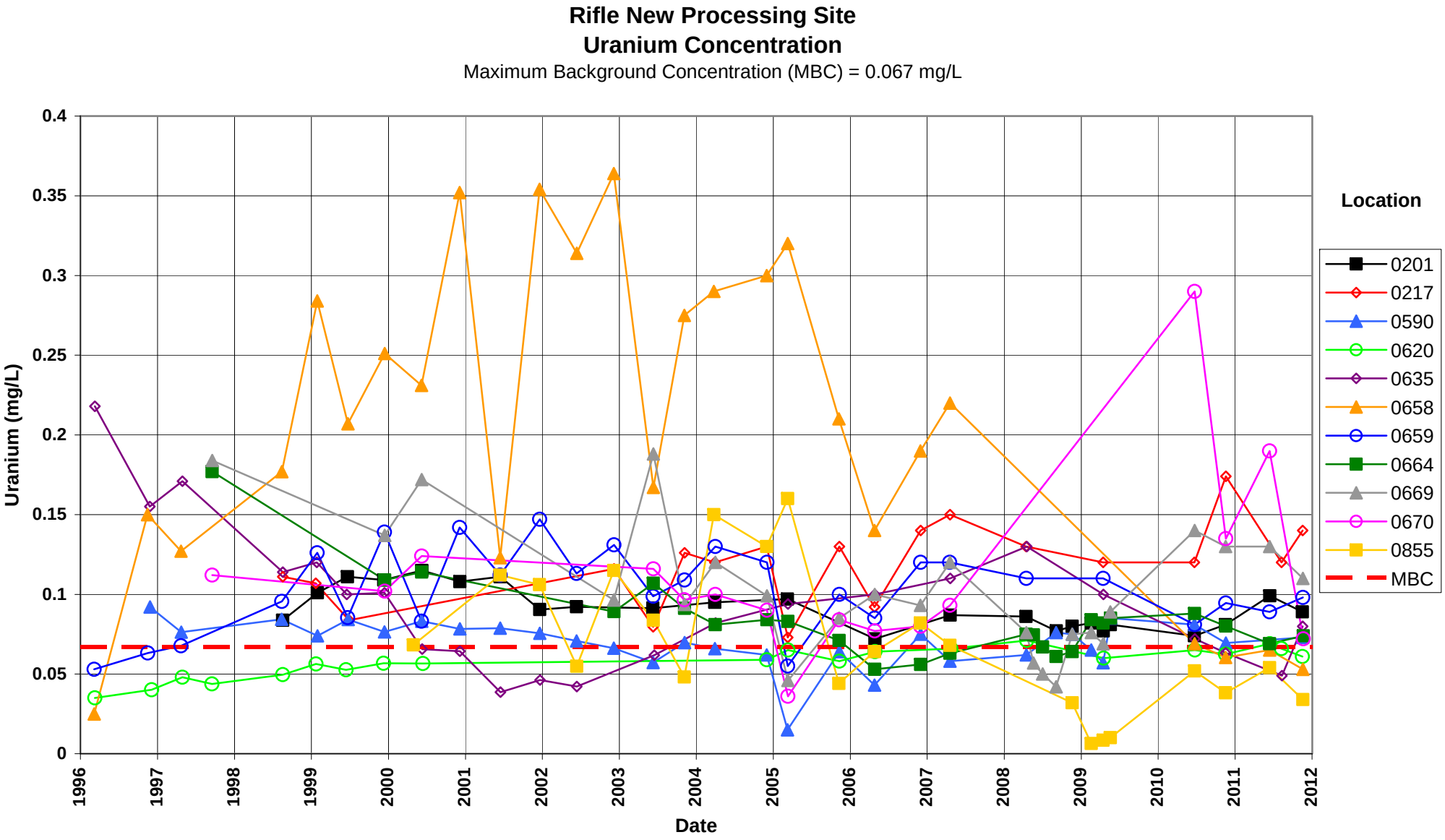
Rifle New Processing Site
Selenium Concentration
Maximum Background Concentration (MBC) = 0.041 mg/L



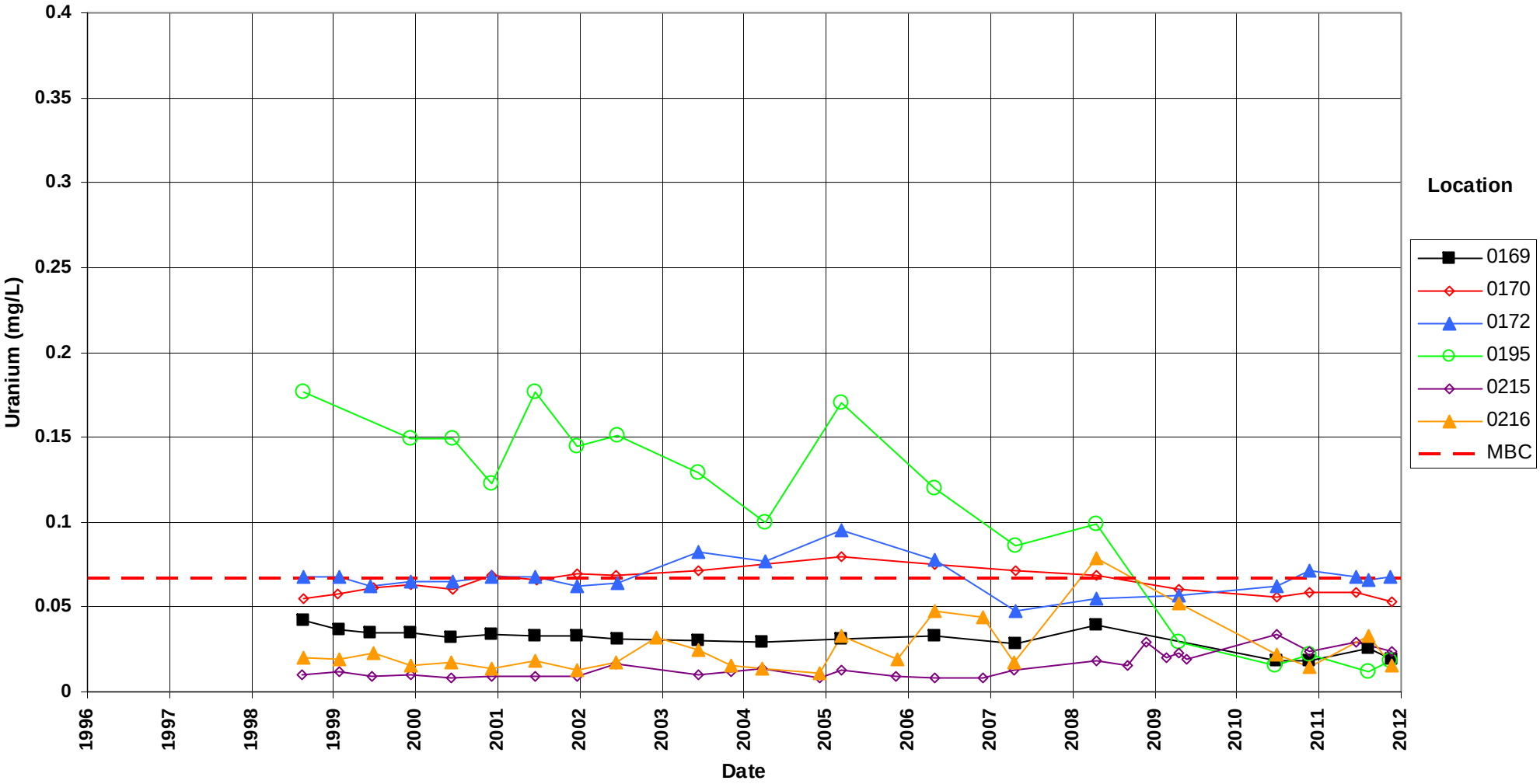
Rifle New Processing Site
Selenium Concentration

Maximum Background Concentration (MBC) = 0.041 mg/L

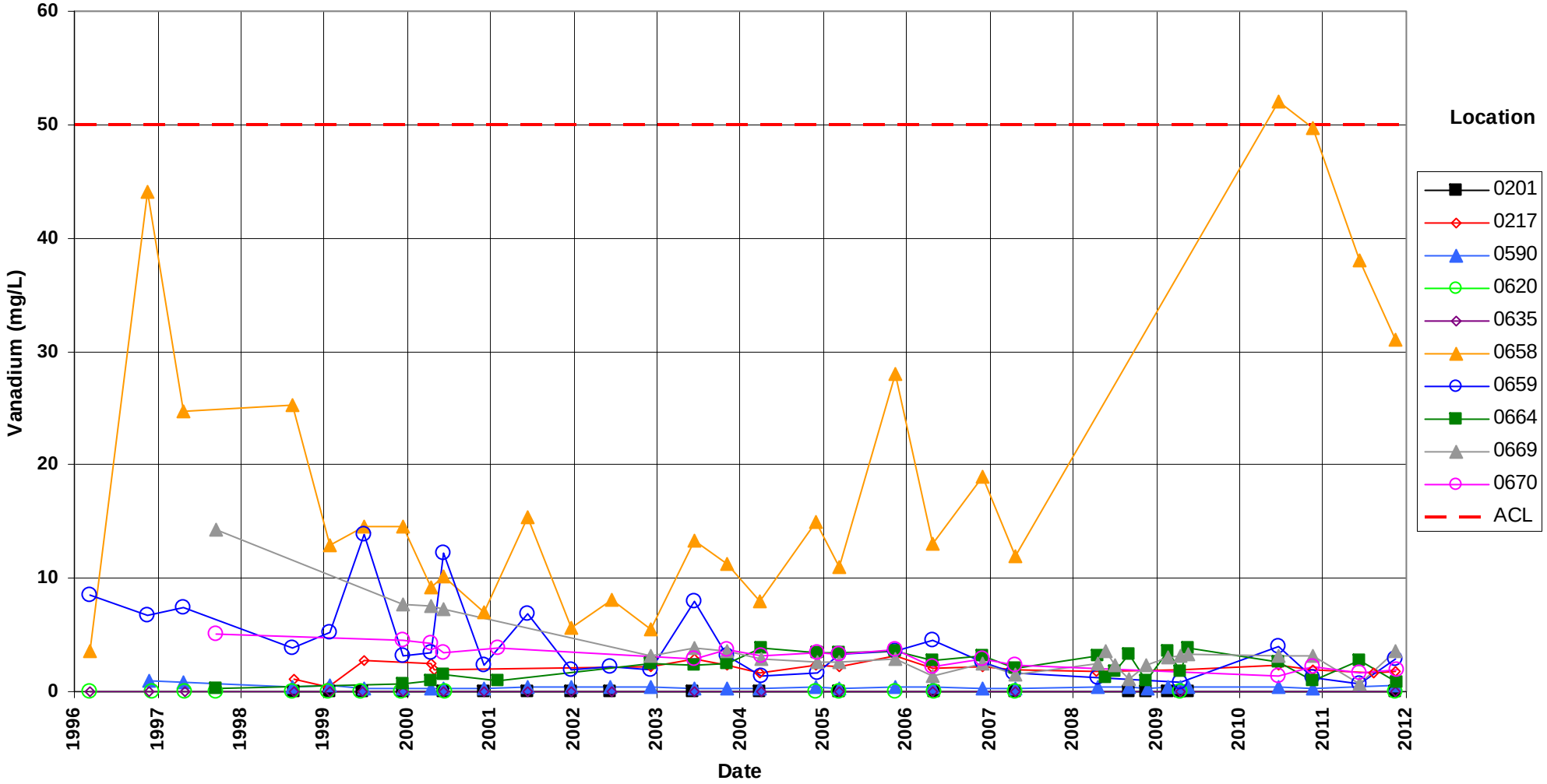



Rifle New Processing Site
Uranium Concentration
Maximum Background Concentration (MBC) = 0.067 mg/L
Uranium (mg/L)
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Date
Location
0201
0217
0590
0620
0635
0658
0659
0664
0669
0670
0855
MBC

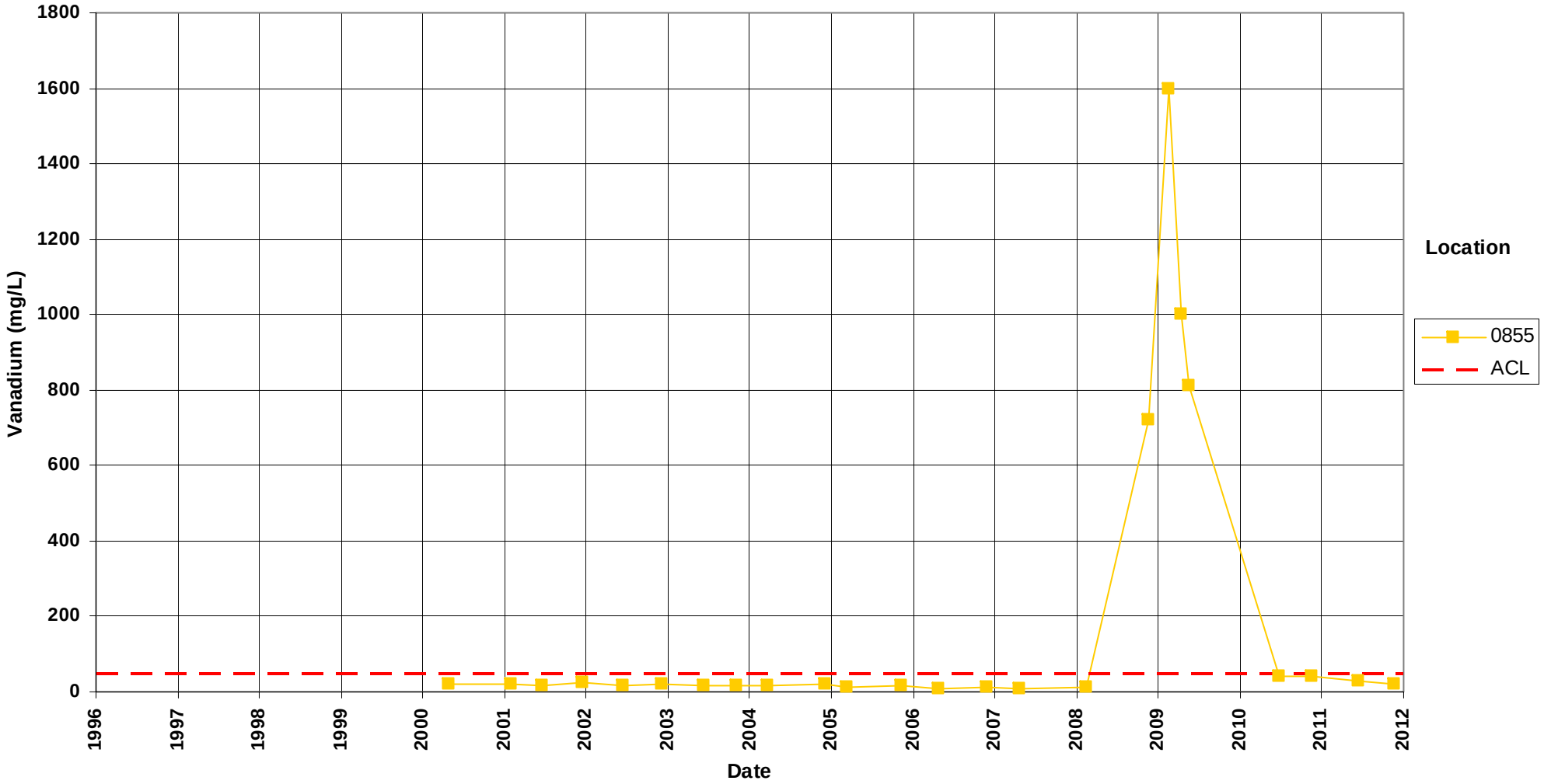
Rifle New Processing Site
Uranium Concentration
Maximum Background Concentration (MBC) = 0.067 mg/L



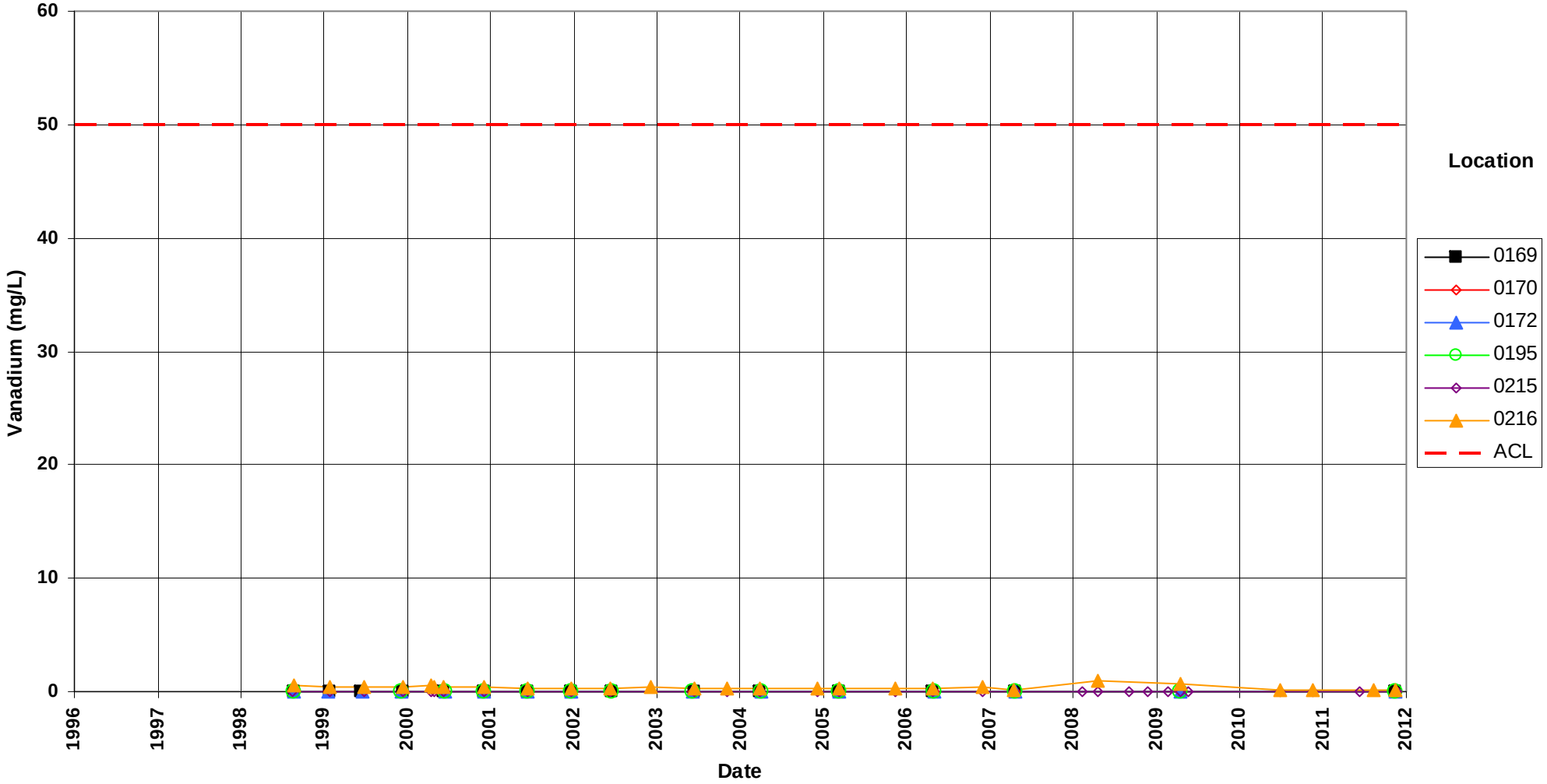
Rifle New Processing Site
Vanadium Concentration
Proposed Alternate Concentration Limit (ACL) = 50 mg/L



Rifle New Processing Site
Vanadium Concentration
Proposed Alternate Concentration Limit (ACL) = 50 mg/L



Rifle New Processing Site
Vanadium Concentration
Proposed Alternate Concentration Limit (ACL) = 50 mg/L



New Rifle Surface Water
Time-Concentration Graphs

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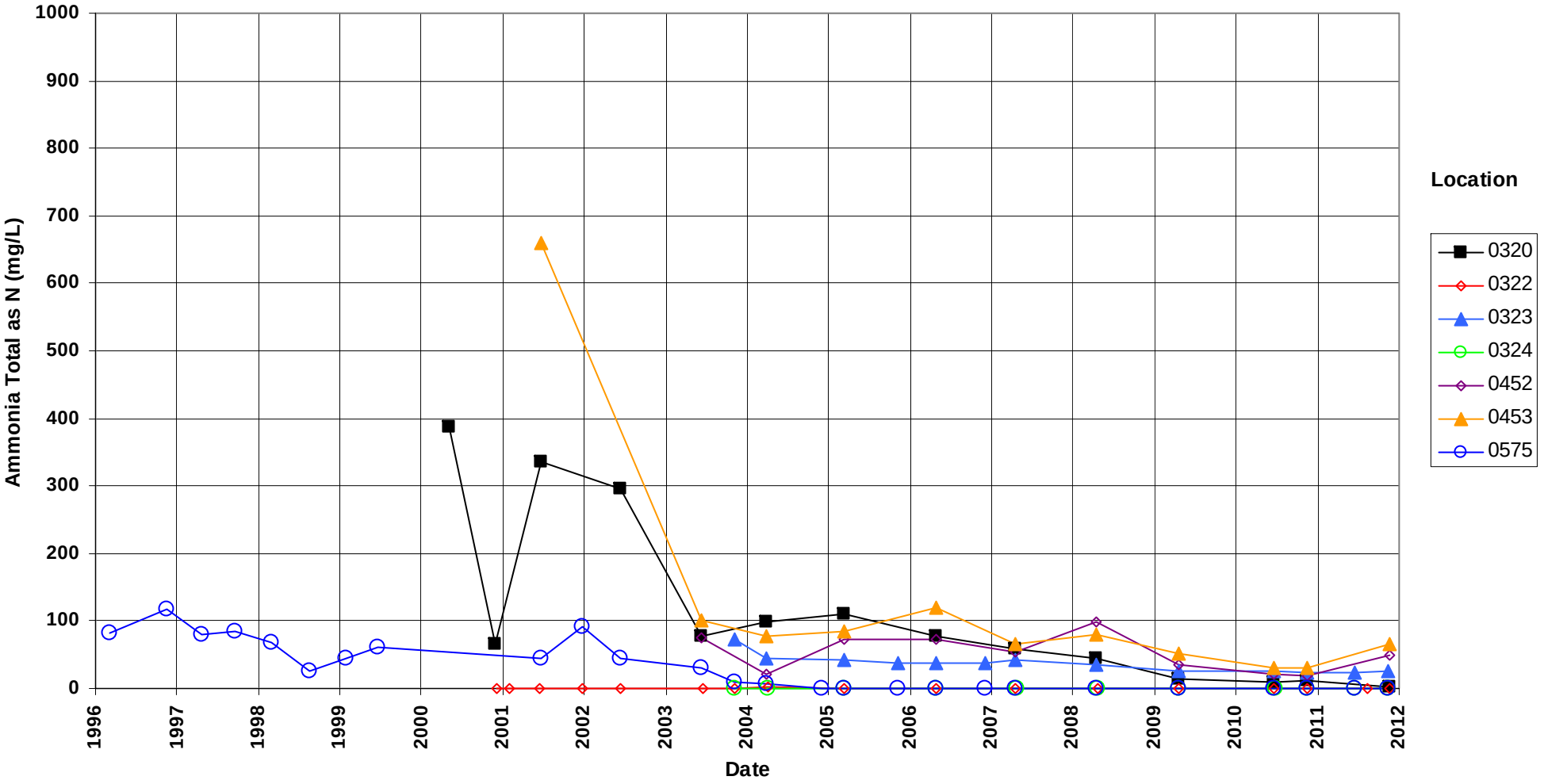
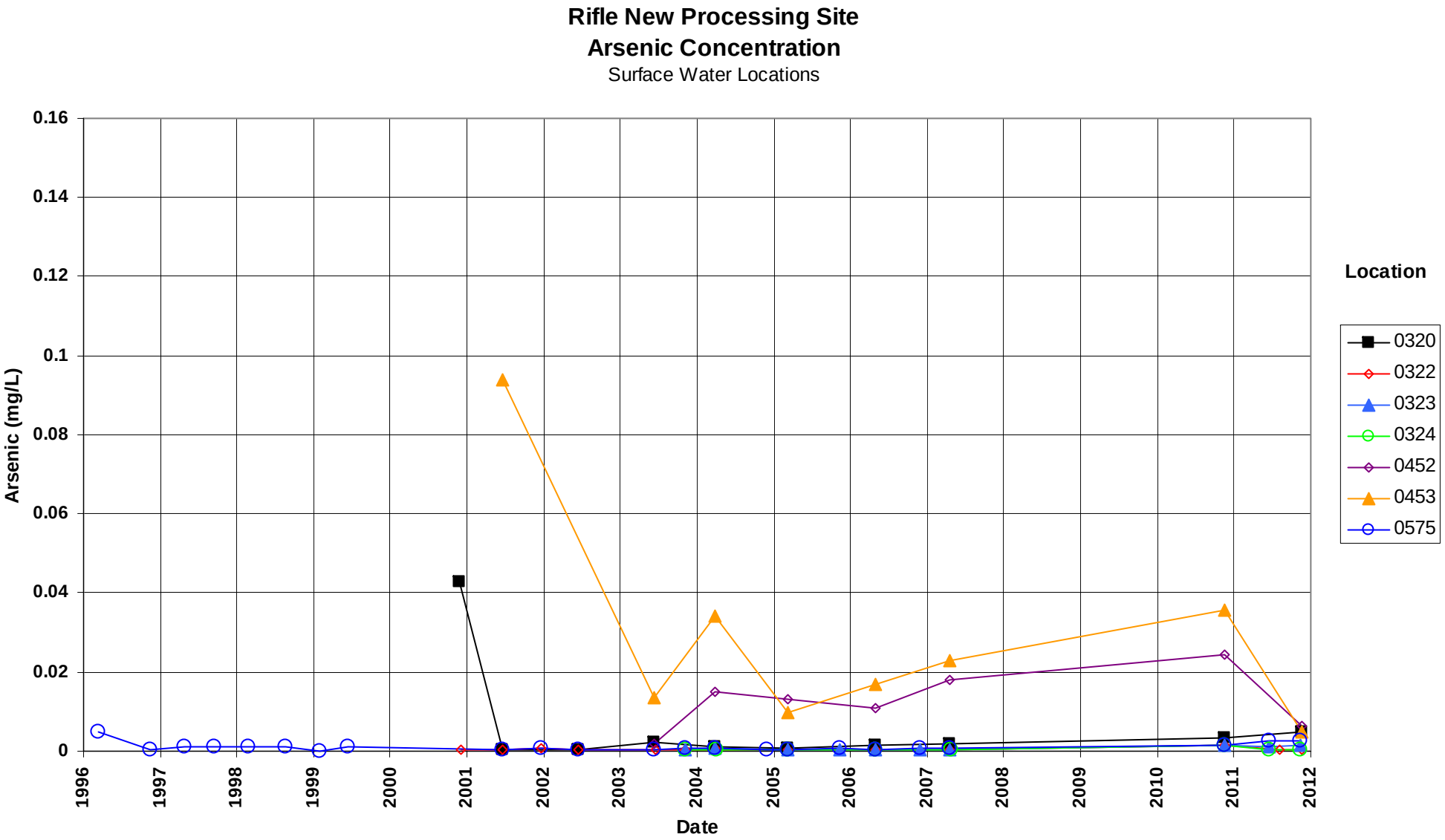
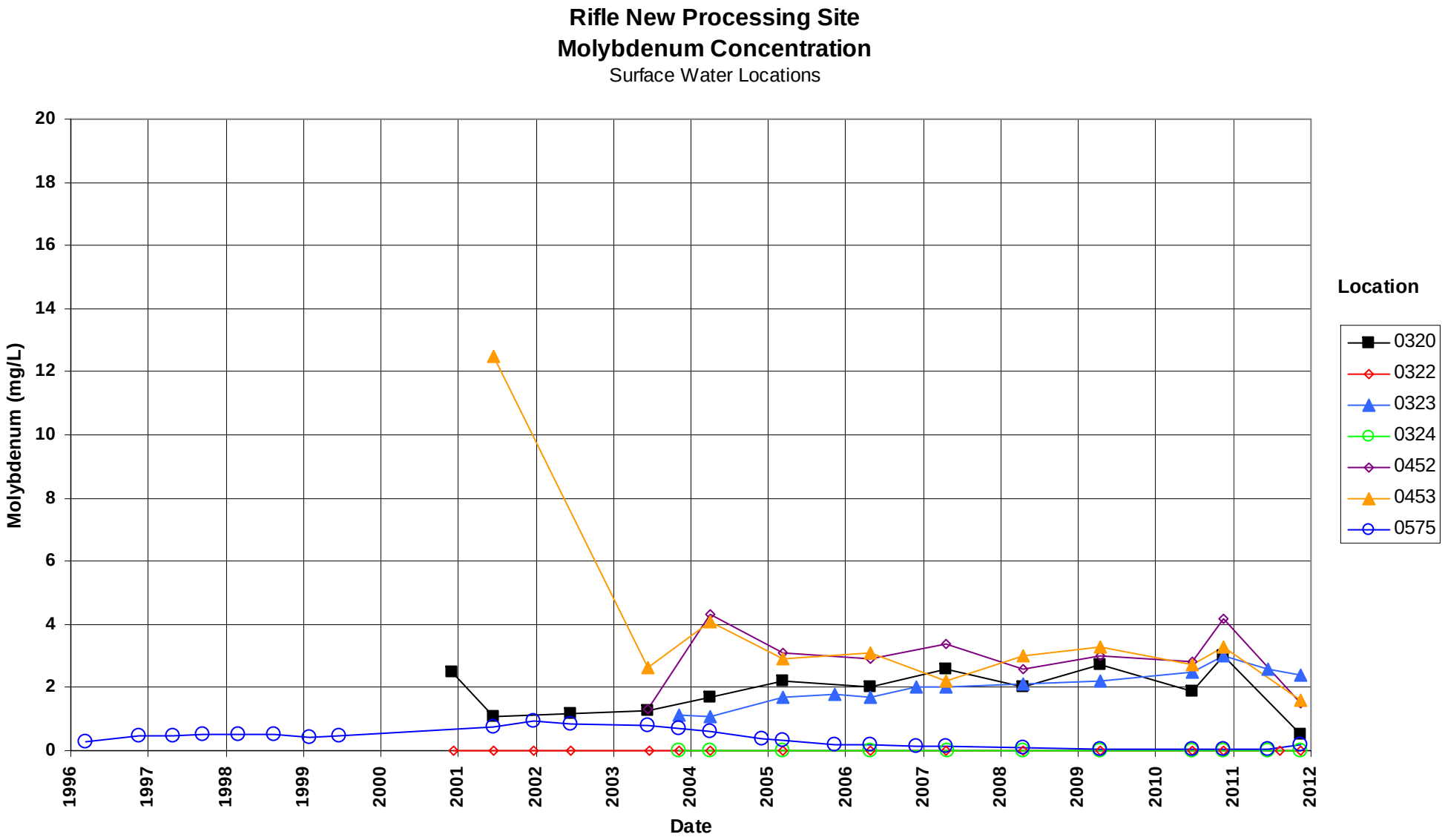
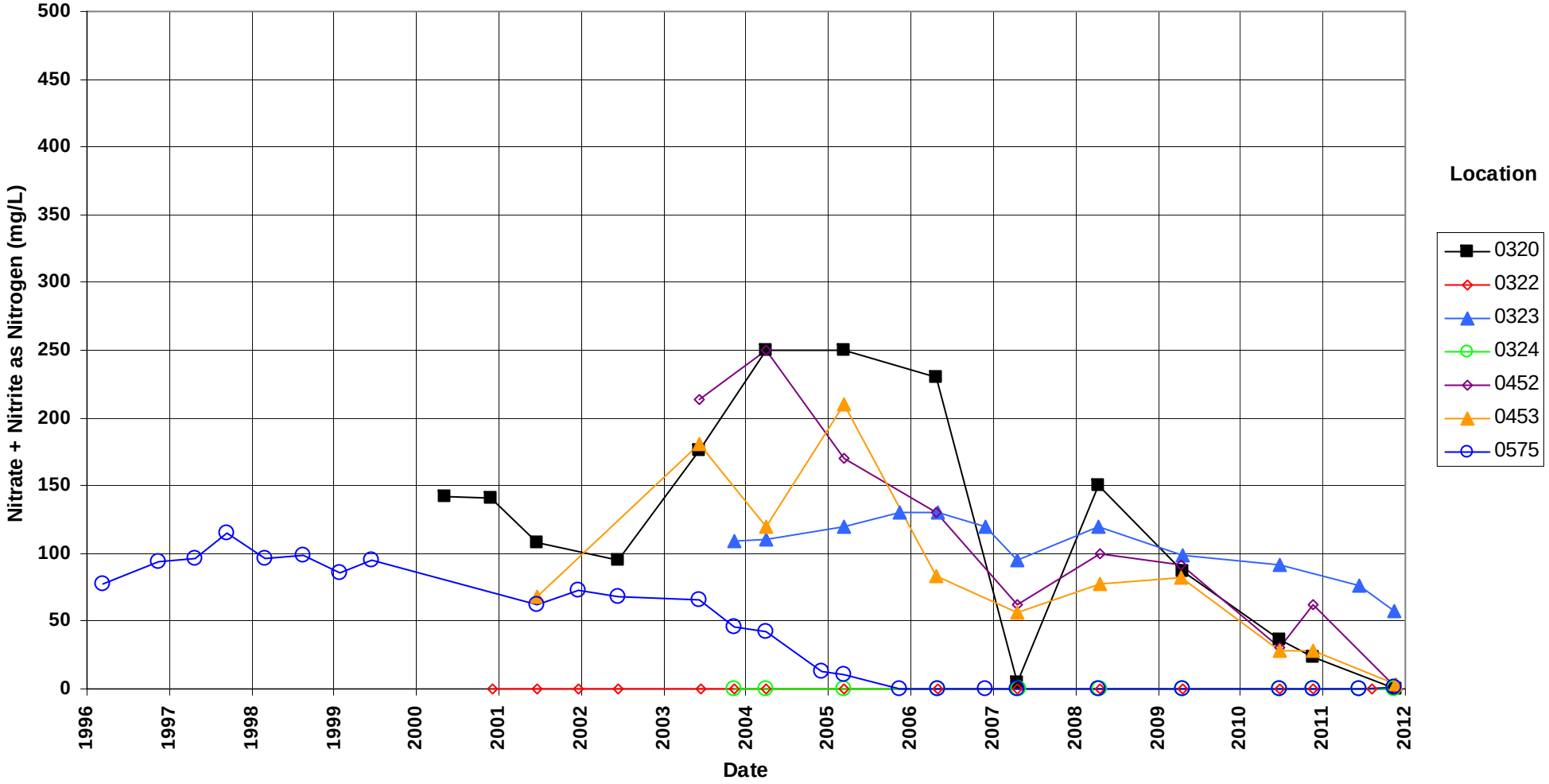
Rifle New Processing Site
Ammonia Total as N Concentration
Surface Water Locations



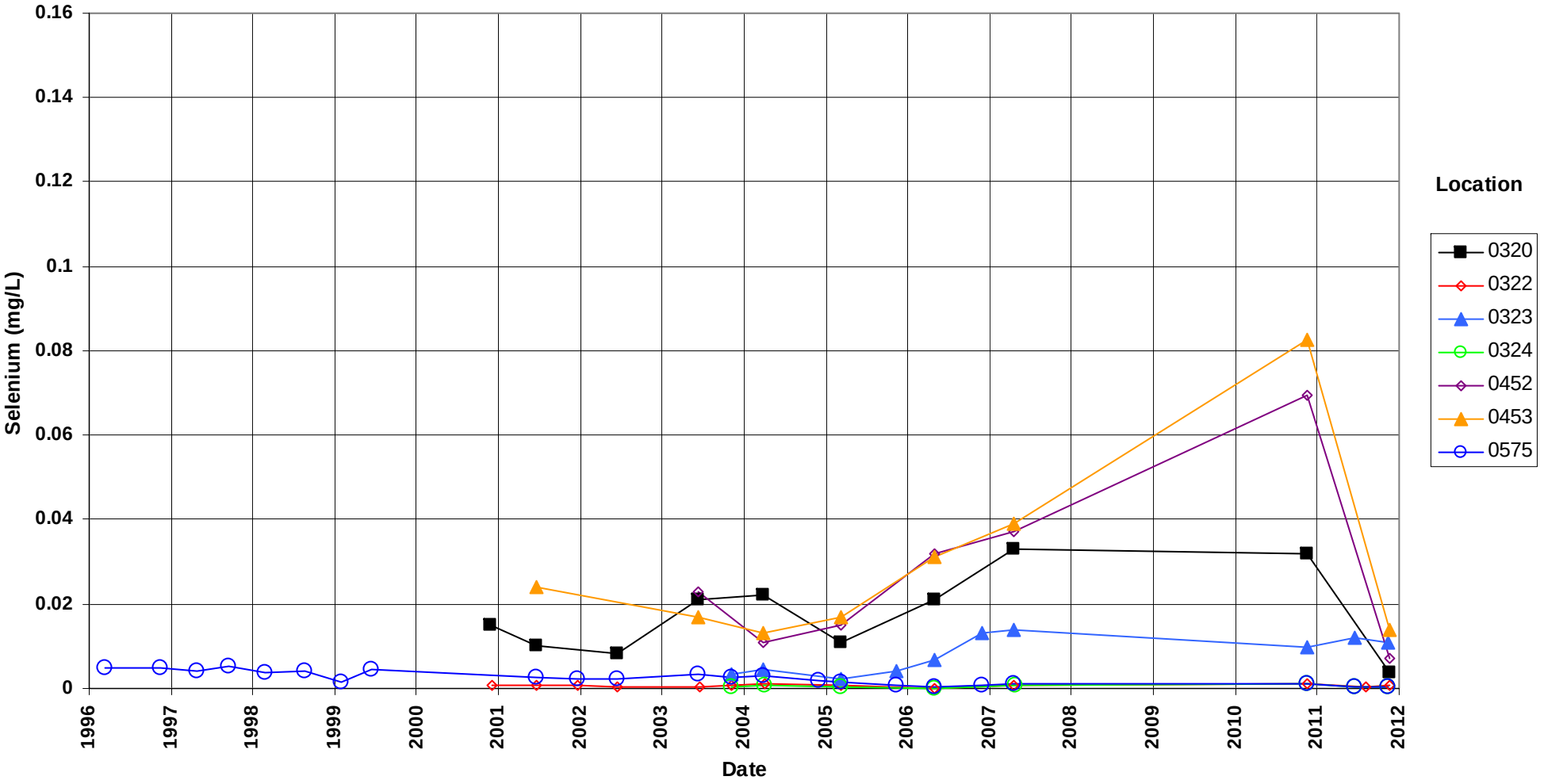

Rifle New Processing Site
Arsenic Concentration
Surface Water Locations
Arsenic (mg/L)
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Date
Location
0320
0322
0323
0324
0452
0453
0575

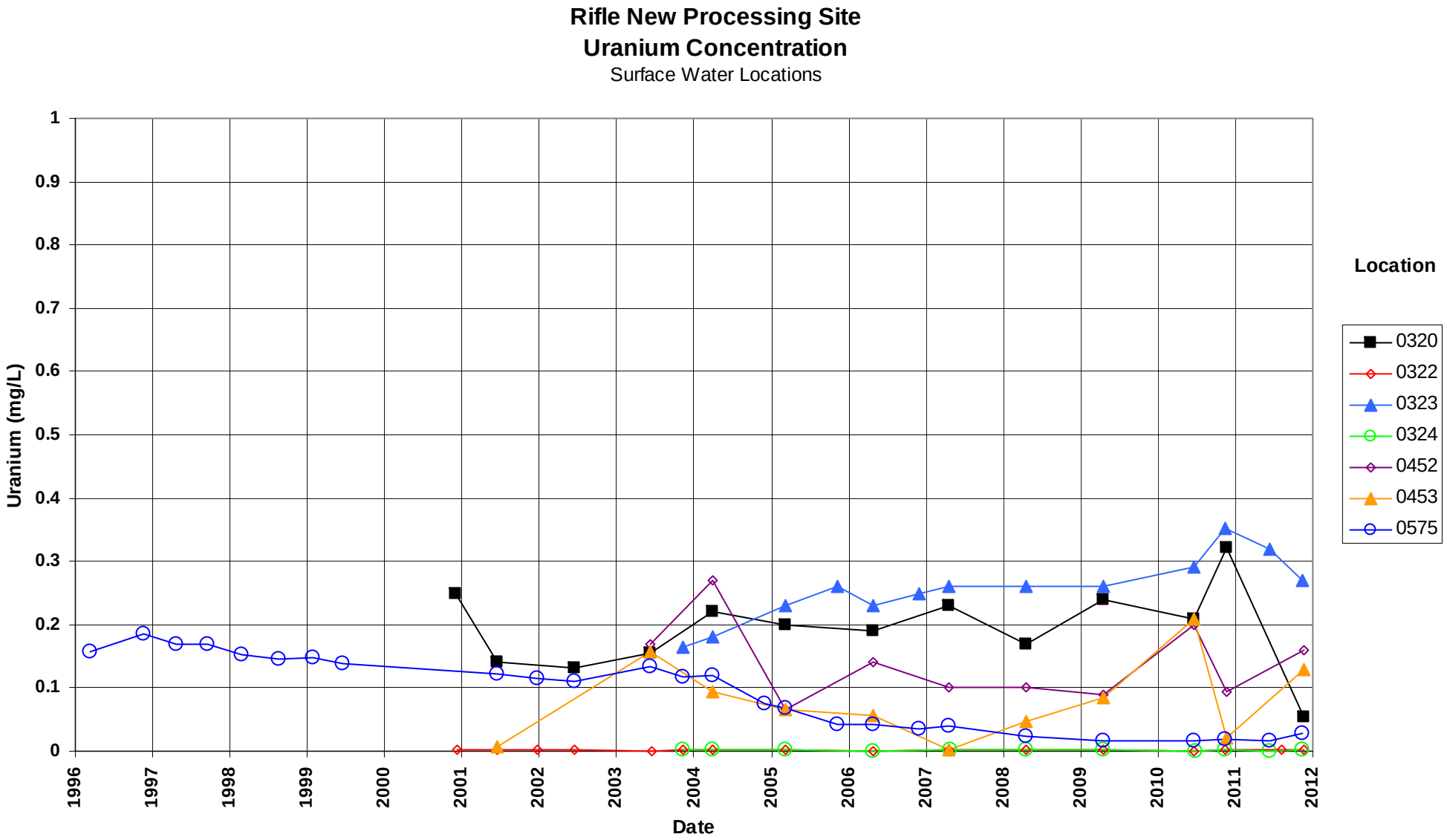

Rifle New Processing Site
Molybdenum Concentration
Surface Water Locations
Molybdenum (mg/L)
20
18
16
14
12
10
8
6
4
2
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Date
Location
0320
0322
0323
0324
0452
0453
0575

Rifle New Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Surface Water Locations

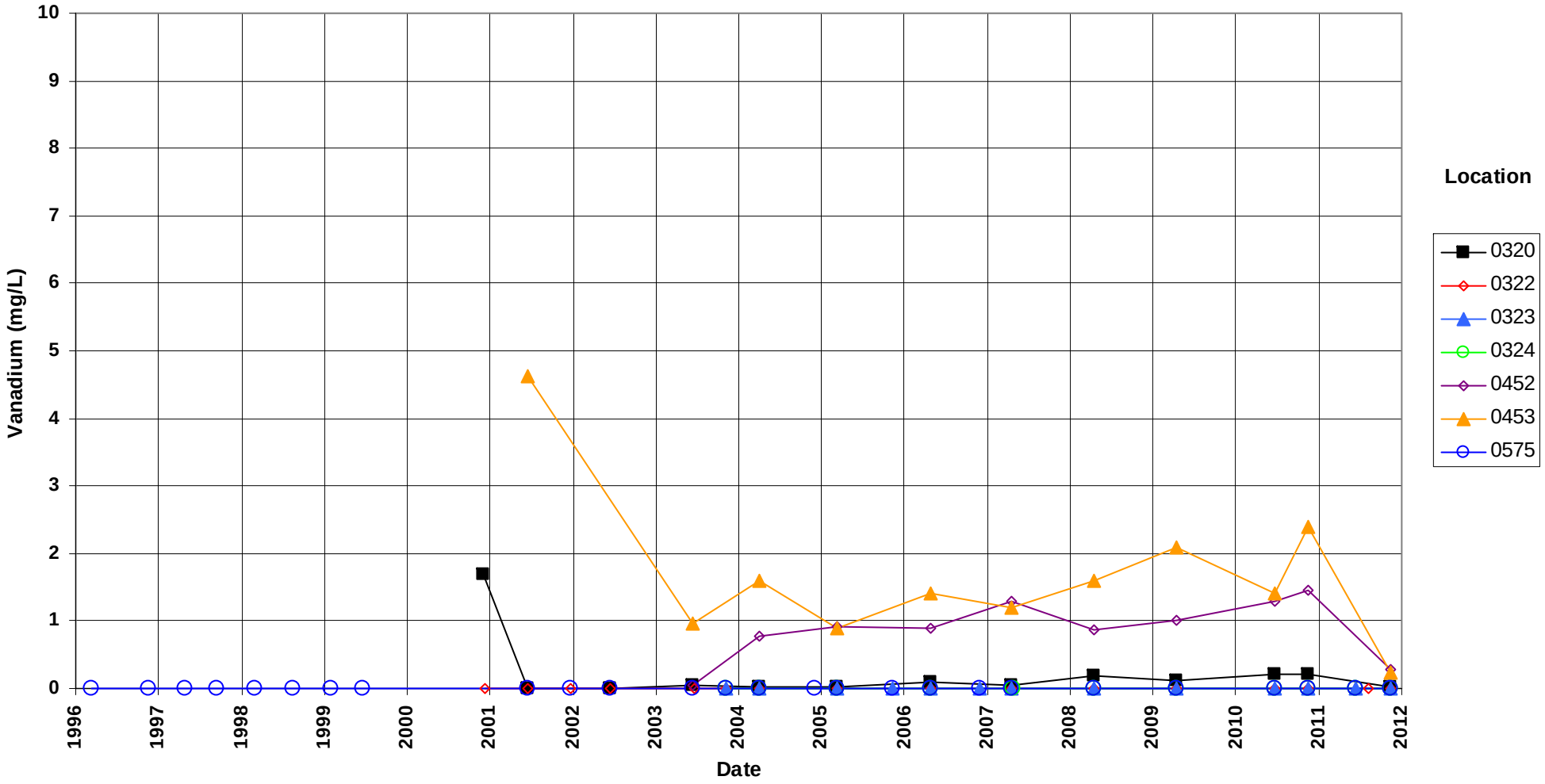


Rifle New Processing Site
Selenium Concentration
Surface Water Locations




Rifle New Processing Site
Uranium Concentration
Surface Water Locations
Uranium (mg/L)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Date
Location
0320
0322
0323
0324
0452
0453
0575

Rifle New Processing Site
Vanadium Concentration
Surface Water Locations



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Old Rifle Groundwater
Time-Concentration Graphs

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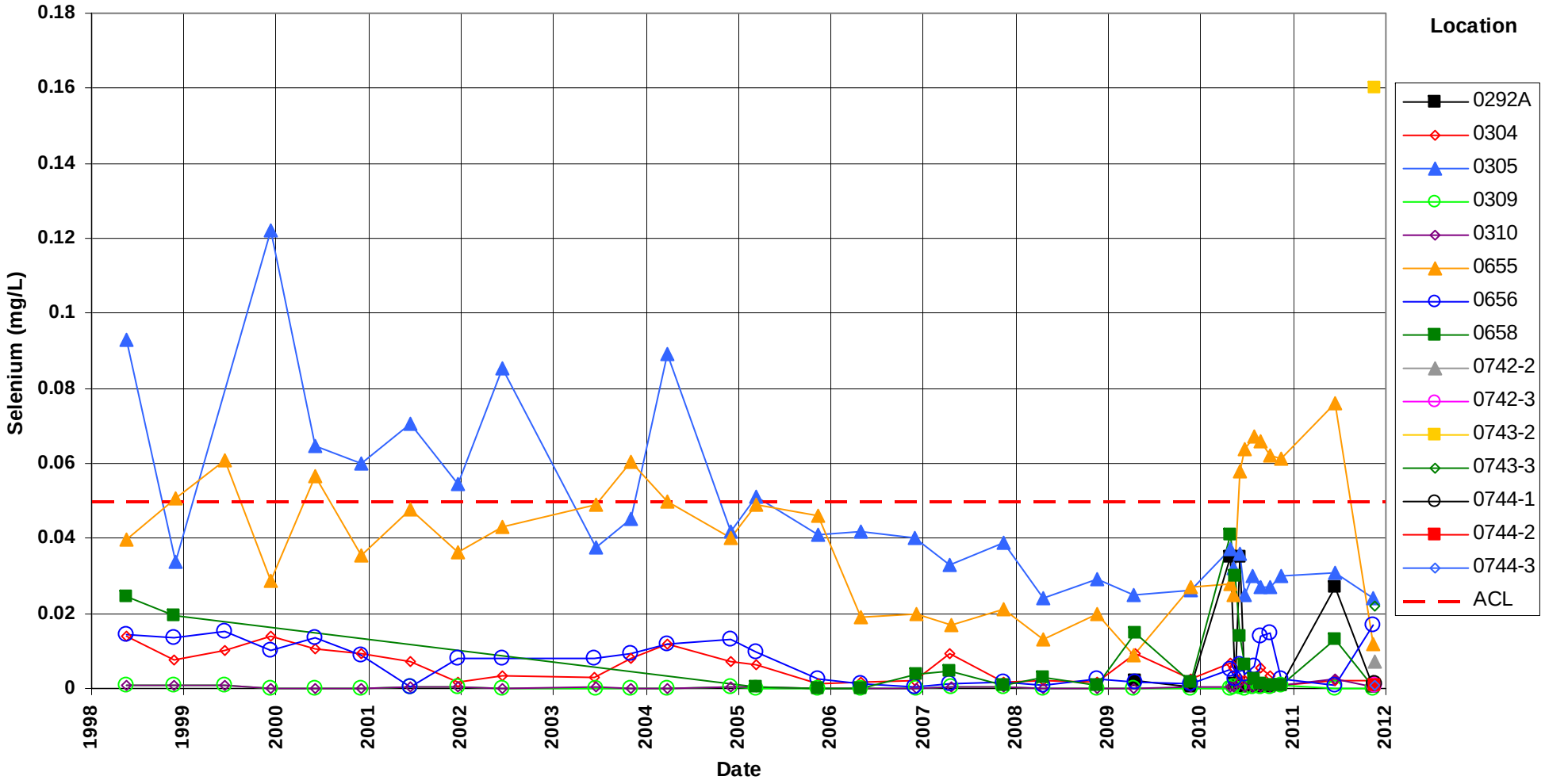
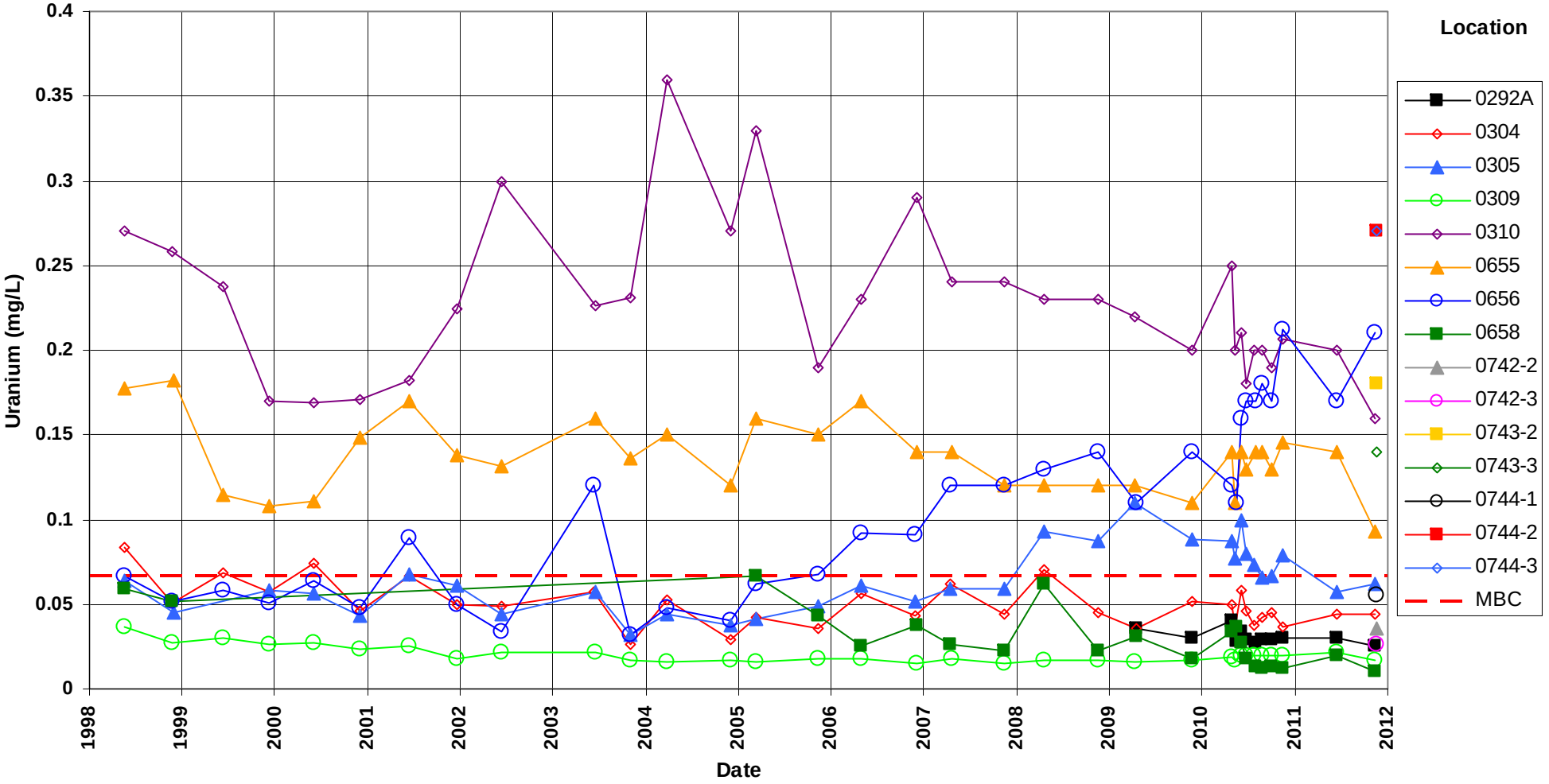
Rifle Old Processing Site
Selenium Concentration
Alternate Concentration Limit (ACL) = 0.05 mg/L

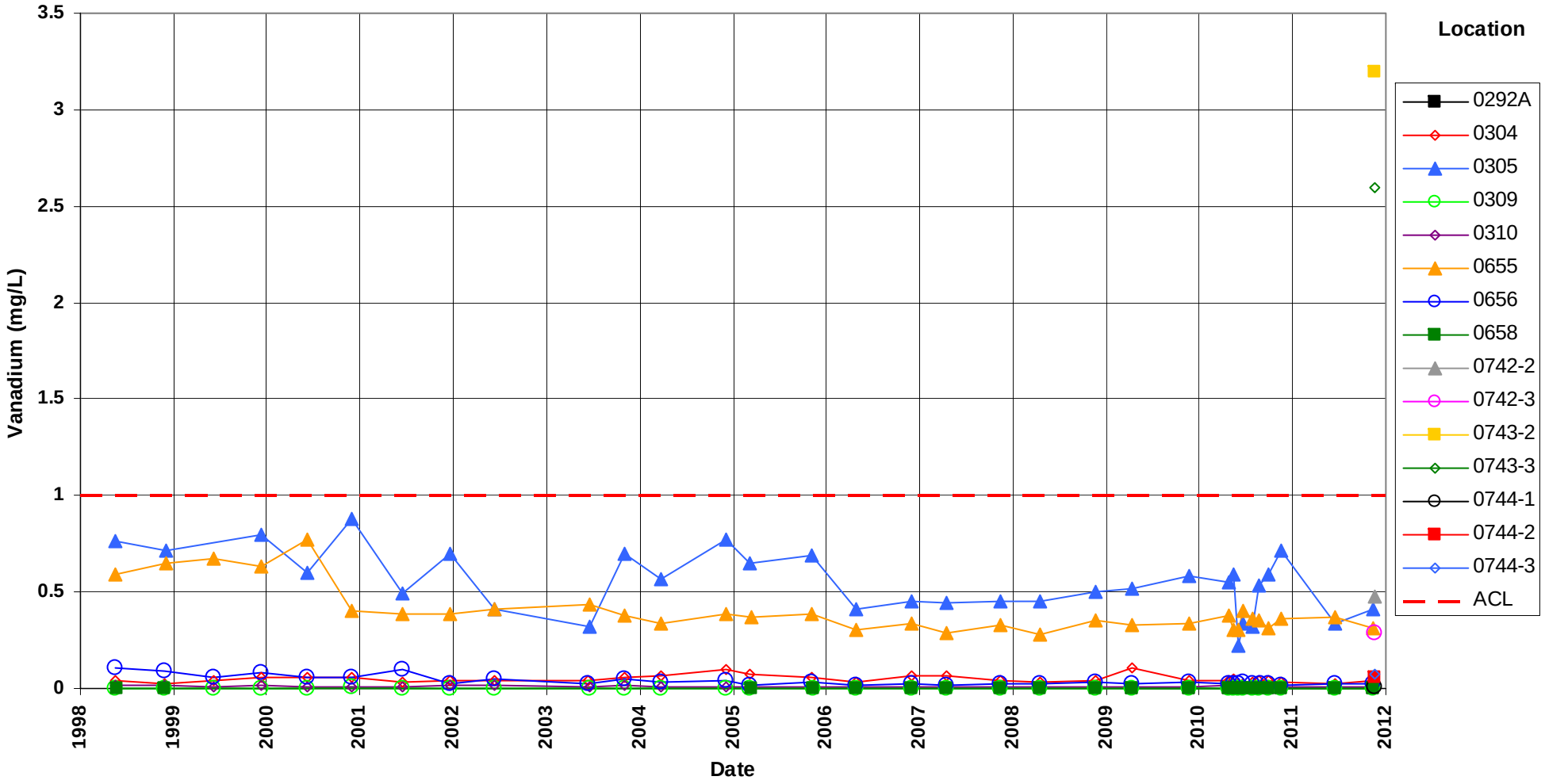


Rifle Old Processing Site
Uranium Concentration

Maximum Background Concentration (MBC) = 0.067 mg/L



Rifle Old Processing Site
Vanadium Concentration
Alternate Concentration Limit (ACL) = 1.0 mg/L



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Old Rifle Surface Water
Time-Concentration Graphs

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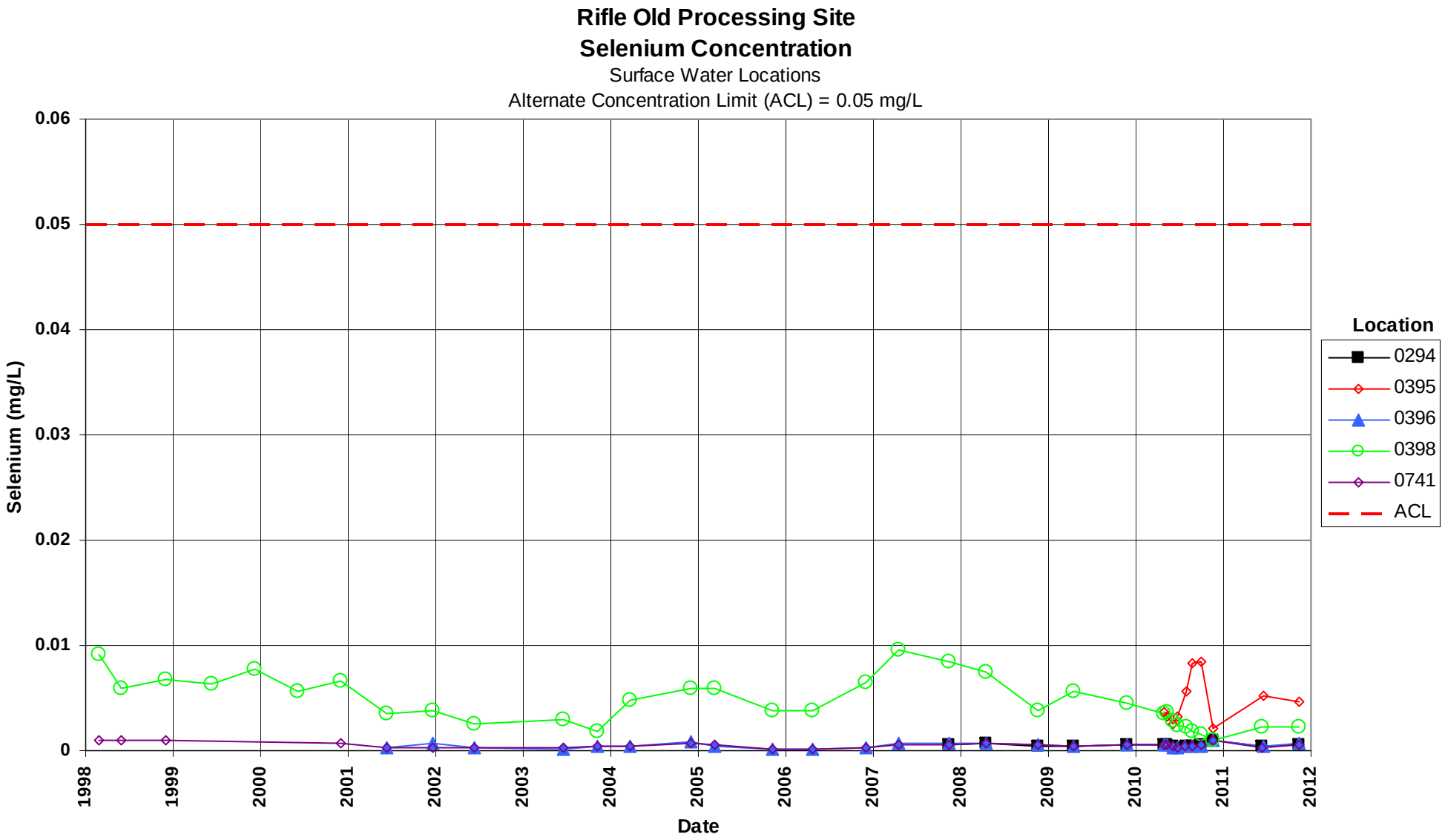
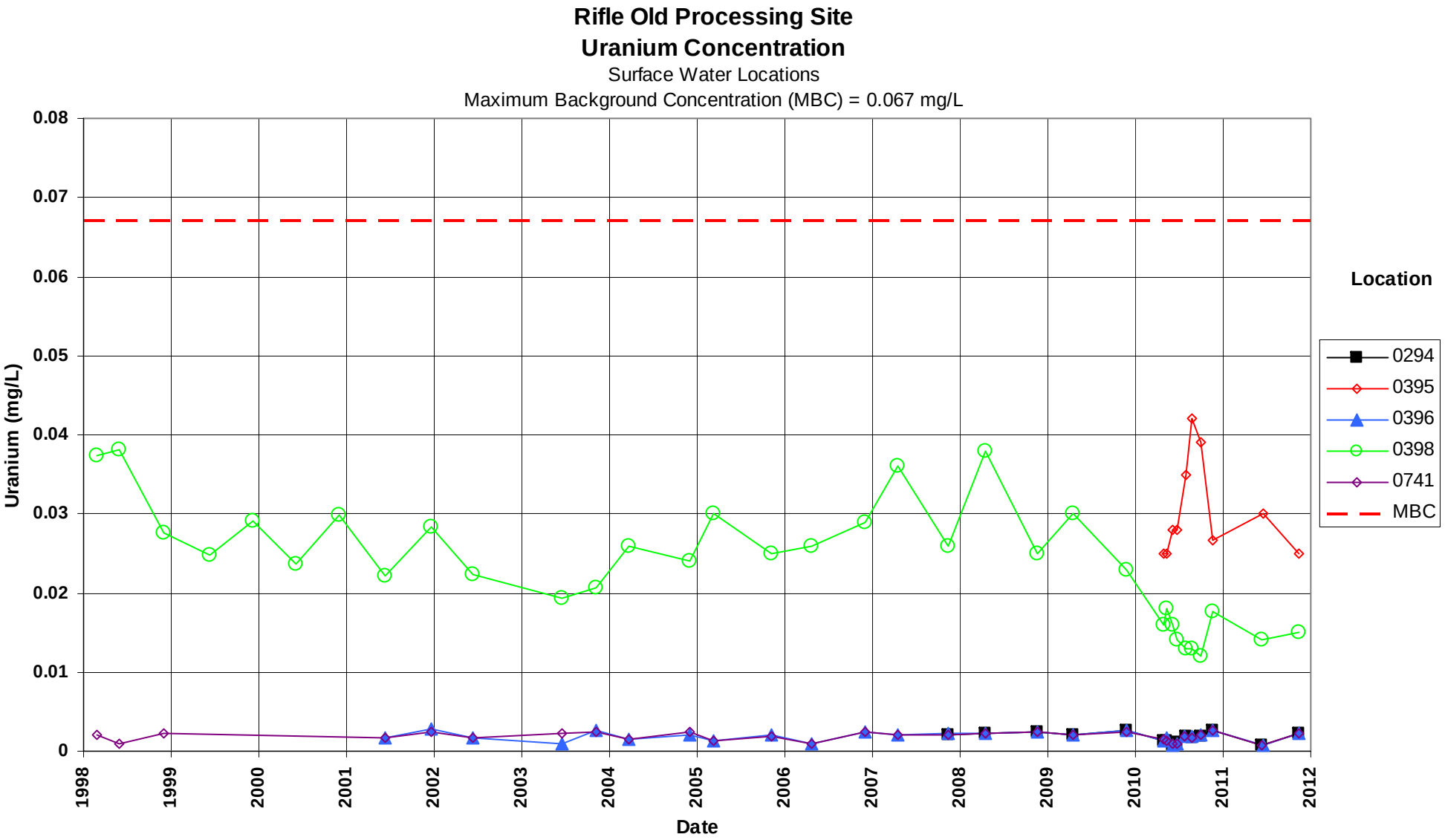
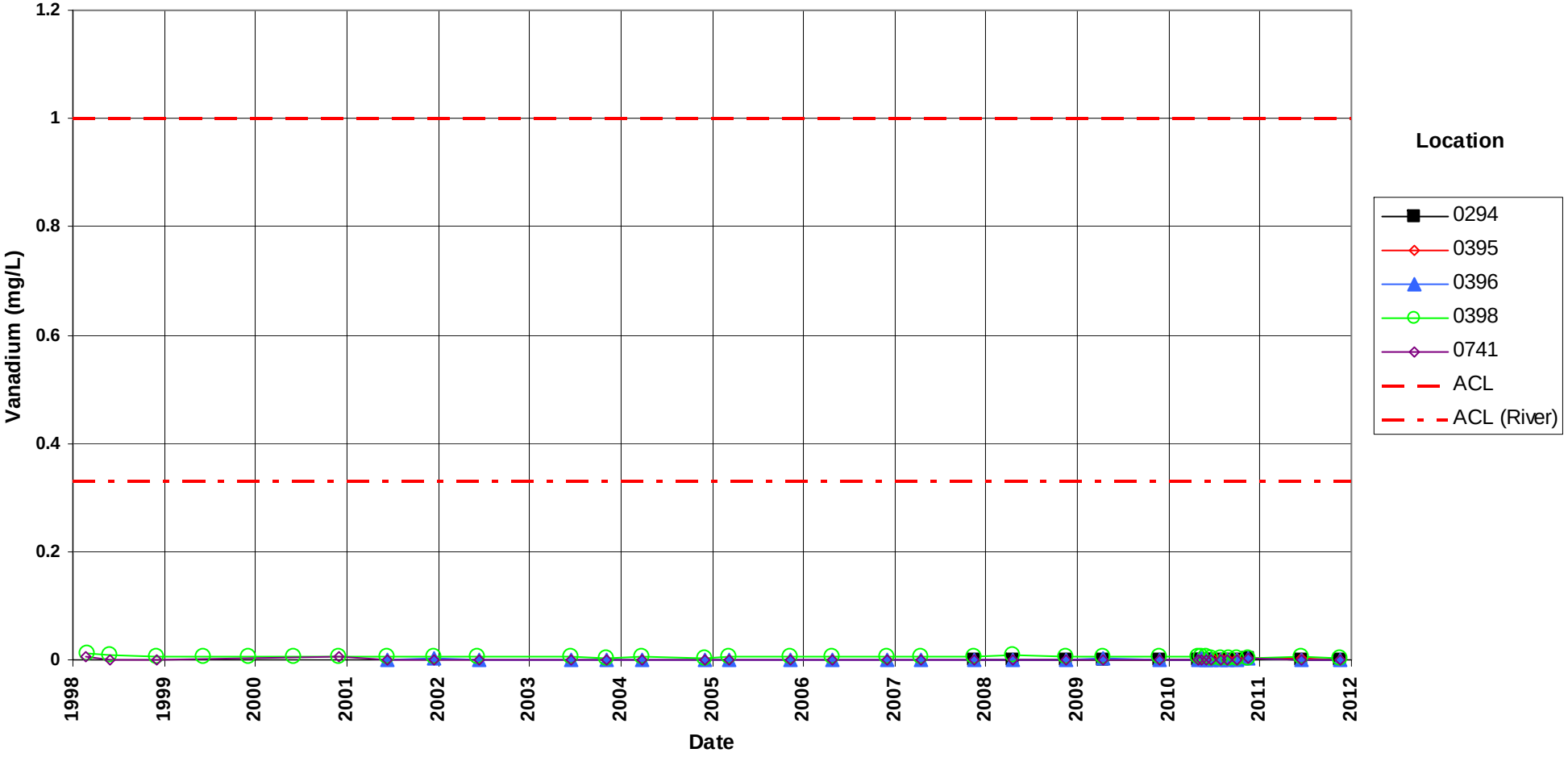

Rifle Old Processing Site
Selenium Concentration
Surface Water Locations
Alternate Concentration Limit (ACL) = 0.05 mg/L
Selenium (mg/L)
0.06
0.05
0.04
0.03
0.02
0.01
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Date
Location
0294
0395
0396
0398
0741
ACL


Rifle Old Processing Site
Uranium Concentration
Surface Water Locations
Maximum Background Concentration (MBC) = 0.067 mg/L
Uranium (mg/L)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Date
Location
0294
0395
0396
0398
0741
MBC

Rifle Old Processing Site
Vanadium Concentration
Surface Water Locations
Alternate Concentration Limit (ACL) = 1.0 mg/L
(0.33 mg/L for River Locations)



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Attachment 3
Sampling and Analysis Work Order

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Task Order LM00-501
Control Number 12-0040

October 17, 2011

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) November 2011 Environmental Sampling at Rifle, Colorado, New and Old Processing Sites

REFERENCE: Task Order LM00-501-02-116-402, Rifle-New and Old, CO, Processing Sites

Dear Mr. Bush:

The purpose of this letter is to inform you of the upcoming sampling event at Rifle, CO. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Rifle New and Old Processing Sites. Water quality data will be collected from these sites as part of the environmental sampling currently scheduled to begin the week of November 14, 2011.

The following lists show the monitoring wells and surface water locations scheduled to be sampled during this event.

Monitoring Wells*

New Rifle

169 Al	195 Al	216 Al	620 Al	658 Al	664 AL	670 Al
170 Al	201 Al	217 Al	635 Al	659 Al	669 Al	855 Al
172 Al	215 Al	590 Al				

Old Rifle

292A Al	305 Al	309 Al	310 Al	655 Al	656 Al	658 Al
304 Al	742 Nr	743 Nr	744 Nr			

*NOTE: Al = alluvium; Nr = no recovery of data for classifying

Surface Locations

New Rifle

320	322	323	324	452	453	575

Old Rifle

294	395	396	398	741		

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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.

A draft of this letter is also being provided to DOE Support for distribution to stakeholders.

Please contact me at (970) 248-6375 if you have any questions or concerns.

Sincerely,

Richard Dayvault
Site Lead

RD/lcg/lb

Enclosures (3)

cc: (electronic)
Karl Stoeckle, DOE
Richard Dayvault, Stoller
Steve Donivan, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
EDD Delivery
rc-grand.junction
File: RFN 410.02(A)
RFO 410.02(A)

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Constituent Sampling Breakdown

Site	Rifle							
Analyte	Groundwater		Surface Water			Required Detection Limit (mg/L)	Analytical Method	Line Item Code
Approx. No. Samples/yr	35		15					
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	*RFO	*RFN	RFO	RFN	RFL			
Aluminum								
Ammonia as N (NH3-N)		X		X		0.1	EPA 350.1	WCH-A-005
Arsenic		X		X		0.0001	SW-846 6020	LMM-02
Calcium								
Chloride								
Chromium								
Gross Alpha								
Gross Beta								
Iron								
Lead								
Magnesium								
Manganese								
Molybdenum		X		X		0.003	SW-846 6020	LMM-02
Nickel								
Nickel-63								
Nitrate + Nitrite as N (NO3+NO2)-N		X		X		0.05	EPA 353.1	WCH-A-022
Potassium								
Radium-226								
Radium-228								
Selenium	X	X	X	X		0.0001	SW-846 6020	LMM-02
Silica								
Sodium								
Strontium								
Sulfate								
Sulfide								
Total Dissolved Solids								
Total Organic Carbon								
Uranium	X	X	X	X	X	0.0001	SW-846 6020	LMM-02
Vanadium	X	X	X	X	X	0.0003	SW-846 6020	LMM-02
Zinc								
Total No. of Analytes	3	7	3	7	2			

*RFN = New Rifle; *RFO = Old Rifle

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

Sampling Frequencies for Locations at Rifle, Colorado

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
Monitoring Wells						
New Rifle						
169		X				
170		X				
172		X				
195		X				
201		X				Data logger
215		X				
216		X				
217		X				
590		X				Data logger
620		X				
635		X				
658		X				
659		X				
664		X				
669		X				
670		X				
855		X				
Old Rifle						
292A		X				GCAP; bkgd well
304		X				GCAP
305		X				GCAP
309		X				GCAP
310		X				GCAP; data logger
655		X				GCAP; data logger
656		X				GCAP
658		X				Background well
742		X				Background well
743		X				Background well
744		X				Background well
Surface Locations						
New Rifle						
320		X				Wetland Pond
322		X				Colorado River
323		X				Gravel pit pond
324		X				Colorado River downgradient
452		X				Wetland Pond
453		X				Wetland Pond
575		X				Gravel pit pond
Old Rifle						
294		X				River, upstream
395		X				Seep, upgradient
396		X				River
398		X				Ditch, onsite
741		X				

Semi-annual sampling conducted in June and November; annual sampling conducted for Rifle Disposal Cell in July

Attachment 4
Trip Report

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Stoller

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Memorandum

DATE: December 7, 2011

TO: Richard Dayvault

FROM: Gretchen Baer

SUBJECT: Trip Report

Site: New Rifle and Old Rifle, Colorado, Processing Sites

Dates of Sampling Event: November 15-18 and 21, 2011

Team Members: Kent Moe, Gretchen Baer, and Jeff Price

Number of Locations Sampled: Samples were collected from all of the 40 locations identified on the sampling notification letter, as follows:

Site ID	Site	Number of Monitoring Wells	Number of Surface Water Locations
RFN01	New Rifle	17	7
RFO01	Old Rifle	11*	5

* Three of the RFO01 monitoring wells are 3-port Continuous Multichannel Tubing (CMT) wells.

Locations Not Sampled/Reason: The CMT ports 0742-1 and 0743-1 were dry. Note that the total number of samples collected was 44 (plus 4 quality control samples).

Location Specific Information:

Site ID	Location IDs	Comments
All	All SW locations	Turbidity is not a required field measurement but it was collected in some cases to determine whether filtration was necessary.
RFN01	0172	Petroleum odor.
RFN01	0320 0452	These surface water samples were collected within just a few yards of the location stakes.
RFN01	0452 0453	These surface water locations are connected: they are in the same shallow pond. Note that there is no location stake for 0453.
RFN01	0669, 0670	Cat II based on WL drop at slow purge rate.
RFO01	0294	This river sample was collected at a point ~50 feet further upstream than usual. The river was low and the water was nearly stagnant at the usual location. This sample was collected at an area where there was perceptible flow.
RFO01	0310	There are a data logger and Sonde installed here. These had to be pulled out to temporarily install sample tubing. They were replaced immediately after sampling.
RFO01	0398	This SW location is a small amount of water in a ditch. This water was flowing (slightly), so it appeared to be a valid sample location, and not just a puddle from precipitation received in the area the previous weekend.
RFO01	0658	Small dark flecks (roots?) in water.

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Site ID	Location IDs	Comments
RFO01	0742 0743 0744	These locations are new 3-port CMT wells. They should have had individual location IDs as follows. Well depths were taken from the Well Completion Logs. 742-1 (Well Depth = 10.55 feet Below Ground Surface, FT/BGS). 742-2 (Well Depth = 14.55 FT/BGS) 742-3 (Well Depth = 18.55 FT/BGS) 743-1 (Well Depth = 8.70 FT/BGS) 743-2 (Well Depth = 12.70 FT/BGS) 743-3 (Well Depth = 16.45 FT/BGS) 744-1 (Well Depth = 11.45 FT/BGS) 744-2 (Well Depth = 15.45 FT/BGS) 744-3 (Well Depth = 19.45 FT/BGS) • No WLs could be recorded. A WL meter with a very thin probe was not available. • Dedicated tubing was cut for all nine ports. This tubing was retained in labeled bags. These bags were stored in the eastern shed, near the back. (This eastern shed is the one with the liquid nitrogen tank).

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

False ID	Ticket Number	True ID	Sample Type	Associated Matrix
2237	JMV 551	RFO01-0305	Duplicate	Groundwater
2238	JMV 552	Associated with RFN01-0320, 0324, 0452 RFO01-0395, 0396	Equipment Blank	Water
2948	JMV 516	RFN01-0323	Duplicate	Surface Water
2949	JMV 517	RFN01-0620	Duplicate	Groundwater

Report Identification Number (RIN) Assigned: 11114182. Field data sheets can be found in Crow\sms\11114182 in the FieldData folder.

Sample Shipment: Samples were shipped from Grand Junction to ALS Laboratory Group on November 22, 2011.

Water Level Measurements: Water levels were measured in all sampled wells, with the exception of the CMT wells, as noted above.

Well Inspection Summary:

- A protective casing needs to be installed at RFN01-0635. This item has been added to the EMO group's "Operations and Maintenance Punch List."
- RFN01-0216 is not labeled very well. At minimum the well ID should be written on the exterior casing with a paint pen.

Field Variance:

- RFN01-0664: Samples were collected before the pH reached stability criteria.
- CMT wells 0742, 0743, and 0744: WL stability cannot be verified in CMT wells because the ports are too narrow to accommodate a WL probe and sample tubing at the same time. These wells were sampled according to Category I purging stability requirements.

Equipment: All equipment functioned properly. All wells were sampled using the low-flow procedure. Wells were sampled with a peristaltic pump and dedicated tubing or a dedicated

bladder pump. Surface waters were sampled using a peristaltic pump and tubing reel, or by container immersion. An equipment blank was collected after decontamination of the tubing reel. All other equipment was dedicated or disposable.

Regulatory: Nothing to note.

Institutional Controls:

Fences, Gates, and Locks: Nothing to note.
Signs: Nothing to note.
Trespassing/Site Disturbances: None observed.

Site Issues:

Disposal Cell/Drainage Structure Integrity: N/A
Vegetation/Noxious Weed Concerns: None observed.
Maintenance Requirements: Installation of protective casing at RFN01-0635 as noted above.
Safety Issues: None.
Access Issues:

- Vehicle access to RFN01 locations 0620 and 0324 is blocked by a locked gate owned by Williams Production. The combination to the lock has been provided by Bryan Hotard of Williams (970-361-2006 & 970-263-2754). The combination is 2-0-0-6.
- Wading boots are required to get close to the location stake at RFN01-0320.
- RFN01-0170: The site lead has indicated that an access agreement with Williams is being set up. (See copy of email in Crow\sms\11114182). There is a new fence blocking access to 0170 from the west. There is a gate in that fence, but it should not be used because of potential damage to vegetation by the sampling truck. To access this well, drive around to a gate east of the well and follow a pipeline road:
-

Corrective Action Required: None.

(GB/lg)

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

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