

***Navajo Nation – McElmo Creek  
Surface Water Quality  
Assessment Report (Integrated 305(b)  
Report and 303(d) Listing)***



(Photograph of McElmo Creek on March 14, 2002)

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**TABLE OF CONTENTS**

1.0	Background and Purpose .....	1
2.0	McElmo Creek Watershed (HUC 14080202).....	2
3.0	McElmo Creek Surface Water Quality Data Collection Activities .....	4
3.1	McElmo Creek Site 04MCELMOCR01 .....	5
3.1.1	McElmo Creek Site 04MCELMOCR01 Water Quality Data.....	8
3.1.2	Non-Attainment of 2010 NNSWQS for Site 04MCELMOCR01 .....	33
3.1.3	Parameters of Interest at Site 04MCELMOCR01 .....	35
3.1.4	Designated Use Support Determination at Site 04MCELMOCR01.....	37
3.1.5	Categories of Designated Use Support and Impairment Determination.....	38
3.2	McElmo Creek Site 04MCELMOCR02.....	39
3.1.1	McElmo Creek Site 04MCELMOCR02 Water Quality Data.....	40
3.1.2	Non-Attainment of 2010 NNSWQS for Site 04MCELMOCR02 .....	40
3.1.3	Parameters of Interest at Site 04MCELMOCR02 .....	40
4.0	Conclusions and Recommendations .....	46
5.0	References.....	46

## FIGURES

2.0.	McElmo Creek Watershed.....	3
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## TABLES

2.0	McElmo Creek Watershed – Atlas of Surface Water Bodies.....	4
2.1	McElmo Creek Watershed Surface Waters with Designated Uses.....	4
3.0	McElmo Creek Sampling Locations and Dates.....	4
3.1.1	Summary of Analytical and Field Data for Site 04MCELMOCR01.....	9
3.1.2	Non-Attainment of 2010 NNSWQS for Site 04MCELMOCR01.....	34
3.1.3	Parameters of Interest for Site 04MCELMOCR01.....	36
3.2.1	Summary of Analytical and Field Data for Site 04MCELMOCR02....	41
3.2.3	Parameters of Interest for Site 04MCELMOCR01.....	45

## MAPS

Map 3.1	Location of Site 04MCELMOCR01.....	5
Map 3.2	Location of Site 04MCELMOCR02.....	39

## PHOTOGRAPHS

Photographs of Site 04MCELMOCR01.....		5
Photographs of Site 04MCELMOCR02.....		39

## APPNDICES

A.	Laboratory Analytical Data
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## 1.0 Background and Purpose

The objective of the United States Clean Water Act (USCWA) is to "*restore and maintain* the chemical, physical, and biological integrity of the Nation's Waters" (USCWA, 1988). In order to meet this objective, and exert its sovereign authority to protect its water resources, the Navajo Nation codified the Navajo Nation Clean Water Act (NNCWA 1999) in July 1999. The importance of water to the Navajo Nation is clearly demonstrated by the adoption of the NNCWA, with the Navajo Nation being only one of a few tribes or states to adopt a formal clean water act. The NNCWA provides the legislative authority to allow the Navajo Nation to fulfill the USCWA requirements.

In order to *restore and maintain* the chemical, physical, and biological integrity of the Nation's Water, states and federally recognized tribes adopt water quality standards which protect the uses of the Nation's water bodies. Water quality standards are narrative and numeric criteria used as benchmarks to determine if a designated use for a water body is being attained. NNCWA Section 103(a)(2)(A) provides for "the establishment of water quality standards to protect fish and wildlife and the domestic, cultural, agricultural and recreational uses of the waters of the Navajo Nation." This is consistent with the "fishable and swimmable goal" set forth in USCWA Sections 101(a)(2) and 303(c)(2). NNCWA Sections 201(b) and (c) requires that designated uses be established for public water supplies, the protection and propagation of fish and wildlife, recreational purposes, agricultural (including livestock watering), industrial, cultural, and other uses, and to establish criteria to protect the designated uses.

The Navajo Nation first codified the 1999 Navajo Nation Water Quality Standards (1999 NNWQS) in July 1999 (NNEPA 1999). On January 20, 2006 the US Environmental Protection Agency (USEPA) approved the Navajo Nation's application to administer the Water Quality Standards and Certification Programs under the federal Clean Water Act's Sections 303 and 401. On March 26, 2009, the USEPA approved the 2007 Navajo Nation Surface Water Quality Standards (NNSWQS) (NNEPA 2008). A draft of the 2010 NNSWQS (NNEPA 2010) is currently awaiting public review.

The Navajo Nation Environmental Protection Agencies (NNEPA) Water Quality / National Pollutant Discharge Elimination System Program (WQ/NPDES Program) is responsible for implementing the requirements of the USCWA and the NNCWA within the Navajo Nation.

This report fulfills the USCWA Section 305(b) reporting requirements, USCWA 303(d) listing requirements, USEPA's USCWA § 106 Tribal Guidance, Chapter 8 and Appendix A, assessment reporting requirements, and Fiscal Year 2013 National Water Program Guidance Measures WQ-06a and WQ-06b. It also fulfills assessment reporting requirements in the “Navajo Nation Environmental Protection Agency Water Quality/National Pollutant Discharge Elimination System Program, Federal Clean Water Act Performance Partnership Grant” Work Plan.

The purpose of this report is to assess McElmo Creek surface water quality data obtained by the Navajo Nation Environmental Protection Agency Water Quality/NPDES Program (NNEPA WQP) by:

1. Presenting the surface water quality data;
2. Comparing the surface water quality data to the latest version of the Navajo Nation Surface Water Quality Standards to see if standards are being attained;
3. Determine if uses designated for McElmo Creek surface waters are being supported and determine if McElmo Creek is impaired using the methods described in the February 20, 2008 NNEPA document entitled: “Guidance for Assessing the Quality of Navajo Nation Surface Waters to Determine Impairment” (Integrated 305(b) Reporting and 303(d) Listing); and
4. Make recommendations for further surface water quality data gathering.

The Navajo Nation McElmo Creek Surface Water Quality Assessment is intended to be a living document, which can be updated to include the latest surface water quality data. The WQ/NPDES Program welcomes all comments that will assist in revising this report in the future.

## 2.0 McElmo Creek Watershed (HUC 14080202)

The McElmo Creek Watershed (Figure 2.0) is located on 702 square miles within the San Juan River Basin. 17.76 stream miles are located within the Navajo Nation. The United States Geological Surveys 8-digit Hydrologic Unit Code for the McElmo Creek Watershed is 14080202 (USGS 1987). Water bodies located in the Navajo Nation within this watershed are listed in Table 2.0. The uses that are designated for these water bodies are listed in Table 2.1.

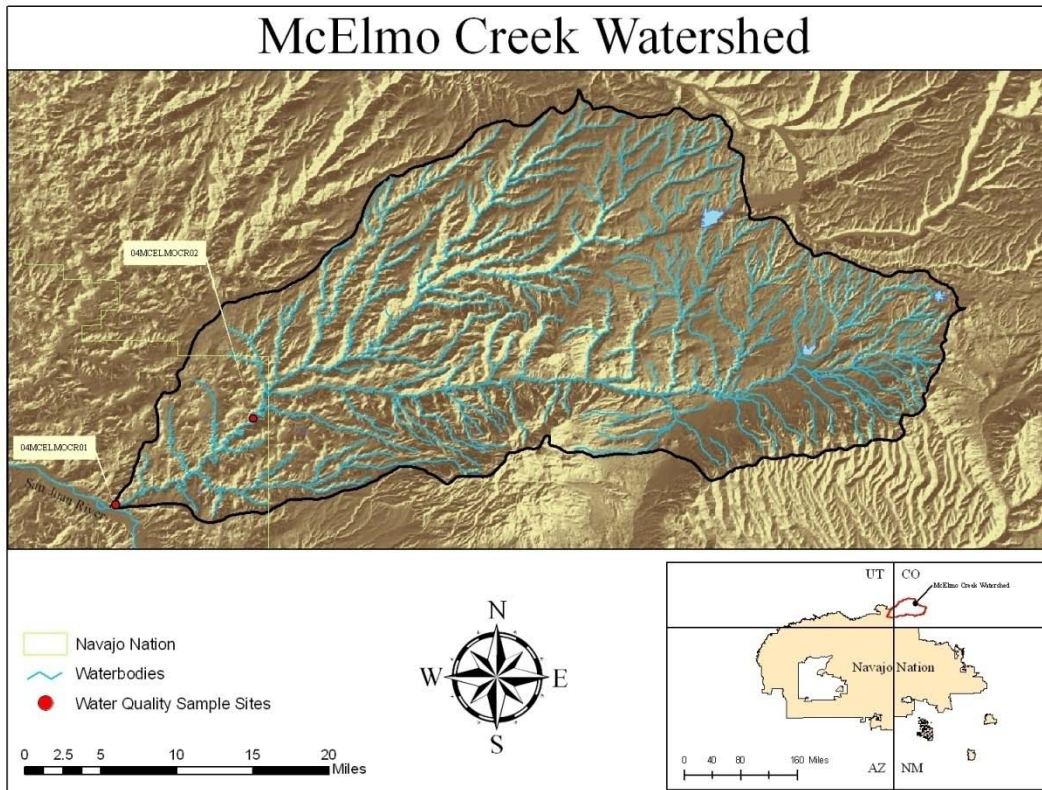


Figure 2.0 – McElmo Creek Watershed

Table 2.0 - McElmo Creek Watershed Atlas of Surface Water Bodies

(from Navajo Nation Department of Water Resources - March 31, 2009)

Surface Water Body Name	Length (miles) or Area (acres)
McElmo Creek	17.76

**Table 2.1 – McElmo Creek Watershed Surface Waters with Designated Uses**

(from 2007 Navajo Nation Surface Water Quality Standards, Table 205.1)

<b>Surface Water Body Name</b>	<b>Designated Uses*</b>
McElmo Creek	PrHC, ScHC, AgWS FC, A&WHbt, and LW

Footnotes: \* = Designated Uses are: Dom = Domestic Water Supply,  
PrHC = Primary Human Contact, ScHC = Secondary Human Contact,  
AgWS = Agricultural Water Supply, FC = Fish Consumption,  
A&WHbt = Aquatic and Wildlife Habitat, and LW = Livestock Watering.

### 3.0 McElmo Creek Surface Water Quality Data Collection Activities

McElmo Creek is the only surface water body from which water quality data was obtained within the McElmo Creek Watershed. Monitoring and water quality sampling of McElmo Creek was conducted at the sites listed in Table 3.0. These activities were undertaken using professional experience and in accordance with the WQ/NPDES Program's June 1, 2012 "Quality Assurance Plan for Surface Water Data Collection" or previous quality assurance plans.

**Table 3.0 – McElmo Creek Sampling Locations and Dates.**

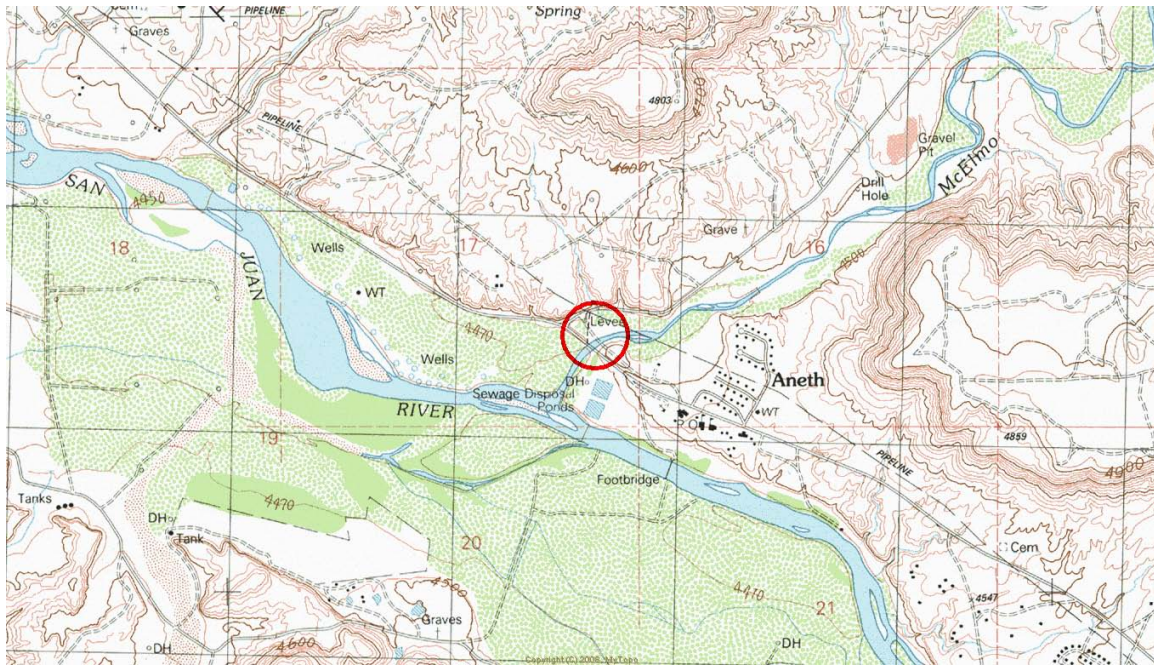
<b>Surface Water Body Name</b>	<b>Site Name</b>	<b>Years Sampled</b>
McElmo Creek	04MCELMOCR01	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2008, 2009, 2010, 2011
McElmo Creek	04MCELMOCR02	2002

Water quality sampling was conducted in the years listed in Table 3.0. Measurements of physical/ chemical characteristics and stream discharge were made. Samples were obtained and submitted to an analytical laboratory for analyses. Quality Assurance and Quality Control samples were also obtained.



### 3.1 McElmo Creek Site 04MCELMOCR01

Sample site 04MCELMOCR01 is located near Aneth, Utah up gradient of the San Juan River confluence. McElmo Creek crosses Highway 262 and is predominately perennial at this location (Map 3.1). Photographs of surface flow conditions at site 04MCELMOCR01 are provided below.



Map 3.1 Location of Site 04MCELMOCR01.

#### **Photographs of Site 04 MCELMOCR01:**



March 14, 2002



August 26, 2002





March 18, 2003



May 15, 2008



September 15 2005



June 23, 2009



May 15, 2006



April 6, 2010



May 6, 2010



June 13, 2010



June 13, 2010



August 26, 2010

### 3.1.1 McElmo Creek Site 04MCELMOCR01 Water Quality Data

A summary of all analytical and field data obtained at this site is provided in Table 3.1.1 and in the analytical laboratory Appendix A.

Table 3.1.1 - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
09/23/1999	.alpha.-Endosulfan	T	ND	ug/L	0.1	USEPA 8081A
09/23/1999	.alpha.-Hexachlorocyclohexane	T	ND	ug/L	0.1	USEPA 8081A
09/23/1999	.beta.-Endosulfan	T	ND	ug/L	0.1	USEPA 8081A
09/23/1999	.beta.-Hexachlorocyclohexane	T	ND	ug/L	0.1	USEPA 8081A
09/23/1999	.delta.-Hexachlorocyclohexane	T	ND	ug/L	0.25	USEPA 8081A
09/23/1999	1,1,1,2-Tetrachloroethane	T	ND	ug/L	5	USEPA 8260B
09/23/1999	1,1,1-Trichloroethane	T	ND	ug/L	2	USEPA 8260B
09/23/1999	1,1,2,2-Tetrachloroethane	T	ND	ug/L	2	USEPA 8260B
09/23/1999	1,1,2-Trichloroethane	T	ND	ug/L	2	USEPA 8260B
09/23/1999	1,1-Dichloroethane	T	ND	ug/L	2	USEPA 8260B
09/23/1999	1,1-Dichloroethene		ND	ug/L	5	USEPA 8260B
09/23/1999	1,1-Dichloropropene	T	ND	ug/L	2	USEPA 8260B
09/23/1999	1,2,3-Trichlorobenzene	T	ND	ug/L	5	USEPA 8260B
09/23/1999	1,2,3-Trichloropropane	T	ND	ug/L	10	USEPA 8260B
09/23/1999	1,2,4-Trichlorobenzene	T	ND	ug/L	10	USEPA 8270
09/23/1999	1,2,4-Trichlorobenzene	T	ND	ug/L	5	USEPA 8260B
09/23/1999	1,2,4-Trimethylbenzene	T	ND	ug/L	2	USEPA 8260B
09/23/1999	1,2-Dibromo-3-chloropropane	T	ND	ug/L	5	USEPA 8260B
09/23/1999	1,2-Dichloroethane	T	ND	ug/L	2	USEPA 8260B
09/23/1999	1,2-Dichloropropane	T	ND	ug/L	2	USEPA 8260B
09/23/1999	1,2-Diphenylhydrazine	T	ND	ug/L	10	USEPA 8270
09/23/1999	1,3,5-Trimethylbenzene	T	ND	ug/L	2	USEPA 8260B
09/23/1999	1,3-Dichloropropane	T	ND	ug/L	2	USEPA 8260B
09/23/1999	2,2-Dichloropropane	T	ND	ug/L	2	USEPA 8260B
09/23/1999	2,3,7,8-Tetrachlorodibenzo-p-dioxin	T	ND	pg/L	5	USEPA 1613B
09/23/1999	2,4,5-T	T	ND	ug/L	3	USEPA 8151
09/23/1999	2,4,6-Trichlorophenol	T	ND	ug/L	10	USEPA 8270
09/23/1999	2,4-D	T	ND	ug/L	10	USEPA 8151
09/23/1999	2,4-DB	T	ND	ug/L	3	USEPA 8151
09/23/1999	2,4-Dichlorophenol		ND	ug/L	10	USEPA 8270
09/23/1999	2,4-Dimethylphenol		ND	ug/L	10	USEPA 8270
09/23/1999	2,4-Dinitrophenol	T	ND	ug/L	30	USEPA 8270
09/23/1999	2,4-Dinitrotoluene		ND	ug/L	10	USEPA 8270
09/23/1999	2,6-Dinitrotoluene		ND	ug/L	10	USEPA 8270
09/23/1999	2-Chloroethyl vinyl ether	T	ND	ug/L	5	USEPA 8260B
09/23/1999	2-Chloronaphthalene	T	ND	ug/L	10	USEPA 8270
09/23/1999	2-Hexanone	T	ND	ug/L	10	USEPA 8260B
05/15/2008	2-Hydroxy-4-methoxybenzophenone	T	ND	ng/L	2	USEPA HPLC/MS-SEDC
06/23/2009	2-Hydroxy-4-methoxybenzophenone	T	ND	ng/L	2	USEPA HPLC/MS-SEDC
09/23/1999	2-Methylnaphthalene	T	ND	ug/L	10	USEPA 8270
09/23/1999	3,3'-Dichlorobenzidine	T	ND	ug/L	10	USEPA 8270
05/15/2008	4,4'-Isopropylidenediphenol	T	ND	ng/L	10	USEPA HPLC/MS-SEDC
06/23/2009	4,4'-Isopropylidenediphenol	T	ND	ng/L	1	USEPA HPLC/MS-SEDC
09/23/1999	4,6-Dinitro-o-cresol		ND	ug/L	10	USEPA 8270
09/23/1999	Acenaphthene	T	ND	ug/L	10	USEPA 8270
09/23/1999	Acenaphthylene	T	ND	ug/L	10	USEPA 8270
05/15/2008	Acetaminophen	T	ND	ng/L	5	USEPA HPLC/MS-SEDC

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
06/23/2009	Acetaminophen	T	ND	ng/L	5	USEPA	HPLC/MS-SEDC
09/23/1999	Acetone	T	ND	ug/L	20	USEPA	8260B
09/23/1999	Aldrin	T	ND	ug/L	0.1	USEPA	8081A
09/10/1998	Alkalinity, bicarbonate as CaCO3		198	mg/L	1	USEPA	310.1
07/22/1999	Alkalinity, bicarbonate as CaCO3		216	mg/L	2	USEPA	310.1
09/23/1999	Alkalinity, bicarbonate as CaCO3		230	mg/L	5	APHA	2320B
07/12/2000	Alkalinity, bicarbonate as CaCO3		280	mg/L	5	APHA	2320B
09/07/2000	Alkalinity, bicarbonate as CaCO3		260	mg/L	5	APHA	2320B
03/13/2001	Alkalinity, bicarbonate as CaCO3		210	mg/L	2	APHA	2320B
08/08/2001	Alkalinity, bicarbonate as CaCO3		250	mg/L	2	APHA	2320B
03/14/2002	Alkalinity, bicarbonate as CaCO3		220	mg/L	2	APHA	2320B
03/18/2003	Alkalinity, bicarbonate as CaCO3		470	mg/L	2	APHA	2320B
04/13/2004	Alkalinity, bicarbonate as CaCO3		250	mg/L	2	APHA	2320B
09/15/2005	Alkalinity, bicarbonate as CaCO3		240	mg/L	2	APHA	2320B
05/15/2008	Alkalinity, bicarbonate as CaCO3	D	210	mg/L	20	APHA	2320B
06/23/2009	Alkalinity, bicarbonate as CaCO3	D	210	mg/L	20	APHA	2320B
09/10/1998	Alkalinity, carbonate as CaCO3		5	mg/L	2	USEPA	310.1
07/22/1999	Alkalinity, carbonate as CaCO3		ND	mg/L	2	USEPA	310.1
09/23/1999	Alkalinity, carbonate as CaCO3		ND	mg/L	5	APHA	2320B
07/12/2000	Alkalinity, carbonate as CaCO3		ND	mg/L	5	APHA	2320B
09/07/2000	Alkalinity, carbonate as CaCO3		ND	mg/L	5	APHA	2320B
03/13/2001	Alkalinity, carbonate as CaCO3		16	mg/L	2	APHA	2320B
08/08/2001	Alkalinity, carbonate as CaCO3		48	mg/L	2	APHA	2320B
03/14/2002	Alkalinity, carbonate as CaCO3		ND	mg/L	2	APHA	2320B
03/18/2003	Alkalinity, carbonate as CaCO3		ND	mg/L	2	APHA	2320B
04/13/2004	Alkalinity, carbonate as CaCO3		ND	mg/L	2	APHA	2320B
09/15/2005	Alkalinity, carbonate as CaCO3		5	mg/L	2	APHA	2320B
05/15/2008	Alkalinity, carbonate as CaCO3	D	ND	mg/L	20	APHA	2320B
06/23/2009	Alkalinity, carbonate as CaCO3	D	ND	mg/L	20	APHA	2320B
07/22/1999	Alkalinity, hydroxide as CaCO3		ND	mg/L	6	USEPA	310.1
03/13/2001	Alkalinity, hydroxide as CaCO3		ND	mg/L	2	APHA	2320B
08/08/2001	Alkalinity, hydroxide as CaCO3		ND	mg/L	2	APHA	2320B
03/14/2002	Alkalinity, hydroxide as CaCO3		ND	mg/L	2	APHA	2320B
03/18/2003	Alkalinity, hydroxide as CaCO3		ND	mg/L	2	APHA	2320B
04/13/2004	Alkalinity, hydroxide as CaCO3		ND	mg/L	2	APHA	2320B
09/15/2005	Alkalinity, hydroxide as CaCO3		ND	mg/L	2	APHA	2320B
05/15/2008	Alkalinity, hydroxide as CaCO3	D	ND	mg/L	20	APHA	2320B
06/23/2009	Alkalinity, hydroxide as CaCO3	D	ND	mg/L	20	APHA	2320B
09/10/1998	Alkalinity, T		203	mg/L	0.1	USEPA	310.1
07/22/1999	Alkalinity, T		217	mg/L	1	USEPA	310.1
09/23/1999	Alkalinity, T		230	mg/L	5	APHA	2320B
07/12/2000	Alkalinity, T		280	mg/L	5	APHA	2320B
09/07/2000	Alkalinity, T		260	mg/L	5	APHA	2320B
03/13/2001	Alkalinity, T		230	mg/L	6	APHA	2320B
08/08/2001	Alkalinity, T		300	mg/L	6	APHA	2320B
03/14/2002	Alkalinity, T		220	mg/L	6	APHA	2320B
03/18/2003	Alkalinity, T		470	mg/L	6	APHA	2320B



Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
04/13/2004	Alkalinity, T		250	mg/L	6	APHA	2320B
09/15/2005	Alkalinity, T		250	mg/L	6	APHA	2320B
05/15/2008	Alkalinity, T	D	210	mg/L	20	APHA	2320B
06/23/2009	Alkalinity, total	D	210	mg/L	20	APHA	2320B
05/15/2008	alpha-Estradiol	T	ND	ng/L	1	USEPA	HPLC/MS-SEDC
06/23/2009	alpha-Estradiol	T	ND	ng/L	1	USEPA	HPLC/MS-SEDC
09/10/1998	Aluminum	T	7	mg/L	0.05	USEPA	200.7
09/23/1999	Aluminum	D	ND	mg/L	0.5	USEPA	200.7
07/12/2000	Aluminum	T	14	mg/L	0.077	USEPA	200.7
07/12/2000	Aluminum	D	ND	mg/L	0.077	USEPA	200.7
09/07/2000	Aluminum	D	ND	mg/L	0.077	USEPA	200.7
03/13/2001	Aluminum	D	ND	mg/L	0.0068	USEPA	200.7
08/08/2001	Aluminum	D	0.02	mg/L	0.0031	USEPA	200.7
03/14/2002	Aluminum	D	0.03	mg/L	0.0045	USEPA	200.7
03/18/2003	Aluminum	D	ND	mg/L	0.1	USEPA	200.7
04/13/2004	Aluminum	T	2.6	mg/L	0.1	USEPA	200.7
09/15/2005	Aluminum	T	6.4	mg/L	0.018	USEPA	200.7
05/15/2006	Aluminum	D	ND	mg/L	0.2	USEPA	200.7
05/15/2008	Aluminum	T	3.1	mg/L	0.032	USEPA	200.7
05/15/2008	Aluminum	D	ND	mg/L	0.032	USEPA	200.7
06/23/2009	Aluminum	D	0.03	mg/L	0.004	USEPA	200.7
06/23/2009	Aluminum	T	4.29	mg/L	0.004	USEPA	200.7
06/13/2011	Aluminum	D	37	ug/l	8.5	USEPA	200.8
06/13/2011	Aluminum	T	470	ug/l	8.5	USEPA	200.8
04/06/2010	Ammonia as nitrogen		0.16	mg/L		Field	
05/06/2010	Ammonia as nitrogen		0.056	mg/L		Field	
05/15/2008	Androstenedione	T	ND	ng/L	10	USEPA	HPLC/MS-SEDC
06/23/2009	Androstenedione	T	ND	ng/L	10	USEPA	HPLC/MS-SEDC
09/10/1998	Anion/cation ratio	T	1.97			ASTM	D-596
09/23/1999	Anion/cation ratio	T	-1.3	%		ASTM	D-596
07/12/2000	Anion/cation ratio	T	4.4	%		ASTM	D-596
09/07/2000	Anion/cation ratio	T	4.5	%		ASTM	D-596
03/13/2001	Anion/cation ratio	T	0.96		0	ASTM	D-596
08/08/2001	Anion/cation ratio	T	1.1		0	ASTM	D-596
03/14/2002	Anion/cation ratio	T	0.989		0	ASTM	D-596
03/18/2003	Anion/cation ratio	T	1.11		0	ASTM	D-596
09/23/1999	Anthracene	T	ND	ug/L	10	USEPA	8270
09/10/1998	Antimony	T	0.007	mg/L		USEPA	200.9
07/22/1999	Antimony	D	ND	mg/L		USEPA	200.9
09/23/1999	Antimony	D	ND	mg/L	0.05	USEPA	200.7
07/12/2000	Antimony	D	ND	mg/L	0.0017	USEPA	200.9
09/07/2000	Antimony	D	ND	mg/l	0.0017	USEPA	200.9
03/13/2001	Antimony	D	ND	mg/L	0.0017	USEPA	200.9
08/08/2001	Antimony	D	ND	mg/L	0.0017	USEPA	200.9
03/14/2002	Antimony	D	ND	mg/L	0.0017	USEPA	200.9
03/18/2003	Antimony	D	ND	mg/L	0.0017	USEPA	200.9
04/13/2004	Antimony	D	ND	mg/L	0.001	USEPA	200.8

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
04/13/2004	Antimony	T	ND	mg/L	0.001	USEPA 200.8
09/15/2005	Antimony	D	ND	mg/L	0.003	USEPA 200.8
09/15/2005	Antimony	T	ND	mg/L	0.00075	USEPA 200.8
05/15/2006	Antimony	D	ND	mg/L	0.003	USEPA 200.8
05/15/2006	Antimony	T	ND	mg/L	0.003	USEPA 200.8
05/15/2008	Antimony	D	ND	mg/L	0.0000853	USEPA 200.8
05/15/2008	Antimony	T	ND	mg/L	0.0000853	USEPA 200.8
06/23/2009	Antimony	D	ND	mg/L	0.0003	USEPA 200.8
06/23/2009	Antimony	T	ND	mg/L	0.003	USEPA 200.8
06/13/2011	Antimony	D	ND	mg/l	0.00023	USEPA 200.8
06/13/2011	Antimony	T	ND	mg/l	0.00023	USEPA 200.8
09/23/1999	Aroclor 1016	T	ND	ug/L	1	USEPA 8082
09/23/1999	Aroclor 1221	T	ND	ug/L	1	USEPA 8082
09/23/1999	Aroclor 1232	T	ND	ug/L	1	USEPA 8082
09/23/1999	Aroclor 1242	T	ND	ug/L	1	USEPA 8082
09/23/1999	Aroclor 1248	T	ND	ug/L	1	USEPA 8082
09/23/1999	Aroclor 1254	T	ND	ug/L	1	USEPA 8082
09/23/1999	Aroclor 1260	T	ND	ug/L	1	USEPA 8082
09/10/1998	Arsenic	T	ND	mg/L	0.005	APHA 3114B
07/22/1999	Arsenic	D	ND	mg/L	0.005	APHA 3114B
09/23/1999	Arsenic	D	ND	mg/L	0.05	USEPA 200.7
07/12/2000	Arsenic	T	0.0065	mg/L	0.003	USEPA 200.9
07/12/2000	Arsenic	D	ND	mg/L	0.003	USEPA 200.9
09/07/2000	Arsenic	D	ND	mg/L	0.003	USEPA 200.9
03/13/2001	Arsenic	D	ND	mg/L	0.005	USEPA 200.9
08/08/2001	Arsenic	D	ND	mg/L	0.005	USEPA 200.9
03/14/2002	Arsenic	D	ND	mg/L	0.005	USEPA 200.9
03/18/2003	Arsenic	D	ND	mg/L	0.005	USEPA 200.9
04/13/2004	Arsenic	D	0.0017	mg/L	0.001	USEPA 200.8
04/13/2004	Arsenic	T	0.0022	mg/L	0.001	USEPA 200.8
09/15/2005	Arsenic	D	0.001	mg/L	0.001	USEPA 200.8
09/15/2005	Arsenic	T	0.0037	mg/L	0.001	USEPA 200.8
05/15/2006	Arsenic	D	0.0011	mg/L	0.001	USEPA 200.8
05/15/2006	Arsenic	T	0.0014	mg/L	0.001	USEPA 200.8
05/15/2008	Arsenic	T	ND	mg/L	0.003	USEPA 200.8
05/15/2008	Arsenic	D	ND	mg/L	0.003	USEPA 200.8
06/23/2009	Arsenic	D	0.0014	mg/L	0.0006	USEPA 200.8
06/23/2009	Arsenic	T	ND	mg/L	0.006	USEPA 200.8
06/13/2011	Arsenic	D	0.0019	mg/l	0.00034	USEPA 200.8
06/13/2011	Arsenic	T	0.0036	mg/l	0.00034	USEPA 200.8
05/15/2008	Atrazine	T	ND	ng/L	1	USEPA HPLC/MS-SEDC
06/23/2009	Atrazine	T	ND	ng/L	1	USEPA HPLC/MS-SEDC
09/10/1998	Barium	T	0.17	mg/L	0.01	USEPA 200.7
09/23/1999	Barium	D	0.053	mg/L		USEPA 200.7
07/12/2000	Barium	D	0.057	mg/L	0.01	USEPA 200.7
09/07/2000	Barium	D	0.062	mg/L	0.01	USEPA 200.7
03/13/2001	Barium	D	0.04	mg/L	0.01	USEPA 200.7

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
08/08/2001	Barium	D	0.065	mg/L	0.01	USEPA 200.7
03/14/2002	Barium	D	0.032	mg/L	0.01	USEPA 200.7
03/18/2003	Barium	D	0.14	mg/L	0.01	USEPA 200.7
04/13/2004	Barium	T	0.084	mg/L	0.001	USEPA 200.8
09/15/2005	Barium	T	0.15	mg/L	0.001	USEPA 200.8
05/15/2006	Barium	T	0.044	mg/L	0.001	USEPA 200.8
05/15/2008	Barium	T	0.11	mg/L	0.01	USEPA 200.7
06/23/2009	Barium	T	0.11	mg/L	0.002	USEPA 200.7
06/13/2011	Barium	T	0.11	mg/l	0.0004	USEPA 200.7
09/23/1999	Benz[a]anthracene		ND	ug/L	10	USEPA 8270
09/23/1999	Benzene		ND	ug/L	2	USEPA 8260B
09/23/1999	Benzo(b)fluoranthene	T	ND	ug/L	10	USEPA 8270
09/23/1999	Benzo[a]pyrene		ND	ug/L	20	USEPA 8270
09/23/1999	Benzo[ghi]perylene	T	ND	ug/L	20	USEPA 8270
09/23/1999	Benzo[k]fluoranthene	T	ND	ug/L	10	USEPA 8270
09/23/1999	Benzoic acid	T	ND	ug/L	50	USEPA 8270
09/23/1999	Benzyl alcohol		ND	ug/L	10	USEPA 8270
09/10/1998	Beryllium	T	ND	mg/L	0.004	USEPA 200.7
07/22/1999	Beryllium	D	ND	mg/L	0.002	USEPA 200.7
09/23/1999	Beryllium	D	ND	mg/L		USEPA 200.7
07/12/2000	Beryllium	D	ND	mg/L	0.0005	USEPA 200.9
09/07/2000	Beryllium	D	ND	mg/L	0.0005	USEPA 200.9
03/13/2001	Beryllium	D	ND	mg/L	0.001	USEPA 200.7
08/08/2001	Beryllium	D	ND	mg/L	0.001	USEPA 200.7
03/14/2002	Beryllium	D	ND	mg/L	0.001	USEPA 200.7
03/18/2003	Beryllium	D	ND	mg/L	0.001	USEPA 200.7
04/13/2004	Beryllium	D	ND	mg/L	0.001	USEPA 200.8
04/13/2004	Beryllium	T	ND	mg/L	0.001	USEPA 200.8
09/15/2005	Beryllium	D	ND	mg/L	0.001	USEPA 200.7
09/15/2005	Beryllium	T	ND	mg/L	0.001	USEPA 200.7
05/15/2006	Beryllium	D	ND	mg/L	0.001	USEPA 200.7
05/15/2006	Beryllium	T	ND	mg/L	0.001	USEPA 200.7
05/15/2008	Beryllium	T	ND	mg/L	0.001	USEPA 200.7
06/23/2009	Beryllium	T	ND	mg/L	0.001	USEPA 200.7
06/13/2011	Beryllium	T	ND	mg/l	0.0004	USEPA 200.7
09/10/1998	Biochemical oxygen demand, standard conditions		4	mg/L	2	USEPA 405.1
09/23/1999	Biochemical oxygen demand, standard conditions		ND	mg/L	2	USEPA 405.1
09/23/1999	Bis(2-chloroethoxy)methane	T	ND	ug/L	10	USEPA 8270
09/23/1999	Bis(2-chloroethyl) ether		ND	ug/L	10	USEPA 8270
09/23/1999	Bis(2-chloroisopropyl) ether	T	ND	ug/L	10	USEPA 8270
09/23/1999	Boron	D	ND	mg/L	0.5	USEPA 200.7
07/12/2000	Boron	D	ND	mg/L	0.013	USEPA 200.7
09/07/2000	Boron	D	0.11	mg/L	0.013	USEPA 200.7
03/13/2001	Boron	D	0.16	mg/L	0.05	USEPA 200.7
08/08/2001	Boron	D	0.13	mg/L	0.05	USEPA 200.7
03/14/2002	Boron	D	0.19	mg/L	0.05	USEPA 200.7
03/18/2003	Boron	D	0.15	mg/L	0.05	USEPA 200.7

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
04/13/2004	Boron	T	0.22	mg/L	0.05	USEPA 200.7
09/15/2005	Boron	T	0.11	mg/L	0.005	USEPA 200.7
05/15/2006	Boron	T	ND	mg/L	0.2	USEPA 200.7
05/15/2008	Boron	D	0.1	mg/L	0.0057	USEPA 200.7
05/15/2008	Boron	T	ND	mg/L	0.0057	USEPA 200.7
06/23/2009	Boron	D	0.11	mg/L	0.008	USEPA 200.7
06/23/2009	Boron	T	0.12	mg/L	0.008	USEPA 200.7
06/13/2011	Boron	D	ND	mg/l	0.042	USEPA 200.7
06/13/2011	Boron	T	ND	mg/l	0.042	USEPA 200.7
09/23/1999	Bromide		ND	mg/L	0.5	USEPA 300
07/12/2000	Bromide		ND	mg/L	0.11	USEPA 300
09/07/2000	Bromide		ND	mg/l	0.11	USEPA 300
03/13/2001	Bromide		0.5	mg/L	0.5	USEPA 300
08/08/2001	Bromide		ND	mg/L	0.5	USEPA 300
03/14/2002	Bromide		ND	mg/L	0.5	USEPA 300
03/18/2003	Bromide		ND	mg/L	0.27	USEPA 300
09/23/1999	Bromobenzene		ND	ug/L	5	USEPA 8260B
09/23/1999	Butyl benzyl phthalate	T	ND	ug/L	10	USEPA 8270
09/10/1998	Cadmium	T	ND	mg/L	0.001	USEPA 200.9
07/22/1999	Cadmium	D	ND	mg/L	0.001	USEPA 200.9
09/23/1999	Cadmium	D	ND	mg/L	0.005	USEPA 200.7
07/12/2000	Cadmium	D	ND	mg/L	0.0005	USEPA 200.9
09/07/2000	Cadmium	D	ND	mg/L	0.0005	USEPA 200.9
03/13/2001	Cadmium	D	ND	mg/L	0.001	USEPA 200.7
08/08/2001	Cadmium	D	ND	mg/L	0.001	USEPA 200.7
03/14/2002	Cadmium	D	ND	mg/L	0.001	USEPA 200.7
03/18/2003	Cadmium	D	ND	mg/L	0.001	USEPA 200.7
04/13/2004	Cadmium	D	ND	mg/L	0.001	USEPA 200.8
04/13/2004	Cadmium	T	ND	mg/L	0.001	USEPA 200.8
09/15/2005	Cadmium	D	ND	mg/L	0.001	USEPA 200.8
09/15/2005	Cadmium	T	ND	mg/L	0.001	USEPA 200.8
05/15/2006	Cadmium	D	ND	mg/L	0.001	USEPA 200.8
05/15/2006	Cadmium	T	ND	mg/L	0.001	USEPA 200.8
05/15/2008	Cadmium	D	ND	mg/L	0.003	USEPA 200.7
05/15/2008	Cadmium	T	ND	mg/L	0.003	USEPA 200.7
06/23/2009	Cadmium	D	ND	mg/L	0.0003	USEPA 200.7
06/23/2009	Cadmium	T	ND	mg/L	0.0003	USEPA 200.7
06/13/2011	Cadmium	D	ND	mg/l	0.00009	USEPA 200.8
06/13/2011	Cadmium	T	ND	mg/l	0.00009	USEPA 200.8
05/15/2008	Caffeine	T	ND	ng/L	5	USEPA HPLC/MS-SEDC
06/23/2009	Caffeine	T	ND	ng/L	5	USEPA HPLC/MS-SEDC
09/10/1998	Calcium	T	149	mg/L	0.2	USEPA 200.7
07/22/1999	Calcium	T	159	mg/L	0.2	USEPA 200.7
09/23/1999	Calcium	T	170	mg/L	2	USEPA 200.7
07/12/2000	Calcium	T	200	mg/L	2	USEPA 200.7
09/07/2000	Calcium	T	180	mg/L	2	USEPA 200.7
03/13/2001	Calcium	T	230	mg/L	2	USEPA 200.7

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
08/08/2001	Calcium	T	210	mg/L	2	USEPA 200.7
03/14/2002	Calcium	T	220	mg/L	2	USEPA 200.7
03/18/2003	Calcium	T	340	mg/L	10	USEPA 200.7
04/13/2004	Calcium	T	280	mg/L	2	USEPA 200.7
09/15/2005	Calcium	T	210	mg/L	2	USEPA 200.7
05/15/2006	Calcium	T	180	mg/L	2	USEPA 200.7
05/15/2008	Calcium	D	180	mg/L	1	USEPA 200.7
06/23/2009	Calcium	D	150	mg/L	0.2	USEPA 200.7
06/13/2011	Calcium	D	160	mg/l	0.012	USEPA 200.7
05/15/2008	Carbamazepine	T	3.7	ng/L	1	USEPA HPLC/MS-SEDC
06/23/2009	Carbamazepine	T	3	ng/L	1	USEPA HPLC/MS-SEDC
09/23/1999	Carbon disulfide		ND	ug/L	5	USEPA 8260B
09/23/1999	Carbon tetrachloride	T	ND	ug/L	5	USEPA 8260B
09/23/1999	CFC-11		ND	ug/L	5	USEPA 8260B
09/23/1999	CFC-12		ND	ug/L	5	USEPA 8260B
09/23/1999	Chemical oxygen demand		30	mg/L	20	USEPA 410.4
09/23/1999	Chlordane	T	ND	ug/L	2	USEPA 8081A
09/10/1998	Chloride	T	29	mg/L	1	USEPA 300
07/22/1999	Chloride	T	41	mg/L	1	USEPA 300
09/23/1999	Chloride	T	13	mg/L	5	USEPA 300
07/12/2000	Chloride	T	18	mg/L	5	USEPA 300
09/07/2000	Chloride	T	17	mg/L	0.5	USEPA 300
03/13/2001	Chloride	T	33	mg/L	2	USEPA 300
08/08/2001	Chloride	T	15	mg/L	2	USEPA 300
03/14/2002	Chloride	T	39	mg/L	2	USEPA 300
03/18/2003	Chloride	T	35	mg/L	2	USEPA 300
04/13/2004	Chloride	T	48	mg/L	2	USEPA 300
09/15/2005	Chloride	T	20	mg/L	2	USEPA 300
05/15/2008	Chloride	D	21	mg/L	13	USEPA 300
06/23/2009	Chloride	D	16	mg/L	0.6	USEPA 300
09/23/1999	Chlorine		ND	mg/L		APHA 4500-CL(I)
07/12/2000	Chlorine		ND	mg/L	0.5	APHA 4500-CL(I)
09/07/2000	Chlorine		ND	mg/L	0.5	APHA 4500-CL(I)
03/13/2001	Chlorine		ND	mg/L	0.05	HACH 8167
08/08/2001	Chlorine		ND	mg/L	0.05	HACH 8167
03/14/2002	Chlorine		ND	mg/L	0.05	HACH 8167
03/18/2003	Chlorine		ND	mg/L	0.05	HACH 8167
09/23/1999	Chlorobenzene		ND	ug/L		USEPA 8260B
09/23/1999	Chlorodibromomethane		ND	ug/L		USEPA 8260B
09/23/1999	Chloroethane		ND	ug/L		USEPA 8260B
09/23/1999	Chloroform		ND	ug/L		USEPA 8260B
09/23/1999	Chloromethane		ND	ug/L		USEPA 8260B
09/10/1998	Chromium	T	ND	mg/L	0.01	USEPA 200.7
07/22/1999	Chromium	D	ND	mg/L	0.01	USEPA 200.7
09/23/1999	Chromium	D	0.24	mg/L	0.01	USEPA 200.7
07/12/2000	Chromium	D	ND	mg/L	0.004	USEPA 200.9
09/07/2000	Chromium	D	ND	mg/L	0.004	USEPA 200.9



Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
03/13/2001	Chromium	D	ND	mg/L	0.01	USEPA	200.7
08/08/2001	Chromium	D	ND	mg/L	0.01	USEPA	200.7
03/14/2002	Chromium	D	ND	mg/L	0.01	USEPA	200.7
03/18/2003	Chromium	D	ND	mg/L	0.01	USEPA	200.7
04/13/2004	Chromium	T	0.0011	mg/L	0.001	USEPA	200.8
04/13/2004	Chromium	D	ND	mg/L	0.001	USEPA	200.8
09/15/2005	Chromium	T	0.0043	mg/L	0.001	USEPA	200.8
09/15/2005	Chromium	D	ND	mg/L	0.001	USEPA	200.8
05/15/2006	Chromium	D	0.0018	mg/L	0.001	USEPA	200.8
05/15/2006	Chromium	T	ND	mg/L	0.001	USEPA	200.8
05/15/2008	Chromium	T	ND	mg/L	0.005	USEPA	200.8
05/15/2008	Chromium	D	ND	mg/L	0.005	USEPA	200.8
06/23/2009	Chromium	D	ND	mg/L	0.002	USEPA	200.8
06/23/2009	Chromium	T	ND	mg/L	0.02	USEPA	200.8
06/13/2011	Chromium	D	ND	mg/l	0.0017	USEPA	200.7
06/13/2011	Chromium	T	ND	mg/l	0.0017	USEPA	200.7
09/23/1999	Chromium(III)	D	0.24	mg/L	0.025	USEPA	200.7
07/12/2000	Chromium(III)	D	ND	mg/L	0.025	USEPA	200.7
03/13/2001	Chromium(III)	D	ND	mg/L	0.01	USEPA	200.7
08/08/2001	Chromium(III)	D	ND	mg/L	0.01	USEPA	200.7
03/14/2002	Chromium(III)	D	ND	mg/L	0.01	USEPA	200.7
03/18/2003	Chromium(III)	D	ND	mg/L	0.01	USEPA	200.7
09/23/1999	Chromium(VI)	D	ND	mg/L		APHA	3500-CR(D)
07/12/2000	Chromium(VI)	D	ND	mg/L	0.025	APHA	3500-CR(D)
03/13/2001	Chromium(VI)	D	ND	mg/L	0.01	APHA	3500-CR(D)
08/08/2001	Chromium(VI)	D	ND	mg/L	0.01	APHA	3500-CR(D)
03/14/2002	Chromium(VI)	D	ND	mg/L	0.01	APHA	3500-CR(D)
03/18/2003	Chromium(VI)	D	ND	mg/L	0.01	APHA	3500-CR(D)
09/23/1999	Chrysene	T	ND	ug/L	10	USEPA	8270
09/23/1999	cis-1,2-Dichloroethylene	T	ND	ug/L	2	USEPA	8260B
09/23/1999	cis-1,3-Dichloropropene	T	ND	ug/L	2	USEPA	8260B
07/22/1999	Cobalt	D	ND	mg/L		USEPA	200.7
09/23/1999	Cobalt	D	ND	mg/L	0.05	USEPA	200.7
07/12/2000	Cobalt	D	ND	mg/L	0.0023	USEPA	200.7
09/07/2000	Cobalt	D	0.0025	mg/L	0.0023	USEPA	200.7
03/13/2001	Cobalt	D	ND	mg/L	0.01	USEPA	200.7
08/08/2001	Cobalt	D	ND	mg/L	0.01	USEPA	200.7
03/14/2002	Cobalt	D	ND	mg/L	0.01	USEPA	200.7
03/18/2003	Cobalt	D	ND	mg/L	0.01	USEPA	200.7
04/13/2004	Cobalt	D	ND	mg/L	0.01	USEPA	200.7
09/15/2005	Cobalt	D	ND	mg/L	0.001	USEPA	200.8
05/15/2006	Cobalt	D	ND	mg/L	0.001	USEPA	200.8
05/15/2008	Cobalt	D	ND	mg/L	0.0017	USEPA	200.7
06/23/2009	Cobalt	D	ND	mg/L	0.002	USEPA	200.7
06/13/2011	Cobalt	D	ND	mg/l	0.0008	USEPA	200.7
05/15/2008	Conductivity		1506	uS/cm		Field Measurement	
06/23/2009	Conductivity		1351	uS/cm		Field Measurement	

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
04/06/2010	Conductivity		2106	uS/cm		Field Measurement	
05/06/2010	Conductivity		22.45	uS/cm		Field Measurement	
08/26/2010	Conductivity		1357	uS/cm		Field Measurement	
06/13/2011	Conductivity		1513	uS/cm		Field Measurement	
09/10/1998	Copper	T	0.03	mg/L	0.01	USEPA	200.7
07/22/1999	Copper	D	ND	mg/L	0.01	USEPA	200.7
09/23/1999	Copper	D	ND	mg/L	0.02	USEPA	200.7
07/12/2000	Copper	D	ND	mg/L	0.004	USEPA	200.9
09/07/2000	Copper	D	0.021	mg/L	0.004	USEPA	200.9
03/13/2001	Copper	D	ND	mg/L	0.01	USEPA	200.7
08/08/2001	Copper	D	ND	mg/L	0.01	USEPA	200.7
03/14/2002	Copper	D	ND	mg/L	0.01	USEPA	200.7
03/18/2003	Copper	D	ND	mg/L	0.01	USEPA	200.7
04/13/2004	Copper	D	0.0033	mg/L	0.001	USEPA	200.8
04/13/2004	Copper	T	0.0047	mg/L	0.001	USEPA	200.8
09/15/2005	Copper	T	0.0072	mg/L	0.001	USEPA	200.8
09/15/2005	Copper	D	ND	mg/L	0.001	USEPA	200.8
05/15/2006	Copper	D	0.0029	mg/L	0.001	USEPA	200.8
05/15/2006	Copper	T	0.0039	mg/L	0.001	USEPA	200.8
05/15/2008	Copper	T	0.0039	mg/L	0.002	USEPA	200.8
05/15/2008	Copper	D	ND	mg/L	0.002	USEPA	200.8
06/23/2009	Copper	D	0.003	mg/L	0.0007	USEPA	200.8
06/23/2009	Copper	T	ND	mg/L	0.007	USEPA	200.8
06/13/2011	Copper	T	0.01	mg/l	0.004	USEPA	200.7
06/13/2011	Copper	D	ND	mg/l	0.004	USEPA	200.7
09/23/1999	Cumene	T	ND	ug/L	2	USEPA	8260B
09/23/1999	Cyanide	T	ND	mg/L	0.02	APHA	4500-CN-C,E
07/12/2000	Cyanide	T	ND	mg/L	0.02	APHA	4500-CN-C,E
07/12/2000	Cyanide	D	ND	mg/L	0.02	APHA	4500-CN-C,E
09/07/2000	Cyanide	T	ND	mg/L	0.04	APHA	4500-CN-C,E
03/13/2001	Cyanide	T	ND	mg/L	0.02	APHA	4500-CN(E)
08/08/2001	Cyanide	T	ND	mg/L	0.02	APHA	4500-CN(E)
03/14/2002	Cyanide	T	ND	mg/L	0.02	APHA	4500-CN(E)
03/18/2003	Cyanide	T	ND	mg/L	0.02	APHA	4500-CN(E)
04/13/2004	Cyanide	T	ND	mg/L	0.02	APHA	4500-CN(E)
09/15/2005	Cyanide	T	0.0061	mg/L	0.005	USEPA	335.2
05/15/2006	Cyanide	T	ND	mg/L	0.0097	USEPA	335.2
05/15/2008	Cyanide	T	ND	mg/L	0.0037	APHA	4500-CN-C,E
06/23/2009	Cyanide	T	ND	mg/L	0.005	USEPA	335.4
06/13/2011	Cyanide	T	ND	mg/l	0.0022	APHA	4500-CN(E)
09/10/1998	D oxygen (DO)		7.7	mg/L		Field Measurement	
07/22/1999	D oxygen (DO)		7.4	mg/L		Field Measurement	
09/23/1999	D oxygen (DO)		8.8	mg/L		Field Measurement	
07/12/2000	D oxygen (DO)		7.57	mg/L		Field Measurement	
03/13/2001	D oxygen (DO)		10.08	mg/L		Field Measurement	
08/08/2001	D oxygen (DO)		7.62	mg/L		Field Measurement	
03/14/2002	D oxygen (DO)		10.96	mg/L		Field Measurement	

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
03/18/2003	D oxygen (DO)		9.98	mg/L		Field Measurement
04/13/2004	D oxygen (DO)		12.85	mg/L		Field Measurement
09/15/2005	D oxygen (DO)		9.4	mg/L		Field Measurement
05/15/2006	D oxygen (DO)		8.41	mg/L		Field Measurement
05/15/2008	D oxygen (DO)		8.75	mg/L		Field Measurement
06/23/2009	D oxygen (DO)		8.95	mg/L		Field Measurement
04/06/2010	D oxygen (DO)		12.06	mg/L		Field Measurement
05/06/2010	D oxygen (DO)		10.08	mg/L		Field Measurement
08/26/2010	D oxygen (DO)		7.95	mg/L		Field Measurement
06/13/2011	D oxygen (DO)		8.35	mg/L		Field Measurement
08/08/2001	D oxygen saturation		99.5	%		Field Measurement
03/14/2002	D oxygen saturation		114.4	%		Field Measurement
03/18/2003	D oxygen saturation		100.2	%		Field Measurement
04/13/2004	D oxygen saturation		143	%		Field Measurement
09/15/2005	D oxygen saturation		91.6	%		Field Measurement
05/15/2006	D oxygen saturation		91	%		Field Measurement
05/15/2008	D oxygen saturation		87.9	%		Field Measurement
06/23/2009	D oxygen saturation		98	%		Field Measurement
04/06/2010	D oxygen saturation		104.5	%		Field Measurement
05/06/2010	D oxygen saturation		99.6	%		Field Measurement
08/26/2010	D oxygen saturation		88.8	%		Field Measurement
06/13/2011	D oxygen saturation		89.6	%		Field Measurement
09/23/1999	Dalapon	T	ND	ug/L	10	USEPA 8151
09/23/1999	Di(2-ethylhexyl) phthalate	T	ND	ug/L	20	USEPA 8270
05/15/2008	Diazepam	T	ND	ng/L	1	USEPA HPLC/MS-SEDC
06/23/2009	Diazepam	T	ND	ng/L	1	USEPA HPLC/MS-SEDC
09/23/1999	Dibenz[a,h]anthracene		ND	ug/L	20	USEPA 8270
09/23/1999	Dibenzofuran		ND	ug/L	10	USEPA 8270
09/23/1999	Dibromomethane		ND	ug/L	2	USEPA 8260B
09/23/1999	Dibutyl phthalate	T	ND	ug/L	10	USEPA 8270
09/23/1999	Dicamba		ND	ug/L	3	USEPA 8151
09/23/1999	Dichlorobromomethane		ND	ug/L	2	USEPA 8260B
09/23/1999	Dichlorprop		ND	ug/L	3	USEPA 8151
09/23/1999	Dieldrin		ND	ug/L	0.1	USEPA 8081A
09/23/1999	Diethyl phthalate	T	ND	ug/L	10	USEPA 8270
05/15/2008	Diethylstilbestrol	T	ND	ng/L	2	USEPA HPLC/MS-SEDC
06/23/2009	Diethylstilbestrol	T	ND	ng/L	2	USEPA HPLC/MS-SEDC
09/23/1999	Dimethyl phthalate	T	ND	ug/L	10	USEPA 8270
09/23/1999	Di-n-octyl phthalate	T	ND	ug/L	10	USEPA 8270
09/23/1999	Dinoseb	T	ND	ug/L	3	USEPA 8151
09/23/1999	Endosulfan sulfate		ND	ug/L	0.5	USEPA 8081A
09/23/1999	Endrin		ND	ug/L	0.1	USEPA 8081A
09/23/1999	Endrin aldehyde		ND	ug/L	0.1	USEPA 8081A
07/12/2000	Escherichia coli		900	MPN/100ml	2	APHA 9221-F
09/07/2000	Escherichia coli		900	MPN/100ml	2	APHA 9221-F
05/15/2008	Estradiol	T	ND	ng/L	2	USEPA HPLC/MS-SEDC
06/23/2009	Estradiol	T	ND	ng/L	1	USEPA HPLC/MS-SEDC

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
05/15/2008	Estriol	T	ND	ng/L	1	USEPA	HPLC/MS-SEDC
06/23/2009	Estriol	T	ND	ng/L	1	USEPA	HPLC/MS-SEDC
05/15/2008	Estrone	T	ND	ng/L	1	USEPA	HPLC/MS-SEDC
06/23/2009	Estrone	T	ND	ng/L	1	USEPA	HPLC/MS-SEDC
05/15/2008	Ethinyl estradiol	T	ND	ng/L	2	USEPA	HPLC/MS-SEDC
06/23/2009	Ethinyl Estradiol	T	ND	ng/L	2	USEPA	HPLC/MS-SEDC
09/23/1999	Ethylbenzene		ND	ug/L	2	USEPA	8260B
09/23/1999	Ethylene dibromide	T	ND	ug/L	2	USEPA	8260B
09/23/1999	Fecal Coliform		119	Col/100 mL	1	APHA	9222D
07/12/2000	Fecal Coliform		900	MPN/100ml	2	APHA	9221E
09/07/2000	Fecal Coliform		900	MPN/100ml	2	APHA	9221E
07/30/2001	Fecal Coliform		>=1600	cfu/100 mL		APHA	9222D
07/22/1999	Flow		121.5	cfs		Field Measurement	
09/23/1999	Flow		134.8	cfs		Field Measurement	
07/12/2000	Flow		83.26	cfs		Field Measurement	
09/07/2000	Flow		90.17	cfs		Field Measurement	
03/13/2001	Flow		43.74	cfs		Field Measurement	
03/14/2002	Flow		20.4	cfs		Field Measurement	
03/18/2003	Flow		154	cfs		Field Measurement	
04/13/2004	Flow		28.4	cfs		Field Measurement	
09/15/2005	Flow		82.3	cfs		Field Measurement	
05/15/2006	Flow		21.2	cfs		Field Measurement	
05/15/2008	Flow		72.4	cfs		Field Measurement	
06/23/2009	Flow		72.4	cfs		Field Measurement	
04/06/2010	Flow		57.8	cfs		Field Measurement	
05/06/2010	Flow		20.5	cfs		Field Measurement	
08/26/2010	Flow		110	cfs		Field Measurement	
06/13/2011	Flow		47.2	cfs		Field Measurement	
09/23/1999	Fluoranthene	T	ND	ug/L	10	USEPA	8270
09/23/1999	Fluorene	T	ND	ug/L	10	USEPA	8270
09/10/1998	Fluoride	T	0.36	mg/L	0.05	USEPA	340.2
07/22/1999	Fluoride	T	0.23	mg/L	0.05	USEPA	340.2
09/07/2000	Fluoride	T	0.34	mg/L	0.1	USEPA	300
03/13/2001	Fluoride	T	ND	mg/L	0.4	USEPA	300
08/08/2001	Fluoride	T	ND	mg/L	0.4	USEPA	300
03/14/2002	Fluoride	T	ND	mg/L	0.4	USEPA	300
03/18/2003	Fluoride	T	ND	mg/L	0.4	USEPA	300
04/13/2004	Fluoride	T	0.48	mg/L	0.4	USEPA	300
09/15/2005	Fluoride	T	0.5	mg/L	0.4	USEPA	300
05/15/2008	Fluoride	T	ND	mg/L	0.5	USEPA	300
06/23/2009	Fluoride	T	ND	mg/L	0.2	USEPA	300
06/13/2011	Fluoride	T	ND	mg/l	0.026	USEPA	300
05/15/2008	Fluoxetine	T	ND	ng/L	1	USEPA	HPLC/MS-SEDC
06/23/2009	Fluoxetine	T	ND	ng/L	1	USEPA	HPLC/MS-SEDC
09/23/1999	Gross alpha radioactivity	T	3.9 ± 0.9	pCi/L	3	USEPA	900
07/12/2000	Gross alpha radioactivity	T	6.9 ± 0.7	pCi/L		USEPA	900
09/07/2000	Gross alpha radioactivity	T	4.3 ± 1.0	pCi/L		USEPA	00-02

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
03/18/2003	Gross alpha radioactivity	T	9.4 ± 1.5	pCi/L		USEPA 00-02
04/13/2004	Gross alpha radioactivity	T	5.1 ± 1.1	pCi/L		USEPA 00-02
09/15/2005	Gross alpha radioactivity	T	4.9 ± 1.0	pCi/L		USEPA 00-02
05/15/2008	Gross alpha radioactivity	T	4.9±1.0	pCi/L		USEPA 00-02
06/13/2011	Gross alpha radioactivity, (Americium-241 ref std)	T	1.5 ± 0.6	pCi/L		USEPA 00-02
09/23/1999	Halon 1011		ND	ug/L	5	USEPA 8260B
03/13/2001	Hardness, Ca		580	mg/L	5	USEPA 200.7
06/13/2011	Hardness, Ca	D	750	mg/l	0.19	APHA 2340B
09/10/1998	Hardness, Ca, Mg		637	mg/L	1	USEPA 200.7
07/22/1999	Hardness, Ca, Mg		710	mg/L	0.2	USEPA 200.7
09/23/1999	Hardness, Ca, Mg		700	mg/L	1	APHA 2340
07/12/2000	Hardness, Ca, Mg		820	mg/L	1	APHA 2340
09/07/2000	Hardness, Ca, Mg		740	mg/L	1	APHA 2340
08/08/2001	Hardness, Ca, Mg		840	mg/L	13	USEPA 200.7
03/14/2002	Hardness, Ca, Mg		1200	mg/L	13	USEPA 200.7
03/18/2003	Hardness, Ca, Mg		1500	mg/L	65	USEPA 200.7
04/13/2004	Hardness, Ca, Mg		1400	mg/L	13	USEPA 200.7
09/15/2005	Hardness, Ca, Mg		880	mg/L	13	USEPA 200.7
05/15/2006	Hardness, Ca, Mg		910	mg/L	13	USEPA 200.7
09/23/1999	Heptachlor		ND	ug/L	0.1	USEPA 8081A
09/23/1999	Heptachlor epoxide		ND	ug/L	0.1	USEPA 8081A
09/23/1999	Hexachlorobenzene	T	ND	ug/L	10	USEPA 8270
09/23/1999	Hexachlorobutadiene	T	ND	ug/L	20	USEPA 8270
09/23/1999	Hexachlorobutadiene	T	ND	ug/L	5	USEPA 8260B
09/23/1999	Hexachlorocyclopentadiene		ND	ug/L	30	USEPA 8270
09/23/1999	Hexachloroethane		ND	ug/L	10	USEPA 8270
03/13/2001	Hydrocarbons, Diesel: C10-C22		ND	mg/L	3	ADHS 8015AZ
03/13/2001	Hydrocarbons, Fuel: C10-C32		ND	mg/L	13	ADHS 8015AZ
03/13/2001	Hydrocarbons, Gasoline: C6-C10		ND	mg/L	2	ADHS 8015AZ
03/13/2001	Hydrocarbons, Oil: C22-C32		ND	mg/L	10	ADHS 8015AZ
05/15/2008	Hydrocodone	T	ND	ng/L	2	USEPA HPLC/MS-SEDC
06/23/2009	Hydrocodone	T	ND	ng/L	2	USEPA HPLC/MS-SEDC
09/23/1999	Indeno[1,2,3-cd]pyrene	T	ND	ug/L	20	USEPA 8270
05/15/2008	Iopromide	T	ND	ng/L	10	USEPA HPLC/MS-SEDC
06/23/2009	Iopromide	T	ND	ng/L	10	USEPA HPLC/MS-SEDC
09/10/1998	Iron	T	8.21	mg/L	0.02	USEPA 200.7
09/23/1999	Isophorone		ND	ug/L	20	USEPA 8270
09/10/1998	Kjeldahl nitrogen		1.2	mg/L	0.1	USEPA 351.3
05/15/2008	Kjeldahl nitrogen	T	ND	mg/L	0.5	USEPA 351.3
06/23/2009	Kjeldahl nitrogen	T	0.62	mg/L	0.06	USEPA 351.3
06/13/2011	Kjeldahl nitrogen	T	ND	mg/l	0.34	APHA 4500-NH3(D)
09/10/1998	Lead	T	0.007	mg/L	0.005	USEPA 200.9
07/22/1999	Lead	D	ND	mg/L	0.005	USEPA 200.9
09/23/1999	Lead	D	ND	mg/L	0.05	USEPA 200.7
07/12/2000	Lead	D	ND	mg/L	0.00095	USEPA 200.9
09/07/2000	Lead	D	0.001	mg/L	0.00095	USEPA 200.9
03/13/2001	Lead	D	0.0021	mg/L	0.0009	USEPA 200.9



Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
08/08/2001	Lead	D	ND	mg/L	0.0009	USEPA 200.9
03/14/2002	Lead	D	ND	mg/L	0.0009	USEPA 200.9
03/18/2003	Lead	D	ND	mg/L	0.0009	USEPA 200.9
04/13/2004	Lead	T	0.0014	mg/L	0.001	USEPA 200.8
04/13/2004	Lead	D	ND	mg/L	0.001	USEPA 200.8
09/15/2005	Lead	T	0.0052	mg/L	0.00045	USEPA 200.8
09/15/2005	Lead	D	ND	mg/L	0.001	USEPA 200.8
05/15/2006	Lead	D	ND	mg/L	0.001	USEPA 200.8
05/15/2006	Lead	T	ND	mg/L	0.001	USEPA 200.8
05/15/2008	Lead	T	ND	mg/L	0.0041	USEPA 200.7
05/15/2008	Lead	D	ND	mg/L	0.0041	USEPA 200.7
06/23/2009	Lead	T	ND	mg/L	0.003	USEPA 200.7
06/23/2009	Lead	D	ND	mg/L	0.003	USEPA 200.7
06/13/2011	Lead	T	0.0047	mg/l	0.00006	USEPA 200.8
06/13/2011	Lead	D	ND	mg/l	0.00006	USEPA 200.8
09/23/1999	Lindane	T	ND	ug/L	0.1	USEPA 8081A
09/10/1998	Magnesium	T	64.3	mg/L	0.2	USEPA 200.7
07/22/1999	Magnesium	T	76.1	mg/L	0.2	USEPA 200.7
09/23/1999	Magnesium	T	68	mg/L	0.5	USEPA 200.7
07/12/2000	Magnesium	T	80	mg/L	0.5	USEPA 200.7
09/07/2000	Magnesium	T	70	mg/L	0.5	USEPA 200.7
03/13/2001	Magnesium	T	170	mg/L	2	USEPA 200.7
08/08/2001	Magnesium	T	78	mg/L	2	USEPA 200.7
03/14/2002	Magnesium	T	160	mg/L	2	USEPA 200.7
03/18/2003	Magnesium	T	150	mg/L	10	USEPA 200.7
04/13/2004	Magnesium	T	180	mg/L	2	USEPA 200.7
09/15/2005	Magnesium	T	88	mg/L	2	USEPA 200.7
05/15/2006	Magnesium	T	110	mg/L	2	USEPA 200.7
05/15/2008	Magnesium	D	99	mg/L	1	USEPA 200.7
06/23/2009	Magnesium	D	75	mg/L	0.03	USEPA 200.7
06/13/2011	Magnesium	D	86	mg/l	0.04	USEPA 200.7
09/10/1998	Manganese	T	0.371	mg/L	0.005	USEPA 200.7
09/23/1999	MCPA	T	ND	ug/L	1000	USEPA 8151
09/23/1999	m-Dichlorobenzene	T	ND	ug/L	10	USEPA 8270
09/23/1999	m-Dichlorobenzene	T	ND	ug/L	2	USEPA 8260B
09/23/1999	Mecoprop	T	ND	ug/L	1000	USEPA 8151
05/15/2008	Meprobamate	T	ND	ng/L	5	USEPA HPLC/MS-SEDC
06/23/2009	Meprobamate	T	ND	ng/L	5	USEPA HPLC/MS-SEDC
09/10/1998	Mercury	T	0.001	mg/L	0.001	USEPA 245.2
07/22/1999	Mercury	T	ND	mg/L	0.001	USEPA 245.1
09/23/1999	Mercury	T	ND	mg/L	0.0002	USEPA 245.1
07/12/2000	Mercury	T	ND	mg/L	0.0002	USEPA 245.1
07/12/2000	Mercury	D	ND	mg/L	0.0002	USEPA 245.1
09/07/2000	Mercury	T	ND	mg/L	0.0002	USEPA 245.1
09/07/2000	Mercury	D	ND	mg/L	0.0002	USEPA 245.1
03/13/2001	Mercury	D	ND	mg/L	0.0002	USEPA 245.1
03/13/2001	Mercury	T	ND	mg/L	0.0002	USEPA 245.1

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
08/08/2001	Mercury	D	ND	mg/L	0.0002	USEPA 245.1
08/08/2001	Mercury	T	ND	mg/L	0.0002	USEPA 245.1
03/14/2002	Mercury	D	ND	mg/L	0.0002	USEPA 245.1
03/14/2002	Mercury	T	ND	mg/L	0.0002	USEPA 245.1
03/18/2003	Mercury	D	ND	mg/L	0.0002	USEPA 245.1
03/18/2003	Mercury	T	ND	mg/L	0.0002	USEPA 245.1
04/13/2004	Mercury	T	ND	mg/L	0.0002	USEPA 245.1
09/15/2005	Mercury	T	ND	mg/L	0.0002	USEPA 245.1
05/15/2006	Mercury	T	1.5	ng/L	0.5	USEPA 1631E
05/15/2008	Mercury	T	1.3	ng/L	0.5	USEPA 1631E
06/23/2009	Mercury	T	4.4	ng/L	0.2	USEPA 1631E
06/13/2011	Mercury	T	9.6	ng/L	0.6	USEPA 1631E
05/15/2008	Methadone	T	ND	ng/L	1	USEPA HPLC/MS-SEDC
06/23/2009	Methadone	T	ND	ng/L	1	USEPA HPLC/MS-SEDC
09/23/1999	Methoxychlor		ND	ug/L	0.1	USEPA 8081A
09/23/1999	Methyl bromide		ND	ug/L	5	USEPA 8260B
09/23/1999	Methyl ethyl ketone		ND	ug/L	10	USEPA 8260B
09/23/1999	Methyl iodide		ND	ug/L	2	USEPA 8260B
09/23/1999	Methyl isobutyl ketone		ND	ug/L	10	USEPA 8260B
09/23/1999	Methyl tert-butyl ether	T	ND	ug/L	5	USEPA 8260B
09/23/1999	Methylene chloride	T	ND	ug/L	5	USEPA 8260B
07/22/1999	Molybdenum	D	ND	mg/L	0.01	USEPA 200.7
09/23/1999	Molybdenum	D	ND	mg/L	0.05	USEPA 200.7
07/12/2000	Molybdenum	D	ND	mg/L	0.05	USEPA 200.7
09/07/2000	Molybdenum	D	ND	mg/L	0.05	USEPA 200.7
03/13/2001	Molybdenum	D	ND	mg/L	0.01	USEPA 200.7
08/08/2001	Molybdenum	D	ND	mg/L	0.01	USEPA 200.7
03/14/2002	Molybdenum	D	ND	mg/L	0.01	USEPA 200.7
03/18/2003	Molybdenum	D	0.049	mg/L	0.01	USEPA 200.7
04/13/2004	Molybdenum	T	0.0051	mg/L	0.001	USEPA 200.8
04/13/2004	Molybdenum	D	ND	mg/L	0.01	USEPA 200.7
09/15/2005	Molybdenum	T	0.003	mg/L	0.001	USEPA 200.8
09/15/2005	Molybdenum	D	ND	mg/L	0.01	USEPA 200.7
05/15/2006	Molybdenum	T	0.0053	mg/L	0.001	USEPA 200.8
05/15/2006	Molybdenum	D	0.0056	mg/L	0.001	USEPA 200.8
05/15/2008	Molybdenum	D	0.0046	mg/L	0.01	USEPA 200.7
06/23/2009	Molybdenum	D	ND	mg/L	0.002	USEPA 200.7
06/13/2011	Molybdenum	D	ND	mg/l	0.0019	USEPA 200.7
05/15/2008	N,N-Diethyl-m-toluamide	T	56	ng/L	5	USEPA HPLC/MS-SEDC
06/23/2009	N,N-Diethyl-m-toluamide	T	27	ng/L	5	USEPA HPLC/MS-SEDC
09/23/1999	Naphthalene	T	ND	ug/L	10	USEPA 8270
09/23/1999	Naphthalene	T	ND	ug/L	5	USEPA 8260B
09/23/1999	n-Butylbenzene		ND	ug/L	5	USEPA 8260B
09/10/1998	Nickel	T	0.01	mg/L	0.01	USEPA 200.7
09/23/1999	Nickel	D	0.072	mg/L	0.05	USEPA 200.7
07/12/2000	Nickel	T	0.015	mg/L	0.004	USEPA 200.9
07/12/2000	Nickel	D	ND	mg/L	0.004	USEPA 200.9

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
09/07/2000	Nickel	D	0.0019	mg/L	0.004	USEPA 200.9
03/13/2001	Nickel	D	ND	mg/L	0.01	USEPA 200.7
08/08/2001	Nickel	D	ND	mg/L	0.01	USEPA 200.7
03/14/2002	Nickel	D	ND	mg/L	0.01	USEPA 200.7
03/18/2003	Nickel	D	ND	mg/L	0.01	USEPA 200.7
04/13/2004	Nickel	D	0.013	mg/L	0.001	USEPA 200.8
04/13/2004	Nickel	T	0.014	mg/L	0.001	USEPA 200.8
09/15/2005	Nickel	D	0.0077	mg/L	0.001	USEPA 200.8
09/15/2005	Nickel	T	0.014	mg/L	0.001	USEPA 200.8
05/15/2006	Nickel	D	0.0073	mg/L	0.001	USEPA 200.8
05/15/2006	Nickel	T	0.008	mg/L	0.001	USEPA 200.8
05/15/2008	Nickel	T	0.016	mg/L	0.01	USEPA 200.7
05/15/2008	Nickel	D	ND	mg/L	0.01	USEPA 200.7
06/23/2009	Nickel	T	0.0069	mg/L	0.005	USEPA 200.7
06/23/2009	Nickel	D	ND	mg/L	0.005	USEPA 200.7
06/13/2011	Nickel	T	ND	mg/l	0.0013	USEPA 200.7
06/13/2011	Nickel	D	ND	mg/l	0.0013	USEPA 200.7
05/15/2008	Nitrate as nitrate		ND	mg/L		Field Measurement
06/23/2009	Nitrate as nitrate		ND	mg/L		Field Measurement
04/06/2010	Nitrate as nitrate		0.169	mg/L		Field Measurement
05/06/2010	Nitrate as nitrate		ND	mg/L		Field Measurement
05/15/2008	Nitrite as nitrite		ND	mg/L		Field Measurement
06/23/2009	Nitrite as nitrite		ND	mg/L		Field Measurement
04/06/2010	Nitrite as nitrite		ND	mg/L		Field Measurement
05/06/2010	Nitrite as nitrite		ND	mg/L		Field Measurement
09/23/1999	Nitrobenzene	T	ND	ug/L	10	USEPA 8270
09/10/1998	Nitrogen, ammonia as N	T	ND	mg/L	0.05	USEPA 350.1
07/22/1999	Nitrogen, ammonia as N	T	ND	mg/L	0.05	USEPA 350.1
09/23/1999	Nitrogen, ammonia as N	T	ND	mg/L	0.5	USEPA 350.3
07/12/2000	Nitrogen, ammonia as N	T	ND	mg/L	0.074	USEPA 350.3
09/07/2000	Nitrogen, ammonia as N	T	0.15	mg/L	0.074	USEPA 350.3
03/13/2001	Nitrogen, ammonia as N	T	0.78	mg/L	0	USEPA 350.3
08/08/2001	Nitrogen, ammonia as N	T	ND	mg/L	0.2	USEPA 350.3
03/14/2002	Nitrogen, ammonia as N	T	ND	mg/L	0.2	USEPA 350.3
03/18/2003	Nitrogen, ammonia as N	T	1.3	mg/L	0.2	USEPA 350.3
04/13/2004	Nitrogen, ammonia as N	T	ND	mg/L	0.197	USEPA 350.3
09/15/2005	Nitrogen, ammonia as N	T	0.92	mg/L	0.197	USEPA 350.3
05/15/2006	Nitrogen, ammonia as N	T	ND	mg/L	0.197	USEPA 350.3
05/15/2008	Nitrogen, ammonia as N	T	ND	mg/L	0.09	USEPA 350.1
06/23/2009	Nitrogen, ammonia as N	T	ND	mg/L	0.05	USEPA 350.1
09/10/1998	Nitrogen, Nitrate (NO3) as N	T	0.48	mg/L	0.05	USEPA 353.2
07/22/1999	Nitrogen, Nitrate (NO3) as N	T	0.96	mg/L	0.05	USEPA 353.2
09/23/1999	Nitrogen, Nitrate (NO3) as N	T	0.3	mg/L	0.1	USEPA 300
07/12/2000	Nitrogen, Nitrate (NO3) as N	T	0.29	mg/L	0.1	USEPA 300
09/07/2000	Nitrogen, Nitrate (NO3) as N	T	0.26	mg/L	0.1	USEPA 300
03/13/2001	Nitrogen, Nitrate (NO3) as N	T	0.67	mg/L	0.2	USEPA 300
08/08/2001	Nitrogen, Nitrate (NO3) as N	T	0.41	mg/L	0.2	USEPA 300

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
03/14/2002	Nitrogen, Nitrate (NO3) as N	T	0.62	mg/L	0.2	USEPA 300
03/18/2003	Nitrogen, Nitrate (NO3) as N	T	2	mg/L	0.2	USEPA 300
04/13/2004	Nitrogen, Nitrate (NO3) as N	T	0.99	mg/L	0.2	USEPA 300
09/15/2005	Nitrogen, Nitrate (NO3) as N	T	0.57	mg/L	0.2	USEPA 300
05/15/2006	Nitrogen, Nitrate (NO3) as N	T	ND	mg/L	0.2	USEPA 300
05/15/2008	Nitrogen, Nitrate (NO3) as N	T	0.24	mg/L	0.0065	USEPA 353.2
04/13/2004	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.82	mg/L	0.05	USEPA 353.2
09/15/2005	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.57	mg/L	0.4	USEPA 300
09/10/1998	Nitrogen, Nitrite (NO2) as N	T	ND	mg/L	0.05	USEPA 353.2
05/15/2008	Nitrogen, Nitrite (NO2) as N	T	ND	mg/L	0.02	APHA 4500-NO2(B)
09/23/1999	N-Nitrosodi-n-propylamine	T	ND	ug/L	10	USEPA 8270
09/23/1999	N-Nitrosodiphenylamine		ND	ug/L	30	USEPA 8270
09/23/1999	n-Propylbenzene	T	ND	ug/L	2	USEPA 8260B
09/23/1999	o-Chlorophenol	T	ND	ug/L	10	USEPA 8270
09/23/1999	o-Chlorotoluene	T	ND	ug/L	5	USEPA 8260B
09/23/1999	o-Cresol	T	ND	ug/L	10	USEPA 8270
09/23/1999	o-Dichlorobenzene		ND	ug/L	10	USEPA 8270
09/23/1999	o-Dichlorobenzene		ND	ug/L	2	USEPA 8260B
09/23/1999	o-Nitrophenol	T	ND	ug/L	10	USEPA 8270
09/10/1998	Orthophosphate		ND	mg/L	0.02	USEPA 365.3
07/22/1999	Orthophosphate		ND	mg/L	0.02	USEPA 365.3
07/12/2000	Orthophosphate		ND	mg/L	0.5	USEPA 300
09/07/2000	Orthophosphate		ND	mg/L	0.5	USEPA 300
09/15/2005	Oxidation reduction potential (ORP)		161.1	mV		Field Measurement
05/15/2006	Oxidation reduction potential (ORP)		161.7	mV		Field Measurement
09/23/1999	p,p'-DDD	T	ND	ug/L	0.1	USEPA 8081A
09/23/1999	p,p'-DDE	T	ND	ug/L	0.1	USEPA 8081A
09/23/1999	p,p'-DDT	T	ND	ug/L	0.1	USEPA 8081A
09/23/1999	p-Bromophenyl phenyl ether	T	ND	ug/L	20	USEPA 8270
09/23/1999	p-Chloroaniline	T	ND	ug/L	10	USEPA 8270
09/23/1999	p-Chloro-m-cresol		ND	ug/L	10	USEPA 8270
09/23/1999	p-Chlorophenyl phenyl ether		ND	ug/L	10	USEPA 8270
09/23/1999	p-Chlorotoluene	T	ND	ug/L	5	USEPA 8260B
09/23/1999	p-Cresol	T	ND	ug/L	10	USEPA 8270
09/23/1999	p-Cymene	T	ND	ug/L	2	USEPA 8260B
09/23/1999	p-Dichlorobenzene	T	ND	ug/L	10	USEPA 8270
09/23/1999	p-Dichlorobenzene	T	ND	ug/L	2	USEPA 8260B
09/23/1999	Pentachlorophenol	T	ND	mg/L	20	USEPA 8270
05/15/2008	Pentoxifylline	T	ND	ng/L	1	USEPA HPLC/MS-SEDC
06/23/2009	Pentoxifylline	T	ND	ng/L	1	USEPA HPLC/MS-SEDC
09/10/1998	pH		8.05	None		Field Measurement
09/10/1998	pH		8.5	None	0.1	USEPA 150.1
07/22/1999	pH		8.33	None		Field Measurement
09/23/1999	pH		8.4	None		USEPA 150.1
09/23/1999	pH		8.58	None		Field Measurement
07/12/2000	pH		8.14	None		Field Measurement
07/12/2000	pH		8.37	None		USEPA 150.1

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
09/07/2000	pH		8.4	None		USEPA	150.1
09/07/2000	pH		8.56	None		Field Measurement	
03/13/2001	pH		8.36	None	2	USEPA	150.1
03/13/2001	pH		8.64	None		Field Measurement	
08/08/2001	pH		8.38	None		Field Measurement	
08/08/2001	pH		8.62	None	2	USEPA	150.1
03/14/2002	pH		8.17	None	2	USEPA	150.1
03/14/2002	pH		8.66	None		Field Measurement	
03/18/2003	pH		8.1	None	2	USEPA	150.1
03/18/2003	pH		8.59	None		Field Measurement	
04/13/2004	pH		8.21	None		Field Measurement	
09/15/2005	pH		8.16	None		Field Measurement	
05/15/2006	pH		7.86	None		Field Measurement	
05/15/2008	pH		7.58	None		Field Measurement	
06/23/2009	pH		8.21	None		Field Measurement	
04/06/2010	pH		8.19	None		Field Measurement	
05/06/2010	pH		8.25	None		Field Measurement	
08/26/2010	pH		8.33	None		Field Measurement	
06/13/2011	pH		8.43	None		Field Measurement	
09/23/1999	Phenanthrene	T	ND	ug/L	10	USEPA	8270
09/23/1999	Phenol	T	ND	ug/L	10	USEPA	8270
05/15/2008	Phosphorous as phosphorous		0.029	mg/L		Field Measurement	
06/23/2009	Phosphorous as phosphorous		0.612	mg/L		Field Measurement	
04/06/2010	Phosphorous as phosphorous		0.224	mg/L		Field Measurement	
05/06/2010	Phosphorous as phosphorous		ND	mg/L		Field Measurement	
09/10/1998	Phosphorus		0.7	mg/L	0.02	USEPA	365.3
07/22/1999	Phosphorus		2.43	mg/L	0.02	USEPA	365.3
09/23/1999	Phosphorus		0.3	mg/L	0.05	USEPA	365.3
07/12/2000	Phosphorus		0.73	mg/L	0.05	USEPA	365.3
09/07/2000	Phosphorus		0.56	mg/L	0.05	USEPA	365.3
03/13/2001	Phosphorus		ND	mg/L	0.2	USEPA	365.3
08/08/2001	Phosphorus		1.3	mg/L	1	APHA	4500-P-B
03/14/2002	Phosphorus		ND	mg/L	0.2	APHA	4500-P-B
03/18/2003	Phosphorus		1.6	mg/L	1	APHA	4500-P-B
05/15/2008	Phosphorus	T	0.12	mg/L	0.05	USEPA	365.3
03/13/2001	Phosphorus, orthophosphate as P		ND	mg/L	0.1	USEPA	365.3
08/08/2001	Phosphorus, orthophosphate as P		ND	mg/L	0.1	APHA	4500-P-E
03/14/2002	Phosphorus, orthophosphate as P		ND	mg/L	0.1	APHA	4500-P-E
03/18/2003	Phosphorus, orthophosphate as P		ND	mg/L	0.1	APHA	4500-P-E
09/23/1999	p-Nitrophenol		ND	ug/L	10	USEPA	8270
09/23/1999	Potassium	D	3.8	mg/L	2	USEPA	200.7
09/23/1999	Potassium	T	4.3	mg/L	2	USEPA	200.7
07/12/2000	Potassium	T	8.4	mg/L	1	USEPA	258.1
09/07/2000	Potassium	T	7.1	mg/L	1	USEPA	258.1
03/13/2001	Potassium	T	7.9	mg/L	2	USEPA	200.7
08/08/2001	Potassium	T	10	mg/L	2	USEPA	200.7
03/14/2002	Potassium	T	8.1	mg/L	2	USEPA	200.7

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
03/18/2003	Potassium	T	35	mg/L	10	USEPA	200.7
09/15/2005	Potassium	T	10	mg/L	2	USEPA	200.7
05/15/2008	Potassium	D	6.7	mg/L	2	USEPA	200.7
06/23/2009	Potassium	D	5.2	mg/L	0.6	USEPA	200.7
05/15/2008	Progesterone	T	ND	ng/L	10	USEPA	HPLC/MS-SEDC
06/23/2009	Progesterone	T	ND	ng/L	10	USEPA	HPLC/MS-SEDC
09/23/1999	Pyrene	T	ND	ug/L	10	USEPA	8270
09/23/1999	Radium-226		0.3 ± 0.1	pCi/L	1	USEPA	903.1
07/12/2000	Radium-226		0.5 ± 0.2	pCi/L	1	USEPA	903.1
09/07/2000	Radium-226		ND	pCi/L	0.2	USEPA	903.1
05/15/2008	Radium-226	T	ND	pCi/L	0.4	USEPA	903.1
06/13/2011	Radium-226	T	ND	pCi/L	0.3	USEPA	903.1
09/23/1999	Radium-226/228	T	0.3 ± 0.1	pCi/L		USEPA	903.1/904
07/12/2000	Radium-226/228	T	0.5 ± 0.2	pCi/L		USEPA	903.1/904
09/07/2000	Radium-226/228	T	0.6 ± 0.3	pCi/L		USEPA	903.1/904
09/23/1999	Radium-228		ND	pCi/L	0.5	USEPA	904
07/12/2000	Radium-228		ND	pCi/L	0.7	USEPA	904
09/07/2000	Radium-228		0.6 ± 0.3	pCi/L		USEPA	904
05/15/2008	Radium-228	T	ND	pCi/L	0.4	USEPA	904
06/13/2011	Radium-228	T	ND	pCi/L	0.4	USEPA	904
07/22/1999	Salinity		0.50	0/00			Field Measurement
09/23/1999	Salinity		0.50	0/00			Field Measurement
07/12/2000	Salinity		0.50	0/00			Field Measurement
09/07/2000	Salinity		0.50	0/00			Field Measurement
03/13/2001	Salinity		1.10	0/00			Field Measurement
03/14/2002	Salinity		1.10	0/00			Field Measurement
03/18/2003	Salinity		0.90	0/00			Field Measurement
04/13/2004	Salinity		1.30	0/00			Field Measurement
09/15/2005	Salinity		0.63	0/00			Field Measurement
05/15/2006	Salinity		1.05	0/00			Field Measurement
05/15/2008	Salinity		0.76	0/00			Field Measurement
06/23/2009	Salinity		0.68	0/00			Field Measurement
04/06/2010	Salinity		1.08	0/00			Field Measurement
05/06/2010	Salinity		1.16	0/00			Field Measurement
08/26/2010	Salinity		0.68	0/00			Field Measurement
06/13/2011	Salinity		0.76	0/00			Field Measurement
09/23/1999	sec-Butylbenzene	T	ND	ug/L	5	USEPA	8260B
09/10/1998	Selenium	T	ND	mg/L	0.005	APHA	3114B
07/22/1999	Selenium	T	ND	mg/L	0.005	APHA	3114B
09/23/1999	Selenium	D	ND	mg/L	0.06	USEPA	200.7
09/23/1999	Selenium	T	ND	mg/L	0.06	USEPA	200.7
07/12/2000	Selenium	D	ND	mg/L	0.00078	USEPA	200.9
07/12/2000	Selenium	T	ND	mg/L	0.00078	USEPA	200.9
09/07/2000	Selenium	D	ND	mg/L	0.00078	USEPA	200.9
03/13/2001	Selenium	D	0.003	mg/L	0.002	USEPA	200.9
03/13/2001	Selenium	T	0.003	mg/L	0.002	USEPA	200.9
08/08/2001	Selenium	D	0.002	mg/L	0.001	USEPA	200.9

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
08/08/2001	Selenium	T	0.002	mg/L	0.001	USEPA 200.9
03/14/2002	Selenium	D	0.004	mg/L	0.001	USEPA 200.9
03/14/2002	Selenium	T	0.0052	mg/L	0.001	USEPA 200.9
03/18/2003	Selenium	D	ND	mg/L	0.001	USEPA 200.9
03/18/2003	Selenium	T	ND	mg/L	0.001	USEPA 200.9
04/13/2004	Selenium	T	0.0039	mg/L	0.001	USEPA 200.8
04/13/2004	Selenium	D	ND	mg/L	0.001	USEPA 200.8
09/15/2005	Selenium	T	0.0025	mg/L	0.00077	USEPA 200.8
09/15/2005	Selenium	D	ND	mg/L	0.002	USEPA 200.8
05/15/2006	Selenium	T	0.002	mg/L	0.002	USEPA 200.8
05/15/2006	Selenium	D	ND	mg/L	0.002	USEPA 200.8
05/15/2008	Selenium	T	ND	mg/L	0.0005922	USEPA 200.8
06/23/2009	Selenium	T	ND	mg/L	0.007	USEPA 200.8
06/13/2011	Selenium	T	0.0025	mg/l	0.0012	USEPA 200.8
03/13/2001	Silica	T	6.5	mg/L	0.21	USEPA 200.7
08/08/2001	Silica	T	44	mg/L	0.21	USEPA 200.7
03/14/2002	Silica	T	6.5	mg/L	0.21	USEPA 200.7
03/18/2003	Silica	T	16	mg/L	0.21	USEPA 200.7
09/10/1998	Silver	T	ND	mg/L	0.01	USEPA 200.7
07/22/1999	Silver	D	ND	mg/L	0.01	USEPA 200.7
09/23/1999	Silver	D	ND	mg/L	0.05	USEPA 200.7
07/12/2000	Silver	D	ND	mg/L	0.005	USEPA 200.9
09/07/2000	Silver	D	ND	mg/L	0.005	USEPA 200.9
03/13/2001	Silver	D	ND	mg/L	0.01	USEPA 200.7
08/08/2001	Silver	D	ND	mg/L	0.01	USEPA 200.7
03/14/2002	Silver	D	ND	mg/L	0.01	USEPA 200.7
03/18/2003	Silver	D	ND	mg/L	0.01	USEPA 200.7
04/13/2004	Silver	D	ND	mg/L	0.001	USEPA 200.8
04/13/2004	Silver	T	ND	mg/L	0.001	USEPA 200.8
09/15/2005	Silver	D	ND	mg/L	0.01	USEPA 200.7
09/15/2005	Silver	T	ND	mg/L	0.01	USEPA 200.7
05/15/2006	Silver	D	ND	mg/L	0.001	USEPA 200.8
05/15/2006	Silver	T	ND	mg/L	0.001	USEPA 200.8
05/15/2008	Silver	T	ND	mg/L	0.005	USEPA 200.7
05/15/2008	Silver	D	ND	mg/L	0.005	USEPA 200.7
06/23/2009	Silver	D	ND	mg/L	0.002	USEPA 200.7
06/23/2009	Silver	T	ND	mg/L	0.002	USEPA 200.7
06/13/2011	Silver	D	ND	mg/l	0.00009	USEPA 200.8
06/13/2011	Silver	T	ND	mg/l	0.00009	USEPA 200.8
09/23/1999	Silvex		ND	ug/L	3	USEPA 8151
09/10/1998	Sodium	T	57.6	mg/L	0.2	USEPA 200.7
07/22/1999	Sodium	T	76.5	mg/L	0.2	USEPA 200.7
09/23/1999	Sodium	T	53	mg/L	5	USEPA 200.7
07/12/2000	Sodium	T	74	mg/L	5	USEPA 273.1
09/07/2000	Sodium	T	61	mg/L	5	USEPA 273.1
03/13/2001	Sodium	T	160	mg/L	20	USEPA 200.7
08/08/2001	Sodium	T	73	mg/L	2	USEPA 200.7

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
03/14/2002	Sodium	T	190	mg/L	20	USEPA	200.7
03/18/2003	Sodium	T	180	mg/L	10	USEPA	200.7
05/15/2008	Sodium	D	91	mg/L	20	USEPA	200.7
06/23/2009	Sodium	D	56	mg/L	5	USEPA	200.7
07/22/1999	Specific conductance		1341	uS/cm		Field Measurement	
09/23/1999	Specific conductance		1341	uS/cm		Field Measurement	
07/12/2000	Specific conductance		1374	uS/cm		Field Measurement	
09/07/2000	Specific conductance		1317	uS/cm		Field Measurement	
03/13/2001	Specific conductance		2520	uS/cm		Field Measurement	
03/14/2002	Specific conductance		2540	uS/cm		Field Measurement	
03/18/2003	Specific conductance		2200	uS/cm		Field Measurement	
04/13/2004	Specific conductance		2770	uS/cm		Field Measurement	
09/15/2005	Specific conductance		1254	uS/cm		Field Measurement	
05/15/2006	Specific conductance		2045	uS/cm		Field Measurement	
09/23/1999	Styrene		ND	ug/L	2	USEPA	8260B
05/15/2008	Sulfamethoxazole	T	24	ng/L	1	USEPA	HPLC/MS-SEDC
06/23/2009	Sulfamethoxazole	T	16	ng/L	1	USEPA	HPLC/MS-SEDC
09/10/1998	Sulfate	T	468	mg/L	5	USEPA	300
07/22/1999	Sulfate	T	562	mg/L	5	USEPA	300
09/23/1999	Sulfate	T	570	mg/L	50	USEPA	300
07/12/2000	Sulfate	T	580	mg/L	50	USEPA	300
09/07/2000	Sulfate	T	490	mg/L	50	USEPA	300
03/13/2001	Sulfate	T	1400	mg/L	100	USEPA	300
08/08/2001	Sulfate	T	520	mg/L	40	USEPA	300
03/14/2002	Sulfate	T	1400	mg/L	200	USEPA	300
03/18/2003	Sulfate	T	1200	mg/L	100	USEPA	300
04/13/2004	Sulfate	T	1400	mg/L	100	USEPA	300
09/15/2005	Sulfate	T	640	mg/L	20	USEPA	300
05/15/2006	Sulfate	T	950	mg/L	40	USEPA	300
05/15/2008	Sulfate	D	680	mg/L	60	USEPA	300
06/23/2009	Sulfate	D	500	mg/L	18	USEPA	300
07/12/2000	Sulfide		0.22	mg/L	0.0044	APHA	4500-S-C,D
09/07/2000	Sulfide		0.0079	mg/L	0.0044	APHA	4500-S-C,D
03/13/2001	Sulfide		ND	mg/L	0	APHA	4500-S-C,D
08/08/2001	Sulfide		ND	mg/L	0.024	APHA	4500-S-C,D
03/14/2002	Sulfide		ND	mg/L	0.024	APHA	4500-S-C,D
03/18/2003	Sulfide		ND	mg/L	0.024	APHA	4500-S-C,D
04/13/2004	Sulfide		0.091	mg/L	0.024	APHA	4500-S-C,D
09/15/2005	Sulfide		ND	mg/L	0.024	APHA	4500-S-C,D
05/15/2006	Sulfide		ND	mg/L	0.024	APHA	4500-S-C,D
09/10/1998	T D solids		994	mg/L	10	USEPA	160.1
07/22/1999	T D solids		657	mg/L		Field Measurement	
07/22/1999	T D solids		1120	mg/L	10	USEPA	160.1
09/23/1999	T D solids		657	mg/L		Field Measurement	
09/23/1999	T D solids		1200	mg/L	20	APHA	2540C
07/12/2000	T D solids		661	mg/L		Field Measurement	
07/12/2000	T D solids		1100	mg/L	20	APHA	2540C



Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
09/07/2000	T D solids		634	mg/L		Field Measurement	
09/07/2000	T D solids		1100	mg/L	20	APHA	2540C
03/13/2001	T D solids		1663	mg/L		Field Measurement	
03/13/2001	T D solids		2200	mg/L	20	APHA	2540C
08/08/2001	T D solids		1000	mg/L	20	APHA	2540C
03/14/2002	T D solids		1676	mg/L		Field Measurement	
03/14/2002	T D solids		2100	mg/L	20	APHA	2540C
03/18/2003	T D solids		1450	mg/L		Field Measurement	
03/18/2003	T D solids		1900	mg/L	10	APHA	2540C
04/13/2004	T D solids		1828	mg/L		Field Measurement	
04/13/2004	T D solids		2300	mg/L	10	APHA	2540C
09/15/2005	T D solids		827	mg/L		Field Measurement	
09/15/2005	T D solids		1200	mg/L	10	APHA	2540C
05/15/2006	T D solids		1350	mg/L		Field Measurement	
04/13/2004	T Residual Chlorine		0	mg/L		Field Measurement	
09/10/1998	T solids		2000	mg/L	1000	USEPA	160.3
07/12/2000	T suspended solids		660	mg/L	20	USEPA	160.2
09/07/2000	T suspended solids		660	mg/L	10	USEPA	160.2
03/13/2001	T suspended solids		36	mg/L	10	USEPA	160.2
08/08/2001	T suspended solids		660	mg/L	20	USEPA	160.2
03/14/2002	T suspended solids		26	mg/L	10	USEPA	160.2
03/18/2003	T suspended solids		3200	mg/L	10	USEPA	160.2
04/13/2004	T suspended solids		91	mg/L	10	USEPA	160.2
09/15/2005	T suspended solids		380	mg/L	10	USEPA	160.2
05/15/2006	T suspended solids		34	mg/L	10	USEPA	160.2
05/15/2008	T suspended solids	T	220	mg/L	10	APHA	2540B
05/15/2008	TDS		994	mg/L		Field Measurement	
06/23/2009	TDS		892	mg/L		Field Measurement	
04/06/2010	TDS		1390	mg/L		Field Measurement	
05/06/2010	TDS		14.82	mg/L		Field Measurement	
08/26/2010	TDS		895	mg/L		Field Measurement	
06/13/2011	TDS		999	mg/L		Field Measurement	
09/10/1998	Temperature, water		20.3	deg C		Field Measurement	
07/22/1999	Temperature, water		26.1	deg C		Field Measurement	
09/23/1999	Temperature, water		15.9	deg C		Field Measurement	
07/12/2000	Temperature, water		23.3	deg C		Field Measurement	
09/07/2000	Temperature, water		18.1	deg C		Field Measurement	
03/13/2001	Temperature, water		10.8	deg C		Field Measurement	
08/08/2001	Temperature, water		20.3	deg C		Field Measurement	
03/14/2002	Temperature, water		9.7	deg C		Field Measurement	
03/18/2003	Temperature, water		7.4	deg C		Field Measurement	
04/13/2004	Temperature, water		12.8	deg C		Field Measurement	
09/15/2005	Temperature, water		14.05	deg C		Field Measurement	
05/15/2006	Temperature, water		18.89	deg C		Field Measurement	
09/23/1999	tert-Butylbenzene	T	ND	ug/L	5	USEPA	8260B
05/15/2008	Testosterone	T	ND	ng/L	10	USEPA	HPLC/MS-SEDC
06/23/2009	Testosterone	T	ND	ng/L	10	USEPA	HPLC/MS-SEDC

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
09/23/1999	Tetrachloroethylene		ND	ug/L	2	USEPA	8260B
09/10/1998	Thallium	T	ND	mg/L	0.002	USEPA	200.9
07/22/1999	Thallium	D	ND	mg/L	0.002	USEPA	200.9
09/23/1999	Thallium	D	ND	mg/L	0.05	USEPA	200.7
07/12/2000	Thallium	T	ND	mg/L	0.002	USEPA	200.9
07/12/2000	Thallium	D	ND	mg/L	0.002	USEPA	200.9
09/07/2000	Thallium	D	ND	mg/L	0.002	USEPA	200.9
03/13/2001	Thallium	D	ND	mg/L	0.001	USEPA	200.9
08/08/2001	Thallium	D	ND	mg/L	0.001	USEPA	200.9
03/14/2002	Thallium	D	ND	mg/L	0.001	USEPA	200.9
03/18/2003	Thallium	D	ND	mg/L	0.001	USEPA	200.9
04/13/2004	Thallium	D	ND	mg/L	0.001	USEPA	200.8
04/13/2004	Thallium	T	ND	mg/L	0.001	USEPA	200.8
09/15/2005	Thallium	D	ND	mg/L	0.001	USEPA	200.8
09/15/2005	Thallium	T	ND	mg/L	0.001	USEPA	200.8
05/15/2006	Thallium	D	ND	mg/L	0.001	USEPA	200.8
05/15/2006	Thallium	T	ND	mg/L	0.001	USEPA	200.8
05/15/2008	Thallium	T	ND	mg/L	0.0005	USEPA	200.8
05/15/2008	Thallium	D	ND	mg/L	0.0005	USEPA	200.8
06/23/2009	Thallium	D	0.0001	mg/L	0.00005	USEPA	200.8
06/23/2009	Thallium	T	ND	mg/L	0.0005	USEPA	200.8
06/13/2011	Thallium	T	ND	mg/l	0.00012	USEPA	200.8
06/13/2011	Thallium	D	ND	mg/l	0.00012	USEPA	200.8
09/23/1999	Toluene		ND	ug/L	2	USEPA	8260B
06/23/2009	Total suspended solids	T	170	mg/L	8	APHA	2540D
06/13/2011	Total suspended solids	T	240	mg/l	0	USEPA	2540D
09/23/1999	Toxaphene		ND	ug/L	4	USEPA	8081A
09/23/1999	trans-1,2-Dichloroethylene	T	ND	ug/L	2	USEPA	8260B
09/23/1999	trans-1,3-Dichloropropene	T	ND	ug/L	2	USEPA	8260B
09/23/1999	Tribromomethane		ND	ug/L	5	USEPA	8260B
09/23/1999	Trichloroethylene		ND	ug/L	2	USEPA	8260B
05/15/2008	Trimethoprim	T	ND	ng/L	5	USEPA	HPLC/MS-SEDC
06/23/2009	Trimethoprim	T	ND	ng/L	5	USEPA	HPLC/MS-SEDC
09/23/1999	Tritium		ND	pCi/L	370	USEPA	906
07/12/2000	Tritium		ND	pCi/L	342	USEPA	906
09/07/2000	Tritium		ND	pCi/L	346	USEPA	906
09/10/1998	Turbidity		351	NTU			Field Measurement
07/22/1999	Turbidity		>999	NTU			Field Measurement
09/23/1999	Turbidity		280	NTU			Field Measurement
07/12/2000	Turbidity		780	NTU			Field Measurement
09/07/2000	Turbidity		408	NTU			Field Measurement
03/13/2001	Turbidity		20.6	NTU			Field Measurement
08/08/2001	Turbidity		974	NTU			Field Measurement
03/14/2002	Turbidity		11.9	NTU			Field Measurement
03/18/2003	Turbidity		>999	NTU			Field Measurement
04/13/2004	Turbidity		100	NTU			Field Measurement
09/15/2005	Turbidity		304	NTU			Field Measurement

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
05/15/2006	Turbidity		33.3	NTU		Field Measurement	
05/15/2008	Turbidity		188	NTU		Field Measurement	
06/23/2009	Turbidity		206	NTU		Field Measurement	
04/06/2010	Turbidity		68.6	NTU		Field Measurement	
05/06/2010	Turbidity		9.9	NTU		Field Measurement	
08/26/2010	Turbidity		392	NTU		Field Measurement	
06/13/2011	Turbidity		254	NTU		Field Measurement	
07/12/2000	Uranium	T	7.2 ± 0.7	pCi/L	3	USEPA	00-07
09/07/2000	Uranium	T	4.5 ± 0.6	pCi/L		USEPA	00-07
03/18/2003	Uranium	T	0.0109	mg/L	0.0001	USEPA	200.8
04/13/2004	Uranium	T	8.6	ug/L	0.1	USEPA	200.8
09/15/2005	Uranium	T	0.0044	mg/L	0.001	USEPA	200.8
05/15/2006	Uranium	T	0.0059	mg/L	0.001	USEPA	200.8
06/23/2009	Uranium	T	0.0037	mg/L	0.0004	USEPA	200.8
06/13/2011	Uranium	T	0.0053	mg/l	0.00005	USEPA	200.8
05/15/2008	Uranium-234/235/238	T	0.006	mg/L	0.0005	USEPA	200.8
07/22/1999	Vanadium	D	ND	mg/L	0.01	USEPA	200.7
09/23/1999	Vanadium	D	ND	mg/L	0.05	USEPA	200.7
07/12/2000	Vanadium	D	ND	mg/L	0.001	USEPA	200.7
09/07/2000	Vanadium	D	0.0024	mg/L	0.001	USEPA	200.7
03/13/2001	Vanadium	D	ND	mg/L	0.01	USEPA	200.7
08/08/2001	Vanadium	D	ND	mg/L	0.01	USEPA	200.7
03/14/2002	Vanadium	D	ND	mg/L	0.01	USEPA	200.7
03/18/2003	Vanadium	D	ND	mg/L	0.01	USEPA	200.7
04/13/2004	Vanadium	D	ND	mg/L	0.01	USEPA	200.7
09/15/2005	Vanadium	D	ND	mg/L	0.001	USEPA	200.7
05/15/2006	Vanadium	D	ND	mg/L	0.001	USEPA	200.8
05/15/2008	Vanadium	D	0.0021	mg/L	0.0014	USEPA	200.7
06/23/2009	Vanadium	D	ND	mg/L	0.002	USEPA	200.7
06/13/2011	Vanadium	D	ND	mg/l	0.0008	USEPA	200.7
09/23/1999	Vinyl acetate		ND	ug/L	5	USEPA	8260B
09/23/1999	Vinyl chloride		ND	ug/L	5	USEPA	8260B
05/15/2008	Water temperature		15.31	deg C		Field Measurement	
06/23/2009	Water temperature		19.72	deg C		Field Measurement	
04/06/2010	Water temperature		8.74	deg C		Field Measurement	
05/06/2010	Water temperature		14.57	deg C		Field Measurement	
08/26/2010	Water temperature		20.68	deg C		Field Measurement	
06/13/2011	Water temperature		18.62	deg C		Field Measurement	
09/23/1999	Xylene	T	ND	ug/L	10	USEPA	8260B
09/10/1998	Zinc	T	ND	mg/L	0.025	USEPA	200.7
07/22/1999	Zinc	D	ND	mg/L	0.025	USEPA	200.7
09/23/1999	Zinc	D	ND	mg/L		USEPA	200.7
07/12/2000	Zinc	D	ND	mg/L	0.05	USEPA	200.7
09/07/2000	Zinc	D	ND	mg/L	0.05	USEPA	200.7
03/13/2001	Zinc	D	ND	mg/L	0.05	USEPA	200.7
08/08/2001	Zinc	D	ND	mg/L	0.05	USEPA	200.7
03/14/2002	Zinc	D	ND	mg/L	0.05	USEPA	200.7

Table 3.1.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
03/18/2003	Zinc	D	ND	mg/L	0.05	USEPA 200.7
04/13/2004	Zinc	D	ND	mg/L	0.01	USEPA 200.8
04/13/2004	Zinc	T	ND	mg/L	0.01	USEPA 200.8
09/15/2005	Zinc	T	0.02	mg/L	0.01	USEPA 200.8
09/15/2005	Zinc	D	ND	mg/L	0.01	USEPA 200.8
05/15/2006	Zinc	D	ND	mg/L	0.01	USEPA 200.8
05/15/2006	Zinc	T	ND	mg/L	0.01	USEPA 200.8
05/15/2008	Zinc	D	ND	mg/L	0.05	USEPA 200.7
05/15/2008	Zinc	T	ND	mg/L	0.05	USEPA 200.7
06/23/2009	Zinc	D	ND	mg/L	0.02	USEPA 200.7
06/23/2009	Zinc	T	ND	mg/L	0.02	USEPA 200.7
06/13/2011	Zinc	T	ND	mg/l	0.027	USEPA 200.7
06/13/2011	Zinc	D	ND	mg/l	0.027	USEPA 200.7

KEY: mg/L = milligrams per Liter, ng/L = nanograms per Liter, ug/L = micrograms per Liter, pCi = picoCuries per Liter, CFS = Cubic Feet per Second. uS/cm = microSiemens per centimeter, MPN = Most Probable Number, deg °C = degrees Celsius, NTU = Nephelometric Turbidity Units USEPA = United States Environmental Protection Agency, SM = State Method (Arizona), APHA = American Public Health Association, ND = Non Detect, T = Total (not filtered), D = Dissolved (filtered with 0.45 um filter), col = coliform, CFU = Coliform Forming Units, TD Solids = Total Dissolved Solids

### 3.1.2 Non-Attainment of 2010 NNSWQS for Site 04MCELMOCR01

A list of parameters which did not attain the corresponding 2010 NNSWQS numeric standard for McElmo Creek designated uses is provided in Table 3.1.2. Table 3.1.2 provides the parameter name, the analytical result, and the numeric Surface Water Quality Standard (SWQS) for the corresponding designated use. Trivalent chromium (0.24 milligrams per liter) did not attain the chronic numeric standard of 0.23 milligrams per liter for the aquatic and wildlife designated use. Cyanide (0.0061 milligrams per liter) did not attain the chronic numeric standard of 0.0052 milligrams per liter for the aquatic and wildlife designated use. Mercury (1.3 to 9.8 nanograms per liter) did not attain the chronic numeric standard of 1.0 nanograms per liter for the aquatic and wildlife designated use. Selenium (0.002 to 0.0052 milligrams per liter) did not attain the chronic numeric standard of 0.002 milligrams per liter for the aquatic and wildlife designated use. (It should be noted that insufficient sampling was conducted to determine a true “chronic” value since samples were not obtained during four consecutive days). Escherichia coli (900 Most Probable Number per 100 milliliters (MPN/100 ml) did not attain the numeric standards for the primary and secondary human contact designated uses of 235 and 575 MPN/100 ml respectively. Total nitrate and nitrate nitrogen (0.57 and 0.82 milligrams per liter) did not attain the numeric standard of 0.132 milligrams per liter for the livestock watering designated use.

Table 3.1.2 - Non-Attainment of 2010 NNSWQS for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	Designated Use	SWQS
09/23/1999	Chromium(III)	D	0.24	mg/L	A&WHbt Chronic	0.23
09/15/2005	Cyanide	T	0.0061	mg/L	A&WHbt Chronic	0.0052
07/12/2000	Escherichia coli		900	MPN/100ml	PrHC/ScHC	235/575
09/07/2000	Escherichia coli		900	MPN/100ml	PrHC/ScHC	235/575
05/15/2006	Mercury	T	1.5	ng/L	A&WHbt Chronic	1.0
05/15/2008	Mercury	T	1.3	ng/L	A&WHbt Chronic	1.0
06/23/2009	Mercury	T	4.4	ng/L	A&WHbt Chronic	1.0
04/06/2010	Mercury	T	3.1	ng/L	A&WHbt Chronic	1.0
05/06/2010	Mercury	T	1.2	ng/L	A&WHbt Chronic	1.0
08/26/2010	Mercury	T	9.8	ng/L	A&WHbt Chronic	1.0
06/13/2011	Mercury	T	9.6	ng/L	A&WHbt Chronic	1.0
04/13/2004	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	T	0.82	mg/L	LW	0.132
09/15/2005	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	T	0.57	mg/L	LW	0.132
03/13/2001	Selenium	T	0.003	mg/L	A&WHbt Chronic	0.002 T
08/08/2001	Selenium	T	0.002	mg/L	A&WHbt Chronic	0.002 T
03/14/2002	Selenium	T	0.0052	mg/L	A&WHbt Chronic	0.002 T
04/13/2004	Selenium	T	0.0039	mg/L	A&WHbt Chronic	0.002 T
09/15/2005	Selenium	T	0.0025	mg/L	A&WHbt Chronic	0.002 T
05/15/2006	Selenium	T	0.002	mg/L	A&WHbt Chronic	0.002 T
06/13/2011	Selenium	T	0.0025	mg/L	A&WHbt Chronic	0.002 T

KEY: mg/L = milligrams per Liter, ng/L = nanograms per Liter, ug/L = micrograms per Liter, pCi = picoCuries per Liter. MPN = Most Probable Number, T = Total (not filtered), D = Dissolved (filtered with 0.45 um filter), CFU = Coliform Forming Units

### 3.1.3 Parameters of Interest at Site 04MCELMOCR01

In addition to the parameters not attaining the numeric standards, there are other parameters which are of interest in assessing McElmo Creek surface water quality at this site. These parameters are listed in Table 3.1.3.

The WQ/NPDES Program has begun analyzing sampled surface waters for pharmaceutical and personal care products. While there are currently no 2010 NNSWQS numeric standards for these compounds, their presence indicates the extent to which these compounds are present in aquatic environments. Pharmaceutical and personal care product compounds present at this site include: Acetaminophen (analgesic), caffeine (stimulant), carbamazepine (anticonvulsant), hydrocodone (narcotic), methadone (narcotic), N,N-Diethyl-meta-toluamide (DEET – insect repellent), sulfamethoxazole (antibiotic), and trimethoprim (antibiotic). Sources of these compounds are usually attributable to waste water discharges. These discharges may occur from point sources such as municipal waste water treatment systems and/or from septic system leach fields.

Additional parameters of interest are total dissolved solids, total suspended solids, and uranium. Total dissolved solids ranged from 892 to 2000 milligrams per liter indicating fairly saline waters. This may be attributable to agricultural return flows in the watershed concentrating salts in those waters. Total suspended solids ranged from 26 to 3200 milligrams per liter. Higher surface water flows present during precipitation events increase suspended solid concentrations. Uranium was present at concentrations ranging from 0.00346 to 0.0109 milligrams per liter. There is no uranium numeric standard for the McElmo Creek designated uses. The NNSWQS does, however have a uranium numeric standard of 0.03 milligrams per liter for the Domestic Water Supply designated use and a numeric standard of 2.8 milligrams per liter for the Secondary Human Contact designated use. Uranium concentrations at McElmo Creek attained these standards.

Table 3.1.3 - Parameters of Interest for Site 04MCELMOCR01

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
05/06/2010	Acetaminophen	T	5200	ng/L	50	USEPA	1694M
08/26/2010	Acetaminophen	T	400	ng/L	100	USEPA	1694M
04/06/2010	Caffeine	T	8.1	ng/L	5.1	USEPA	1694M
04/06/2010	Carbamazepine	T	4.2	ng/L	5.1	USEPA	1694M
09/15/2005	Cyanide	T	0.0061	mg/L	0.005	USEPA	335.2
05/06/2010	Hydrocodone	T	29000	ng/L	2000	USEPA	1694M
05/06/2010	Methadone	T	110	ng/L	50	USEPA	1694M
08/26/2010	Methadone	T	230	ng/L	50	USEPA	1694M
05/15/2008	N,N-Diethyl-m-toluamide	T	56	ng/L	5	USEPA	HPLC/MS-SEDC
05/15/2008	Sulfamethoxazole	T	24	ng/L	1	USEPA	HPLC/MS-SEDC
04/06/2010	Sulfamethoxazole	T	32	ng/L	1	USEPA	1694M
05/06/2010	Sulfamethoxazole	T	28	ng/L	10	USEPA	1694M
08/26/2010	Sulfamethoxazole	T	21	ng/L	10	USEPA	1694M
06/23/2009	TDS		892	mg/L			Field Measurement
08/26/2010	TDS		895	mg/L			Field Measurement
05/15/2008	TDS		994	mg/L			Field Measurement
06/13/2011	TDS		999	mg/L			Field Measurement
04/06/2010	TDS		1390	mg/L			Field Measurement
09/10/1998	T solids		2000	mg/L	1000	USEPA	160.3
07/12/2000	T suspended solids		660	mg/L	20	USEPA	160.2
09/07/2000	T suspended solids		660	mg/L	10	USEPA	160.2
03/13/2001	T suspended solids		36	mg/L	10	USEPA	160.2
08/08/2001	T suspended solids		660	mg/L	20	USEPA	160.2
03/14/2002	T suspended solids		26	mg/L	10	USEPA	160.2
03/18/2003	T suspended solids		3200	mg/L	10	USEPA	160.2
04/13/2004	T suspended solids		91	mg/L	10	USEPA	160.2
09/15/2005	T suspended solids		380	mg/L	10	USEPA	160.2
05/15/2006	T suspended solids		34	mg/L	10	USEPA	160.2
05/15/2008	T suspended solids	T	220	mg/L	10	APHA	2540B
04/06/2010	Trimethoprim	T	5.4	ng/L	5.1	USEPA	1694M
07/12/2000	Uranium	T	7.2 ± 0.7	pCi/L	3	USEPA	00-07
09/07/2000	Uranium	T	4.5 ± 0.6	pCi/L		USEPA	00-07
03/18/2003	Uranium	T	0.0109	mg/L	0.0001	USEPA	200.8
04/13/2004	Uranium	T	8.6	ug/L	0.1	USEPA	200.8
09/15/2005	Uranium	T	0.0044	mg/L	0.001	USEPA	200.8
05/15/2006	Uranium	T	0.0059	mg/L	0.001	USEPA	200.8
05/15/2008	Uranium-234/235/238	T	0.006	mg/L	0.0005	USEPA	200.8
04/06/2010	Uranium	T	0.0089	mg/L	0.0005	USEPA	200.8
05/06/2010	Uranium	T	0.0069	mg/L	0.0005	USEPA	200.8
08/26/2010	Uranium	T	0.00346	mg/L	0.0005	USEPA	200.8

KEY: mg/L = milligrams per Liter, ng/L = nanograms per Liter, ug/L = micrograms per Liter, pCi = picoCuries per Liter, CFS = Cubic Feet per Second, uS/cm = microSiemens per centimeter, MPN = Most Probable Number, deg °C = degrees Celsius, NTU = Nephelometric Turbidity Units USEPA = United States Environmental Protection Agency, SM = State Method (Arizona), APHA = American Public Health Association, ND = Non Detect, T = Total (not filtered), D = Dissolved (filtered with 0.45 um filter), col = coliform, CFU = Coliform Forming Units, TD Solids = Total Dissolved Solids



#### 3.1.4 Designated Use Support Determination at Site 04MCELMOCR01

For those parameters not attaining the numeric standards (see Table 3.1.2) a determination if the designated use for that standard is supported is made using the “Summary of Data Required to Determine Designated Use Support” found in Table 1 of the NNEPA Integrated 305(b) Reporting and 303(d) Listing guidance. Table 1 provides the minimum number of values and the number or percent non-attainment of the water quality standard required to determine designated use support for each parameter. The minimum number of values required to determine support of the designated uses for those parameters and designated uses in Table 3.1.3 is five values in three years. If the water quality standard is not attained one or less times the designated use is supported. If the water quality standard is not attained two or more times the designated use is not supported for that parameter.

From Table 3.1.1 the trivalent chromium result in 1999 was the only one of the five results from the three years (1999 to 2002) which did not attain the chronic numeric standard. ***Since this is one or less non attainment of the five values obtained, the Aquatic and Wildlife designated use for the chronic trivalent chromium standard is supported.***

From Table 3.1.1 the Escherichia coli results in 2000 were the only two consecutive times these values were obtained. Since a minimum of ten values were not obtained in ten years a determination of designated use support cannot be made.

From Table 3.1.1 the cyanide result in 2005 was the only one of the three results from the three years (2005 to 2008) which did not attain the aquatic and wildlife habitat chronic numeric standard. However a minimum of five samples was not obtained during this time-frame so a determination of designated use support cannot be made.

Mercury did not attain the aquatic and wildlife habitat chronic numeric standard five times in three years from 2008 to 2011. ***Since this is two or more non attainments of the five values obtained, the Aquatic and Wildlife designated use for the chronic mercury standard is not supported.***

From Table 3.1.1 the total nitrogen nitrate and nitrite results in 2004 and 2005 were the only two consecutive years when these values were obtained. Since a minimum of five samples were not obtained in three years a determination of designated use support cannot be made.

From Table 3.1.1 selenium did not attain the aquatic and wildlife habitat chronic numeric standard five times in three years from 2000 to 2003. ***Since this is two or more non attainments of the six values obtained, the Aquatic and Wildlife designated use for the chronic selenium standard is not supported.***

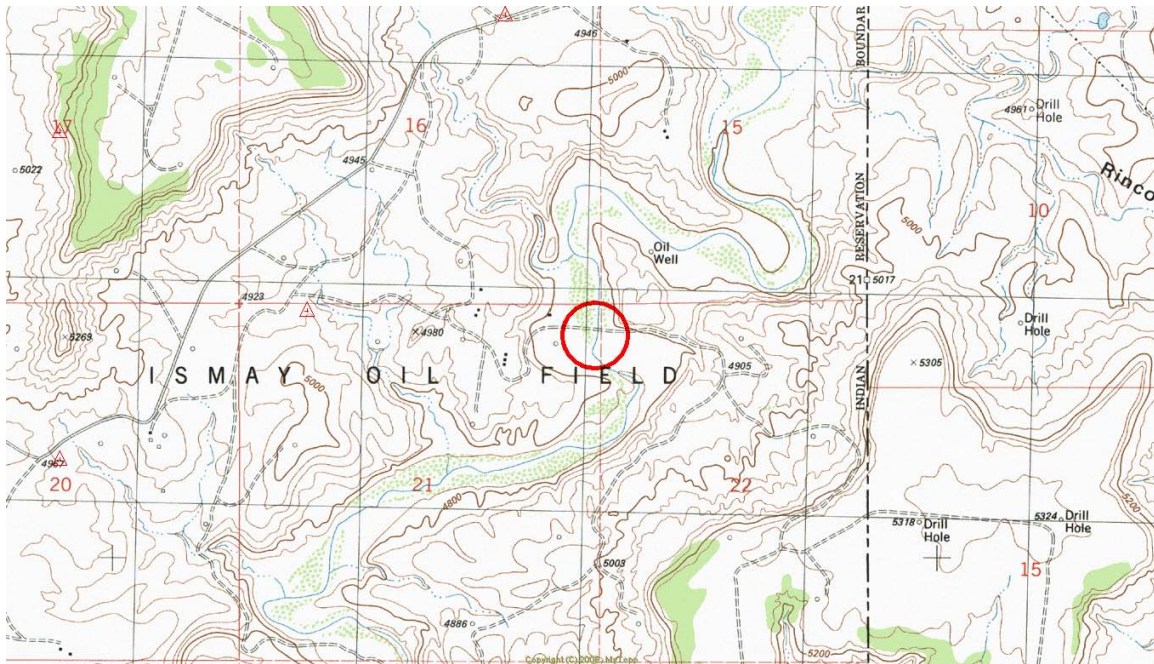
### 3.1.5 Categories of Designated Use Support and Impairment Determination

Once a determination of designated use support is made for a given water surface body using Table 1 of the NNEPA Integrated 305(b) Reporting and 303(d) Listing guidance, surface water body segments are assigned one of five-categories based on their designated use support status to determine if the surface water should be listed as ***impaired***. These five categories may be found in Section 3.2 of NNEPA Integrated 305(b) Reporting and 303(d) Listing guidance. Only surface water reaches falling into Category 5 will be considered ***impaired*** and listed on the federal Clean Water Act Section 303(d) list.

For the aquatic and wildlife habitat chronic numeric standards for mercury and selenium the most appropriate category at this point is Category 4c. Category 4c states that the “designated use is not supported because the water body is impaired, but the impairment may not be caused by a pollutant. (Pollutant is defined in NNSWQS Section 104). This can include flow alterations and/or naturally occurring elements.” This provides the opportunity to determine if the presence of mercury and selenium in McElmo Creek is from natural and/or anthropogenic sources. While the aquatic and wildlife designated use is not supported for the chronic mercury and selenium standards, McElmo Creek will not be listed under USCWQA Section 303(d) as impaired.

### 3.2 McElmo Creek Site 04MCELMOCR02

Sample site 04MCELMOCR02 is located up gradient of Site 04MCELMOCR01. McElmo Creek crosses County Road 407 and is predominately perennial at this location (Map 3.2). Photographs of surface flow conditions at site 04MCELMOCR02 are provided below.



Map 3.2 – Location of Site 04MCELMOCR02.

#### **Photographs of Sampling Site 04MCELMOCR02:**



August 26, 2002.



August 26, 2002.

### 3.2.1 McElmo Creek Site 04MCELMOCR02 Water Quality Data

A summary of all analytical and field data obtained at this site is provided in Table 3.2.1.

### 3.2.2 Non-Attainment of NNSWQS for Site 04MCELMOCR01

All NNSWQS numeric criteria were attained for those parameters with numeric criteria listed in Table 3.2.1. Therefore a determination of designated use support and water body impairment will not be made.

### 3.2.3 Parameters of Interest at Site 04MCELMOCR02

Parameters which are of interest in assessing McElmo Creek surface water quality at this site are listed in Table 3.2.3.

Total dissolved solids values of 1881 and 2300 milligrams per Liter indicate fairly saline waters. This may be attributable to agricultural return flows in the watershed concentrating salts in those waters. The total suspended solids value of 23 milligrams per liter indicates base flow conditions. Uranium was present at concentrations ranging from 0.0093 milligrams per liter. As previously stated there is no uranium numeric standard for the McElmo Creek designated uses. The NNSWQS does, however have a uranium numeric standard of 0.03 milligrams per liter for the Domestic Water Supply designated use and a numeric standard of 2.8 milligrams per liter for the Secondary Human Contact designated use. The uranium concentration at this site was below these values and therefore attained these standards.

Table 3.2.1 - Summary of Analytical and Field Data for Site 04MCELMOCR02

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
08/26/2002	1,1,1,2-Tetrachloroethane	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,1,1-Trichloroethane	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,1,2,2-Tetrachloroethane	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,1,2-Trichloroethane	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,1-Dichloroethane	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,1-Dichloroethene		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,1-Dichloropropene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,2,3-Trichlorobenzene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,2,3-Trichloropropane	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,2,4-Trichlorobenzene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,2,4-Trimethylbenzene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,2-Dibromo-3-chloropropane	T	ND	mg/L	0.002	USEPA	524.2
08/26/2002	1,2-Dichloroethane	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,2-Dichloropropane	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,3,5-Trimethylbenzene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	1,3-Dichloropropane	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	2,2-Dichloropropane	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Alkalinity, bicarbonate as CaCO <sub>3</sub>		220	mg/L	2	APHA	2320B
08/26/2002	Alkalinity, carbonate as CaCO <sub>3</sub>		ND	mg/L	2	APHA	2320B
08/26/2002	Alkalinity, hydroxide as CaCO <sub>3</sub>		ND	mg/L	2	APHA	2320B
08/26/2002	Alkalinity, T		220	mg/L	6	APHA	2320B
08/26/2002	Aluminum	D	ND	mg/L	0.1	USEPA	200.7
08/26/2002	Anion/cation ratio	T	0.96			ASTM	D-596
08/26/2002	Antimony	D	ND	mg/L	0.003	USEPA	200.9
08/26/2002	Arsenic	D	ND	mg/L	0.005	USEPA	200.9
08/26/2002	Barium	D	0.036	mg/L	0.01	USEPA	200.7
08/26/2002	Benzene		ND	mg/L	0.0001	USEPA	524.2
08/26/2002	Beryllium	D	ND	mg/L	0.001	USEPA	200.7
08/26/2002	Boron	D	0.28	mg/L	0.05	USEPA	200.7
08/26/2002	Bromide		ND	mg/L	0.5	USEPA	300
08/26/2002	Bromobenzene		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Cadmium	D	ND	mg/L	0.001	USEPA	200.7
08/26/2002	Calcium	T	260	mg/L	2	USEPA	200.7
08/26/2002	Carbon tetrachloride	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	CFC-11		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	CFC-12		ND	mg/L	0.0005	USEPA	524.2

Table 3.2.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR02

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
08/26/2002	Chloride	T	45	mg/L	2	USEPA	300
08/26/2002	Chlorine		ND	mg/L	0.05	HACH	8167
08/26/2002	Chlorobenzene		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Chlorodibromomethane		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Chloroethane		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Chloroform		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Chloromethane		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Chromium	D	ND	mg/L	0.01	USEPA	200.7
08/26/2002	Chromium(III)	D	ND	mg/L	0.01	USEPA	200.7
08/26/2002	Chromium(VI)	D	ND	mg/L	0.01	APHA	3500-CR(D)
08/26/2002	cis-1,2-Dichloroethylene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	cis-1,3-Dichloropropene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Cobalt	D	ND	mg/L	0.01	USEPA	200.7
08/26/2002	Copper	D	0.017	mg/L	0.01	USEPA	200.7
08/26/2002	Cumene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Cyanide	T	ND	mg/L	0.02	APHA	4500-CN(E)
08/26/2002	Dibromomethane		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Dichlorobromomethane		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	D oxygen (DO)		9.37	mg/L			
08/26/2002	D oxygen saturation		129.7	%			
08/26/2002	Ethylbenzene		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Ethylene dibromide	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Flow		1.12	cfs			
08/26/2002	Fluoride	T	0.46	mg/L	0.4	USEPA	300
08/26/2002	Gross alpha radioactivity, (Americium-241 ref std)	T	11.0 ± 1.7	pCi/L		USEPA	00-02
08/26/2002	Halon 1011		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Hardness, Ca, Mg		1500	mg/L	13	USEPA	200.7
08/26/2002	Hexachlorobutadiene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Hydrocarbons, Diesel: C10-C22		ND	mg/L	3	ADHS	8015AZ
08/26/2002	Hydrocarbons, Oil: C22-C32		ND	mg/L	10	ADHS	8015AZ
08/26/2002	Lead	D	0.0025	mg/L	0.002	USEPA	200.9
08/26/2002	Magnesium	T	190	mg/L	2	USEPA	200.7
08/26/2002	m-Dichlorobenzene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Mercury	D	ND	mg/L	0.0002	USEPA	245.1
08/26/2002	Mercury	T	ND	mg/L	0.0002	USEPA	245.1
08/26/2002	Methyl bromide		ND	mg/L	0.0005	USEPA	524.2

Table 3.2.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR02

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
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08/26/2002	Methylene chloride	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Molybdenum	D	ND	mg/L	0.01	USEPA	200.7
08/26/2002	Naphthalene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	n-Butylbenzene		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Nickel	D	ND	mg/L	0.01	USEPA	200.7
08/26/2002	Nitrogen, ammonia as N	T	ND	mg/L	0.5	USEPA	350.3
08/26/2002	Nitrogen, Nitrate (NO3) as N	T	ND	mg/L	0.2	USEPA	300
08/26/2002	n-Propylbenzene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	o-Chlorotoluene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	o-Dichlorobenzene		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	p-Chlorotoluene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	p-Cymene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	p-Dichlorobenzene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	pH		8.08	None	2	USEPA	150.1
08/26/2002	pH		8.33	None			
08/26/2002	Phosphorus		ND	mg/L	0.2	APHA	4500-P-B
08/26/2002	Phosphorus, orthophosphate as P		ND	mg/L	0.1	APHA	4500-P-E
08/26/2002	Potassium	T	15	mg/L	2	USEPA	200.7
08/26/2002	Radium-226		ND	pCi/L	0.3	USEPA	903.1
08/26/2002	Radium-226/228	T	ND	pCi/L	0.4	USEPA	903.1/904
08/26/2002	Radium-228		ND	pCi/L	0.4	USEPA	904
08/26/2002	Salinity		1.40	0/00			
08/26/2002	sec-Butylbenzene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Selenium	D	ND	mg/L	0.005	USEPA	200.9
08/26/2002	Selenium	T	ND	mg/L	0.005	USEPA	200.9
08/26/2002	Silica	T	15	mg/L	0.21	USEPA	200.7
08/26/2002	Silver	D	ND	mg/L	0.01	USEPA	200.7
08/26/2002	Sodium	T	230	mg/L	10	USEPA	200.7
08/26/2002	Specific conductance		2850	uS/cm			
08/26/2002	Styrene		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Sulfate	T	1700	mg/L	100	USEPA	300
08/26/2002	Sulfide		ND	mg/L	0.05	APHA	4500-S-C,D
08/26/2002	Temperature, water		22.9	deg C			
08/26/2002	tert-Butylbenzene	T	ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Tetrachloroethylene		ND	mg/L	0.0005	USEPA	524.2
08/26/2002	Thallium	D	ND	mg/L	0.001	USEPA	200.9

Table 3.2.1 (continued) - Summary of Analytical and Field Data for Site 04MCELMOCR02

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement
08/26/2002	Toluene		ND	mg/L	0.0005	USEPA 524.2

08/26/2002	T D solids		2300	mg/L		APHA	2540C
08/26/2002	T D solids		1881	mg/L			
08/26/2002	T suspended solids		21	mg/L		USEPA	160.2
08/26/2002	trans-1,2-Dichloroethylene	T	ND	mg/L	0.00014	USEPA	524.2
08/26/2002	trans-1,3-Dichloropropene	T	ND	mg/L	0.00014	USEPA	524.2
08/26/2002	Tribromomethane		ND	mg/L	0.00015	USEPA	524.2
08/26/2002	Trichloroethylene		ND	mg/L	0.0001	USEPA	524.2
08/26/2002	Trihalomethanes	T	ND	mg/L	0	USEPA	524.2
08/26/2002	Tritium		ND	pCi/L	342	USEPA	906
08/26/2002	Turbidity		9.98	NTU			
08/26/2002	Uranium	T	0.0093	mg/L	0.00001	USEPA	200.8
08/26/2002	Vanadium	D	ND	mg/L	0.01	USEPA	200.7
08/26/2002	Vinyl chloride		ND	mg/L	0.00023	USEPA	524.2
08/26/2002	Xylene	T	ND	mg/L	0.00018	USEPA	524.2
08/26/2002	Zinc	D	0.1	mg/L	0.05	USEPA	200.7

KEY: mg/L = milligrams per Liter, ng/L = nanograms per Liter, ug/L = micrograms per Liter, pCi = picoCuries per Liter, CFS = Cubic Feet per Second. uS/cm = microSiemens per centimeter, MPN = Most Probable Number, deg °C = degrees Celsius, NTU = Nephelometric Turbidity Units USEPA = United States Environmental Protection Agency, SM = State Method (Arizona), APHA = American Public Health Association, ND = Non Detect, T = Total (not filtered), D = Dissolved (filtered with 0.45 um filter), col = coliform, CFU = Coliform Forming Units, TD Solids = Total Dissolved Solids



Table 3.2.3 - Parameters of Interest for Site 04MCELMOCR02

Sample Date	Parameter	Fraction	Result	Units	RL	Method or Measurement	
08/26/2002	T D solids		2300	mg/L		APHA	2540C
08/26/2002	T D solids		1881	mg/L			
08/26/2002	T suspended solids		21	mg/L		USEPA	160.2
08/26/2002	Uranium	T	0.0093	mg/L	0.00001	USEPA	200.8

KEY: mg/L = milligrams per Liter, USEPA = United States Environmental Protection Agency, SM = State Method (Arizona), APHA = American Public Health Association, T = Total (not filtered), TD Solids = Total Dissolved Solids

#### 4.0 Conclusions and Recommendations

17.76 stream miles of McElmo Creek were assessed as per USCWA 305(b) requirements. A determination of designated use support and water body impairment was conducted consistent with USCWA Sections 305(b) and 303(d). Pharmaceutical and personal care product compounds were present at site 04MCELMOCR01. Chronic water quality mercury and selenium numeric criteria were not attained for the aquatic and wildlife habitat designated uses. Therefore the aquatic and wildlife habitat designated use is not supported for chronic selenium and mercury at McElmo Creek. McElmo Creek is assigned a 4c category of designated use support. McElmo Creek is not listed as a USCWA 303(d) impaired water body.

Additional surface water samples should be obtained for those parameters with insufficient data collected to determine designated use support. Sources of mercury and selenium should be identified. Additional surface water samples for pharmaceutical and personal care product analysis should be obtained. Sources of pharmaceutical and personal care product compounds should be identified.

#### 5.0 REFERENCES

- NNEPA. July 23, 1999. Navajo Nation Clean Water Act.
- NNEPA. November 9, 1999. Navajo Nation Water Quality Standards.
- NNEPA. May 13, 2008. Navajo Nation Surface Water Quality Standards 2007
- NNEPA. 2010. 2010 Navajo Nation Surface Water Quality Standards.
- United States Geological Survey. 1987. Hydrologic Unit Maps, United States Geological Survey Water- Supply Paper 2294.
- United States Government Printing Office. March 1988. The Clean Water Act As Amended By The Water Quality Act Of 1987 Public Law 100-4.

# **APPENDIX A**

# **LABORATORY**

# **ANALYTICAL DATA**



Trans West Analytical Services  
Formerly Columbia Analytical Services

License No. AZ0757/AZM757

**CLIENT:** Navajo Nation EPA  
**Work Order:** 10040104  
**Lab ID:** 10040104-01  
**Project Name:** 04-01\_100406/McElmo Creek 305(b)  
**Project Number:**

**Client Sample ID:** 04-01\_100406  
**Collection Date:** 4/6/2010 11:30:00 AM  
**Matrix:** Water

Analyte	Result	PQL	Qual	Units	DF	Date Prepared	Date Analyzed	Analyst	Batch ID
<i>TEST METHOD: SM2320B PREP METHOD: NONE Test Performed By: AZ0757</i>									
<b>Alkalinity, Bicarbonate, Dissolved</b>	<b>230</b>	20		mg/L CaC	1.0	N/A	4/15/10	RLH	ALK_WD-4/15/2010
Alkalinity, Carbonate, Dissolved	<20	20		mg/L CaC	1.0	N/A	4/15/10	RLH	ALK_WD-4/15/2010
Alkalinity, Hydroxide, Dissolved	<20	20		mg/L CaC	1.0	N/A	4/15/10	RLH	ALK_WD-4/15/2010
<b>Alkalinity, Sum, Dissolved</b>	<b>230</b>	20		mg/L CaC	1.0	N/A	4/15/10	RLH	ALK_WD-4/15/2010
<i>TEST METHOD: 10-204-00-1-X PREP METHOD: 10-204-00-1-X Test Performed By: AZ0757</i>									
Cyanide, Total	<0.0050	0.0050		mg/L	1.0	4/7/10	4/7/10 18:49	RH	5717
<i>TEST METHOD: EPA300.0 PREP METHOD: NONE Test Performed By: AZ0757</i>									
Fluoride	<0.50	0.50		mg/L	1.0	N/A	4/25/10 21:05	TL	IC-4/25/2010A
<i>TEST METHOD: EPA350.1 PREP METHOD: NONE Test Performed By: AZ0757</i>									
<b>Nitrogen, Ammonia (As N)</b>	<b>0.038</b>	0.10	E4	mg/L	1.0	4/14/10 8:50	4/14/10 12:09	TK	5766
<i>TEST METHOD: EPA351.2 PREP METHOD: METHOD Test Performed By: AZ0757</i>									
<b>Nitrogen, Kjeldahl, Total</b>	<b>0.60</b>	0.20		mg/L	1.0	4/12/10 11:05	4/13/10 9:50	TK	5751
<i>TEST METHOD: SM2540D PREP METHOD: NONE Test Performed By: AZ0757</i>									
<b>Total Suspended Solids</b>	<b>88</b>	10		mg/L	1.0	N/A	4/13/10	DPM	TSS_W_4/13/2010
<i>TEST METHOD: EPA200.7 PREP METHOD: EPA200.7 Test Performed By: AZ0757</i>									
<b>Aluminum</b>	<b>1.6</b>	0.10		mg/L	1.0	4/12/10 11:00	4/13/10 11:27	MDD	5749
<b>Barium</b>	<b>0.073</b>	0.010		mg/L	1.0	4/12/10 11:00	4/13/10 11:27	MDD	5749
Beryllium	<0.0010	0.0020	E8	mg/L	1.0	4/12/10 11:00	4/13/10 11:27	MDD	5749
<b>Boron</b>	<b>0.17</b>	0.10		mg/L	1.0	4/12/10 11:00	4/13/10 11:27	MDD	5749
Cadmium	<0.00030	0.0030	E8	mg/L	1.0	4/12/10 11:00	4/13/10 11:27	MDD	5749
Lead	<0.0030	0.010	E8	mg/L	1.0	4/12/10 11:00	4/13/10 11:27	MDD	5749
Nickel	<0.0050	0.010	E8	mg/L	1.0	4/12/10 11:00	4/13/10 11:27	MDD	5749
Silver	<0.0020	0.0050	E8	mg/L	1.0	4/12/10 11:00	4/13/10 11:27	MDD	5749
<b>Zinc</b>	<b>0.023</b>	0.050	E4	mg/L	1.0	4/12/10 11:00	4/13/10 11:27	MDD	5749
<i>TEST METHOD: EPA200.7 PREP METHOD: EPA200.7-Diss Test Performed By: AZ0757</i>									
Aluminum, Dissolved	<0.040	0.10	E8	mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742
<b>Boron, Dissolved</b>	<b>0.14</b>	0.10		mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742
Cadmium, Dissolved	<0.00030	0.0030	E8	mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742
<b>Calcium, Dissolved</b>	<b>250</b>	1.0		mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742
Cobalt, Dissolved	<0.0020	0.010	E8	mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742



Trans West Analytical Services  
Formerly Columbia Analytical Services

License No. AZ0757/AZM757

**CLIENT:** Navajo Nation EPA  
**Work Order:** 10040104  
**Lab ID:** 10040104-01  
**Project Name:** 04-01\_100406/McElmo Creek 305(b)  
**Project Number:**

**Client Sample ID:** 04-01\_100406  
**Collection Date:** 4/6/2010 11:30:00 AM  
**Matrix:** Water

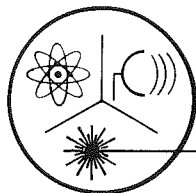
Analyte	Result	PQL	Qual	Units	DF	Date Prepared	Date Analyzed	Analyst	Batch ID
Lead, Dissolved	<0.0030	0.010	E8	mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742
<b>Magnesium, Dissolved</b>	<b>160</b>	1.0		mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742
<b>Molybdenum, Dissolved</b>	<b>0.0033</b>	0.010	E4	mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742
Nickel, Dissolved	<0.0050	0.010	E8	mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742
<b>Potassium, Dissolved</b>	<b>5.0</b>	2.0		mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742
Silver, Dissolved	<0.0020	0.0050	E8	mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742
<b>Sodium, Dissolved</b>	<b>160</b>	2.0		mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742
Vanadium, Dissolved	<0.0020	0.010	E8	mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742
Zinc, Dissolved	<0.020	0.050	E8	mg/L	1.0	4/12/10 8:30	4/12/10 23:51	MDD	5742

TEST METHOD: EPA200.8 PREP METHOD: E200.8 Test Performed By: AZ0757

Antimony	<0.0002	0.0020	E8	mg/L	1.0	4/9/10 7:00	4/20/10 14:02	BJK	5733
<b>Arsenic</b>	<b>0.0013</b>	0.0030	E4	mg/L	1.0	4/9/10 7:00	4/20/10 14:02	BJK	5733
<b>Chromium</b>	<b>0.0005</b>	0.0050	E4	mg/L	1.0	4/9/10 7:00	4/20/10 14:02	BJK	5733
<b>Copper</b>	<b>0.0049</b>	0.0020		mg/L	1.0	4/9/10 7:00	4/20/10 14:02	BJK	5733
<b>Selenium</b>	<b>0.0014</b>	0.0020	E4	mg/L	1.0	4/9/10 7:00	4/20/10 14:02	BJK	5733
Thallium	<0.0001	0.0005	E8	mg/L	1.0	4/9/10 7:00	4/20/10 14:02	BJK	5733
<b>Uranium</b>	<b>0.0089</b>	0.0005		mg/L	1.0	4/9/10 7:00	4/20/10 14:02	BJK	5733

TEST METHOD: EPA200.8 PREP METHOD: EPA200.8-Dissolved Test Performed By: AZ0757

Antimony, Dissolved	<0.0002	0.0020	E8	mg/L	1.0	4/12/10 8:30	4/12/10 17:03	BJK	5746
<b>Arsenic, Dissolved</b>	<b>0.0009</b>	0.0030	E4	mg/L	1.0	4/12/10 8:30	4/12/10 17:03	BJK	5746
Chromium, Dissolved	<0.0004	0.0050	E8	mg/L	1.0	4/12/10 8:30	4/12/10 17:03	BJK	5746
<b>Copper, Dissolved</b>	<b>0.0012</b>	0.0020	E4	mg/L	1.0	4/12/10 8:30	4/12/10 17:03	BJK	5746
<b>Thallium, Dissolved</b>	<b>0.0007</b>	0.0005		mg/L	1.0	4/12/10 8:30	4/12/10 17:03	BJK	5746



## Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121  
Website: [www.radsafe.com](http://www.radsafe.com)

(480) 897-9459  
FAX (480) 892-5446

### Radiochemical Activity in Water (pCi/L)

Columbia Analytical Services  
3725 E. Atlanta Avenue, Suite 2  
Phoenix, AZ 85040

Sampling Date: April 06, 2010  
Sample Received: April 09, 2010  
Analysis Completed: April 21, 2010

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Radium 226 Activity Method 903.1 (pCi/L)	Radium 228 Activity Method 904 (pCi/L)	Total Radium (pCi/L)
04-01_100406	8.7 ± 2.2	<0.7	<0.4	<0.7

Date of Analysis	4/13/2010	4/15/2010	4/15/2010	4/15/2010
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*G. William Klingler*

G. William Klingler, B.S.E., M.S.E.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client:** Columbia Analytical Services, Inc. - TGI  
**Project:** McElmo Creek (305(b)/10040104  
**Sample Matrix:** Water

**Service Request:** K1003350  
**Date Collected:** 04/06/10  
**Date Received:** 04/08/10

Mercury, Total

**Prep Method:** METHOD  
**Analysis Method:** 1631E  
**Test Notes:**

**Units:** ng/L  
**Basis:** NA

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
04-01_100406	K1003350-001	1.0	1	04/27/10	04/30/10	3.1	
Method Blank 1	K1003350-MB1	1.0	1	04/27/10	04/30/10	ND	
Method Blank 2	K1003350-MB2	1.0	1	04/27/10	04/30/10	ND	
Method Blank 3	K1003350-MB3	1.0	1	04/27/10	04/30/10	ND	

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Columbia Analytical Services, Inc. - TGI  
**Project:** McElmo Creek (305(b)/10040104  
**Sample Matrix:** Water  
**Sample Name:** 04-01\_100406  
**Lab Code:** K1003350-001

**Service Request:** K1003350  
**Date Collected:** 4/ 6/10 1130  
**Date Received:** 4/ 8/10

**Units:** ng/L  
**Basis:** NA

**Steroids and Endocrine Disrupting Compounds**

**Analytical Method:** 1694M  
**Prep Method:** Method

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Analysis		
							Lot	Lot	Note
Androstenedione	ND	U	10	1	4/12/10	4/27/10 14:59	109210	198559	
Atrazine	ND	U	1.0	1	4/12/10	4/27/10 14:59	109210	198559	
Bisphenol A	ND	U	10	1	4/12/10	4/28/10 15:20	109210	198559	
Caffeine	8.1		5.1	1	4/12/10	4/27/10 14:59	109210	198559	
Carbamazepine	4.2		1.0	1	4/12/10	4/27/10 14:59	109210	198559	
DEET	ND	U	5.1	1	4/12/10	4/27/10 14:59	109210	198559	
Diazepam	ND	U	1.0	1	4/12/10	4/27/10 14:59	109210	198559	
Diethylstilbestrol	ND	U	2.0	1	4/12/10	4/28/10 15:20	109210	198559	
Estradiol	ND	U	2.0	1	4/12/10	4/28/10 15:20	109210	198559	
Estriol	ND	U	1.0	1	4/12/10	4/28/10 15:20	109210	198559	
Estrone	ND	U	5.1	1	4/12/10	4/28/10 15:20	109210	198559	
Ethinyl Estradiol	ND	U	2.0	1	4/12/10	4/28/10 15:20	109210	198559	
Fluoxetine	ND	U	1.0	1	4/12/10	4/27/10 06:26	109210	198559	
Hydrocodone	ND	U	1.0	1	4/12/10	4/27/10 14:59	109210	198559	
Meprobamate	ND	U	5.1	1	4/12/10	4/27/10 14:59	109210	198559	
Oxybenzone	ND	U	2.0	1	4/12/10	4/27/10 14:59	109210	198559	
Progesterone	ND	U	10	1	4/12/10	4/27/10 14:59	109210	198559	
Sulfamethoxazole	32		1.0	1	4/12/10	4/27/10 14:59	109210	198559	
Testosterone	ND	U	10	1	4/12/10	4/27/10 14:59	109210	198559	
Trimethoprim	5.4		5.1	1	4/12/10	4/28/10 15:20	109210	198559	
alpha-Estradiol	ND	U	1.0	1	4/12/10	4/28/10 15:20	109210	198559	
Pentoxifylline	ND	U	1.0	1	4/12/10	4/27/10 14:59	109210	198559	
Methadone	ND	U	5.1	1	4/12/10	4/27/10 14:59	109210	198559	
Acetaminophen	ND	U	5.1	1	4/12/10	4/27/10 14:59	109210	198559	

Comments:





Trans West Analytical Services  
Formerly Columbia Analytical Services

License No. AZ0757/AZM757

CLIENT: Navajo Nation EPA  
Work Order: 10050139  
Lab ID: 10050139-01  
Project Name: McElmo Ck 305(b)  
Project Number:

Client Sample ID: 04-01\_100506  
Collection Date: 5/6/2010 10:20:00 AM  
Matrix: Water

Analyte	Result	PQL	Qual	Units	DF	Date Prepared	Date Analyzed	Analyst	Batch ID
<i>TEST METHOD: SM2320B PREP METHOD: NONE Test Performed By: AZ0757</i>									
Alkalinity, Bicarbonate, Dissolved	210	20		mg/L CaC	1.0	N/A	5/17/10	RLH	ALK_WD 5/17/2010
Alkalinity, Carbonate, Dissolved	<20	20		mg/L CaC	1.0	N/A	5/17/10	RLH	ALK_WD 5/17/2010
Alkalinity, Hydroxide, Dissolved	<20	20		mg/L CaC	1.0	N/A	5/17/10	RLH	ALK_WD 5/17/2010
Alkalinity, Sum, Dissolved	210	20		mg/L CaC	1.0	N/A	5/17/10	RLH	ALK_WD 5/17/2010
<i>TEST METHOD: 10-204-00-1-X PREP METHOD: 10-204-00-1-X Test Performed By: AZ0757</i>									
Cyanide, Total	<0.0050	0.0050		mg/L	1.0	5/13/10	5/14/10 16:28	RH	6031
<i>TEST METHOD: EPA300.0 PREP METHOD: NONE Test Performed By: AZ0757</i>									
Fluoride	<0.50	0.50		mg/L	1.0	N/A	5/28/10 3:59	TL	IC-5/27/2010A
<i>TEST METHOD: EPA300.0 PREP METHOD: NONE Test Performed By: AZ0757</i>									
Chloride, Dissolved	39	2.5		mg/L	1.0	N/A	5/31/10 12:43	TL	IC-5/31/2010
Sulfate, Dissolved	650	150	D2	mg/L	50	N/A	5/31/10 12:59	TL	IC-5/31/2010
<i>TEST METHOD: EPA350.1 PREP METHOD: NONE Test Performed By: AZ0757</i>									
Nitrogen, Ammonia (As N)	0.023	0.10	E4	mg/L	1.0	5/14/10 9:43	5/14/10 12:35	TK	6028
<i>TEST METHOD: EPA351.2 PREP METHOD: METHOD Test Performed By: AZ0757</i>									
Nitrogen, Kjeldahl, Total	0.55	0.20		mg/L	1.0	5/10/10 10:14	5/11/10 10:37	TK	5985
<i>TEST METHOD: SM2540D PREP METHOD: NONE Test Performed By: AZ0757</i>									
Total Suspended Solids	15	2		mg/L	1.0	N/A	5/13/10	DPM	TSS_W_5/13/2010
<i>TEST METHOD: EPA200.7 PREP METHOD: EPA200.7 Test Performed By: AZ0757</i>									
Aluminum	0.15	0.10		mg/L	1.0	5/19/10 3:00	5/21/10 15:43	MDD	6057
Barium	0.046	0.010		mg/L	1.0	5/19/10 3:00	5/21/10 15:43	MDD	6057
Beryllium	<0.00020	0.0020	E8	mg/L	1.0	5/19/10 3:00	5/21/10 15:43	MDD	6057
Boron	0.15	0.10		mg/L	1.0	5/19/10 3:00	5/21/10 15:43	MDD	6057
Cadmium	<0.00020	0.0030	E8	mg/L	1.0	5/19/10 3:00	5/21/10 15:43	MDD	6057
Lead	<0.0020	0.010	E8	mg/L	1.0	5/19/10 3:00	5/21/10 15:43	MDD	6057
Nickel	0.0012	0.010	E4	mg/L	1.0	5/19/10 3:00	5/21/10 15:43	MDD	6057
Silver	<0.00080	0.0050	E8	mg/L	1.0	5/19/10 3:00	5/21/10 15:43	MDD	6057
Zinc	0.0025	0.050	E4	mg/L	1.0	5/19/10 3:00	5/21/10 15:43	MDD	6057
<i>TEST METHOD: EPA200.7 PREP METHOD: EPA200.7-Diss Test Performed By: AZ0757</i>									
Aluminum, Dissolved	<0.030	0.10	E8	mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982



Trans West Analytical Services  
Formerly Columbia Analytical Services

License No. AZ0757/AZM757

CLIENT: Navajo Nation EPA  
Work Order: 10050139  
Lab ID: 10050139-01  
Project Name: McElmo Ck 305(b)  
Project Number:

Client Sample ID: 04-01\_100506  
Collection Date: 5/6/2010 10:20:00 AM  
Matrix: Water

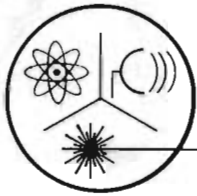
Analyte	Result	PQL	Qual	Units	DF	Date Prepared	Date Analyzed	Analyst	Batch ID
<b>Boron, Dissolved</b>	<b>0.15</b>	0.10		mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982
Cadmium, Dissolved	<0.00020	0.0030	E8	mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982
<b>Calcium, Dissolved</b>	<b>220</b>	1.0		mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982
Cobalt, Dissolved	<0.00050	0.010	E8	mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982
Lead, Dissolved	<0.0020	0.010	E8	mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982
<b>Magnesium, Dissolved</b>	<b>150</b>	1.0		mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982
<b>Molybdenum, Dissolved</b>	<b>0.0037</b>	0.010	E4	mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982
<b>Nickel, Dissolved</b>	<b>0.0011</b>	0.010	E4	mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982
<b>Potassium, Dissolved</b>	<b>5.5</b>	2.0		mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982
Silver, Dissolved	<0.00080	0.0050	E8	mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982
<b>Sodium, Dissolved</b>	<b>170</b>	2.0		mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982
Vanadium, Dissolved	<0.0040	0.010	E8	mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982
Zinc, Dissolved	<0.0020	0.050	E8	mg/L	1.0	5/10/10 13:00	5/11/10 15:56	MDD	5982

TEST METHOD: EPA200.8 PREP METHOD: E200.8 Test Performed By: AZ0757

Antimony	<0.0002	0.0020	E8	mg/L	1.0	5/19/10 3:00	5/20/10 19:28	BJK	6058
Arsenic	<0.0006	0.0030	E8	mg/L	1.0	5/19/10 3:00	5/20/10 19:28	BJK	6058
<b>Chromium</b>	<b>0.0027</b>	0.0050	E4	mg/L	1.0	5/19/10 3:00	5/20/10 19:28	BJK	6058
<b>Copper</b>	<b>0.0022</b>	0.0020		mg/L	1.0	5/19/10 3:00	5/20/10 19:28	BJK	6058
<b>Selenium</b>	<b>0.0010</b>	0.0020	E4	mg/L	1.0	5/19/10 3:00	5/20/10 19:28	BJK	6058
<b>Thallium</b>	<b>0.0009</b>	0.0005		mg/L	1.0	5/19/10 3:00	5/20/10 19:28	BJK	6058
<b>Uranium</b>	<b>0.0069</b>	0.0005		mg/L	1.0	5/19/10 3:00	5/20/10 19:28	BJK	6058

TEST METHOD: EPA200.8 PREP METHOD: EPA200.8-Dissolved Test Performed By: AZ0757

Antimony, Dissolved	<0.0002	0.0020	E8	mg/L	1.0	5/10/10 13:00	5/11/10 17:52	BJK	5983
Arsenic, Dissolved	<0.0006	0.0030	E8	mg/L	1.0	5/10/10 13:00	5/11/10 17:52	BJK	5983
Chromium, Dissolved	<0.0004	0.0050	E8	mg/L	1.0	5/10/10 13:00	5/11/10 17:52	BJK	5983
<b>Copper, Dissolved</b>	<b>0.0011</b>	0.0020	E4	mg/L	1.0	5/10/10 13:00	5/17/10 14:46	BJK	5983
Thallium, Dissolved	<0.0001	0.0005	E8	mg/L	1.0	5/10/10 13:00	5/11/10 17:52	BJK	5983



# Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121  
Website: [www.radsafe.com](http://www.radsafe.com)

(480) 897-9459  
FAX (480) 892-5446

## Radiochemical Activity in Water (pCi/L)

Xenco (Trans West Analytical Services)  
3725 E. Atlanta Avenue, Suite 2  
Phoenix, AZ 85040

Sampling Date: May 06, 2010  
Sample Received: May 07, 2010  
Analysis Completed: May 18, 2010

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Radium 226 Activity Method 903.1 (pCi/L)	Radium 228 Activity Method 904 (pCi/L)	Total Radium (pCi/L)
04-01_100506	6.0 ± 1.9	<1.5	<0.8	<1.5

Date of Analysis	5/12/2010	5/13/2010	5/13/2010	5/13/2010
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Robert L. Metzger, Ph.D., C.H.P.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Xenco Laboratories  
Project: McElmo Ck 305 (b)/10050139  
Sample Matrix: Water

Service Request: K1004753  
Date Collected: 05/06/10  
Date Received: 05/12/10

Mercury, Total

Prep Method: METHOD  
Analysis Method: 1631E  
Test Notes:

Units: ng/L  
Basis: NA

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
04-01_100506	K1004753-001	1.0	1	05/25/10	06/02/10	1.2	
Method Blank 1	K1004753-MB1	1.0	1	05/25/10	06/02/10	ND	
Method Blank 2	K1004753-MB2	1.0	1	05/25/10	06/02/10	ND	
Method Blank 3	K1004753-MB3	1.0	1	05/25/10	06/02/10	ND	

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Xenco Laboratories  
**Project:** McElmo Ck 305 (b)/10050139  
**Sample Matrix:** Water  
**Sample Name:** 04-01\_100506  
**Lab Code:** K1004753-001

**Service Request:** K1004753  
**Date Collected:** 5/6/10 1020  
**Date Received:** 5/12/10

**Units:** ng/L  
**Basis:** NA

**Steroids and Endocrine Disrupting Compounds**

**Analytical Method:** 1694M  
**Prep Method:** EPA 3535A

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot
Androstenedione	ND	U	100	1	5/21/10	6/21/10 17:37	111861	201216
Atrazine	ND	U	10	1	5/21/10	6/21/10 17:37	111861	201216
Bisphenol A	ND	U	100	1	5/21/10	6/21/10 19:50	111861	201216
Caffeine	ND	U	50	1	5/21/10	6/21/10 17:37	111861	201216
Carbamazepine	ND	U	10	1	5/21/10	6/21/10 17:37	111861	201216
DEET	ND	U	50	1	5/21/10	6/21/10 17:37	111861	201216
Diazepam	ND	U	10	1	5/21/10	6/21/10 17:37	111861	201216
Diethylstilbestrol	ND	U	20	1	5/21/10	6/21/10 19:50	111861	201216
Estradiol	ND	U	20	1	5/21/10	6/21/10 19:50	111861	201216
Estriol	ND	U	20	1	5/21/10	6/21/10 19:50	111861	201216
Estrone	ND	U	50	1	5/21/10	6/21/10 19:50	111861	201216
Ethinyl Estradiol	ND	U	20	1	5/21/10	6/21/10 19:50	111861	201216
Fluoxetine	ND	U	10	1	5/21/10	7/7/10 19:08	111861	201216
Hydrocodone	29000		2000	10	5/21/10	7/8/10 14:21	111861	201216
Meprobamate	ND	U	50	1	5/21/10	6/21/10 17:37	111861	201216
Oxybenzone	ND	U	20	1	5/21/10	6/21/10 17:37	111861	201216
Progesterone	ND	U	100	1	5/21/10	6/21/10 17:37	111861	201216
Sulfamethoxazole	28		10	1	5/21/10	6/21/10 17:37	111861	201216
Testosterone	ND	U	100	1	5/21/10	6/21/10 17:37	111861	201216
Trimethoprim	ND	U	50	1	5/21/10	6/21/10 19:50	111861	201216
alpha-Estradiol	ND	U	10	1	5/21/10	6/21/10 19:50	111861	201216
Pentoxifylline	ND	U	10	1	5/21/10	6/21/10 17:37	111861	201216
Methadone	110		50	1	5/21/10	6/21/10 17:37	111861	201216
Acetaminophen	5200		50	1	5/21/10	6/21/10 17:37	111861	201216

# Analytical Report 387297

for

**Navajo Nation EPA**

**Project Manager: Steve Austin**

**McElmo Creek 305(b)**

**01-DEC-10**



Trans West Analytical Services, LLC

**Celebrating 20 Years of commitment to excellence in Environmental Testing Services**

**3725 E. Atlanta Ave, Phoenix, AZ 85040**

**Ph: (602) 437-0330**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370)

Xenco-Boca Raton (EPA Lab Code: FL01273):

Florida(E86240),South Carolina(96031001), Louisiana(04154), Georgia(917)  
North Carolina(444), Texas(T104704468-TX), Illinois(002295), Florida(E86349)

Xenco Phoenix (EPA Lab Code: AZ00901):

Arizona(AZ0757), California(06244CA), Texas(104704435-10-2), Nevada(NAC-445A), DoD(65816)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)



01-DEC-10

Project Manager: **Steve Austin**  
**Navajo Nation EPA**  
P.O. Box 1999  
Shiprock, NM 87420

Reference: XENCO Report No: **387297**  
**McElmo Creek 305(b)**  
Project Address:

**Steve Austin:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 387297. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 387297 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

---

**Tom Helton**

Project Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

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## CASE NARRATIVE

*Client Name: Navajo Nation EPA*

*Project Name: McElmo Creek 305(b)*

*Project ID:  
Work Order Number: 387297*

*Report Date: 01-DEC-10  
Date Received: 08/27/2010*

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**Sample receipt non conformances and Comments:**

*The Samples were contained within this report were subcontracted for the following analysis: Radiochemistry and Mercury by EPA 1631. The subcontractor reports have been appended in their entirety.*

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

*Batch: LBA-820750 Nitrite by SM 4500-NO2B*

*Batch: LBA-821810 Alkalinity, Dissolved, by SM 2320B*

*Batch: LBA-822288 Anions, Dissolved, by EPA 300.0  
Chloride recovered below QC limits in the Matrix Spike.  
Samples affected are: 387297-001.  
The Laboratory Control Sample for Chloride is within laboratory Control Limits*

*Batch: LBA-822299 Anions by EPA 300.0*

*Batch: LBA-822657 Cyanide By Quikchem 10-204-00-1-X  
Cyanide, Total recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate.  
Samples affected are: 387297-001.  
The Laboratory Control Sample for Cyanide, Total is within laboratory Control Limits*

*Batch: LBA-823379 Nitrogen, Ammonia by EPA 350.1  
Nitrogen, Ammonia (as N) recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate.  
Samples affected are: 387297-001.  
The Laboratory Control Sample for Nitrogen, Ammonia (as N) is within laboratory Control Limits*

*Batch: LBA-823393 Nitrogen, Kjeldahl, Total by EPA 351.2  
Nitrogen, Total Kjeldahl recovered below QC limits in Matrix Spike  
Samples affected are: 387297-001.  
The Laboratory Control Sample for Nitrogen, Total Kjeldahl is within laboratory Control Limits*





## CASE NARRATIVE

*Client Name: Navajo Nation EPA  
Project Name: McElmo Creek 305(b)*

*Project ID:  
Work Order Number: 387297*

*Report Date: 01-DEC-10  
Date Received: 08/27/2010*

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*Batch: LBA-823669 Nitrogen, Nitrate by EPA 353.2*

*Batch: LBA-823709 Metals, Dissolved, by EPA 200.8*

*Batch: LBA-824426 Metals, Total, by EPA 200.8*

*Batch: LBA-824506 Metals, Dissolved, by EPA 200.7*

*Batch: LBA-824624 Metals, Total, by EPA 200.7  
Aluminum recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate.  
Samples affected are: 387297-001.  
The Laboratory Control Sample for Aluminum is within laboratory Control Limits*

*Ba Failed in 573742-1-BLK (9/24/2010 13:11:12)  
Mn Failed in the ICSAB (9/24/2010 12:42:27)*

*BA, Mn reported from 387297-001 (9/30/2010 11:13:43)  
BA, Mn reported from 387297-001 S (9/30/2010 11:19:01)  
BA, Mn reported from 387297-001 SD (9/30/2010 11:24:06)*

### Arizona Flags

All method blanks, laboratory spikes, and/or matrix spikes met quality control objectives for the parameters associated with this Work Order except as detailed below or on the Data Qualifier page of this report. Data Qualifiers used in this report are in accordance with ADEQ Arizona Data Qualifiers, Revision 3.0 9/20/2007. Data qualifiers (flags) contained within this analytical report have been issued to explain a quality control deficiency, and do not affect the quality (validity) of the data unless noted otherwise in the case narrative.

- B4 Target analyte detected in blank at or above method acceptance criteria.
- D2 Sample required dilution due to high concentration of target analyte.
- E4 Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL).
- E8 Analyte reported to MDL per project specification. Target analyte was not detected in sample.
- M1 Matrix spike recovery was high; the associated blank spike recovery was acceptable.
- M2 Matrix spike recovery was low; the associated blank spike recovery was acceptable.
- M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The associated blank spike recovery was acceptable.



# Certificate of Analytical Results 387297

**Navajo Nation EPA, Shiprock, NM**  
McElmo Creek 305(b)

Sample Id: <b>04-01_100826</b>	Matrix: <b>Water</b>	% Moisture:
Lab Sample Id: <b>387297-001</b>	Date Collected: <b>Aug-26-10 11:00</b>	
	Date Received: <b>Aug-27-10 10:25</b>	

**Analytical Method: Alkalinity, Dissolved, by SM 2320B**

Analyst: RLH Tech: RLH  
Seq Number: 821810

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	ALKCACO3	<1.53	20.0	1.53	mg/L	09/06/10 00:00	E8	1
Alkalinity, Carbonate (as CaCO3)	ALKCARB	<1.53	20.0	1.53	mg/L	09/06/10 00:00	E8	1
Alkalinity, hydroxide (as CaCO3)		<1.53	20.0	1.53	mg/L	09/06/10 00:00	E8	1
Alkalinity, Sum, Dissolved (as CaCO3)		<1.53	20.0	1.53	mg/L	09/06/10 00:00	E8	1

**Analytical Method: Anions by EPA 300.0** Prep Method: E300P

Analyst: TNL Date Prep: Sep-08-10 16:40  
Seq Number: 822299 Tech: TNL

**Dilution Analysis:**  
Seq#: 822288 Date Analyzed: 09/07/10 21:42

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Fluoride	16984-48-8	<0.036	0.500	0.036	mg/L	09/08/10 16:40		1

**Analytical Method: Anions, Dissolved, by EPA 300.0** Prep Method: E300P

Analyst: TNL Date Prep: Sep-07-10 21:24  
Seq Number: 822288 Tech: TNL

**Dilution Analysis:**  
Seq#: 822288 Date Analyzed: 09/07/10 21:42

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	16.8	2.50	0.700	mg/L	09/07/10 21:24		1
Sulfate	14808-79-8	512	30.0	3.00	mg/L	09/07/10 21:42	D2M2	10

**Analytical Method: Cyanide By Quikchem 10-204-00-1-X** Prep Method: QUIKCHEM102C

Analyst: REH Date Prep: Sep-01-10 13:00  
Seq Number: 822657 Tech: REH

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Cyanide, Total	57-12-5	<0.0030	0.0050	0.0030	mg/L	09/02/10 11:45	E8M2	1



# Certificate of Analytical Results 387297

## Navajo Nation EPA, Shiprock, NM McElmo Creek 305(b)

Sample Id: <b>04-01_100826</b>	Matrix: <b>Water</b>	% Moisture:
Lab Sample Id: <b>387297-001</b>	Date Collected: <b>Aug-26-10 11:00</b>	
	Date Received: <b>Aug-27-10 10:25</b>	

<b>Analytical Method: Nitrite by SM 4500-NO2B</b>		
Analyst: HHH	Tech: HHH	
Seq Number: 820750		

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Nitrite as N	7727-37-9	<0.0020	0.020	0.0020	mg/L	08/27/10 13:00		1

<b>Analytical Method: Nitrogen, Ammonia by EPA 350.1</b>			Prep Method: E350.1P			
Analyst: KMD		Date Prep: Sep-13-10 14:11		Tech: KMD		
Seq Number: 823379						

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Nitrogen, Ammonia (as N)	7664-41-7	<0.020	0.100	0.020	mg/L	09/13/10 19:48	E8M2	1

<b>Analytical Method: Nitrogen, Kjeldahl, Total by EPA 351.2</b>			Prep Method: E351.2P			
Analyst: KMD		Date Prep: Sep-14-10 09:53		Tech: KMD		
Seq Number: 823393						

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Nitrogen, Total Kjeldahl	7727-37-9	1.20	0.200	0.060	mg/L	09/15/10 16:23	M2	1

<b>Analytical Method: Nitrogen, Nitrate by EPA 353.2</b>			Prep Method: E353.2P			
Analyst: TNL		Date Prep: Sep-17-10 15:15		Tech: TNL		
Seq Number: 823669						

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Nitrogen, Nitrate-Nitrite	7727-37-9	0.298	0.100	0.020	mg/L	09/17/10 15:15		1

<b>Analytical Method: Total Suspended Solids by SM 2540D</b>			
Analyst: HHH		Tech: HHH	
Seq Number: 821175			

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Total Suspended Solids	C-009	368	10.0	10.0	mg/L	08/30/10 14:25		1



# Certificate of Analytical Results 387297

## Navajo Nation EPA, Shiprock, NM McElmo Creek 305(b)

Sample Id: <b>04-01_100826</b>	Matrix: <b>Water</b>	% Moisture:
Lab Sample Id: <b>387297-001</b>	Date Collected: <b>Aug-26-10 11:00</b>	
	Date Received: <b>Aug-27-10 10:25</b>	

Analytical Method: <b>Metals, Total, by EPA 200.7</b>	Prep Method: E200.7P
Analyst: MDD	Date Prep: Sep-20-10 09:00
Seq Number: 824624	Tech: SGO

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Aluminum	7429-90-5	7.5230	0.10000	0.03000	mg/L	09/24/10 13:52	M1B4	1
Barium	7440-39-3	0.22280	0.01000	0.00070	mg/L	09/24/10 13:52	B4	1
Beryllium	7440-41-7	0.00040	0.00200	0.00020	mg/L	09/24/10 13:52	E4	1
Boron	7440-42-8	0.12360	0.10000	0.02000	mg/L	09/24/10 13:52		1
Cadmium	7440-43-9	0.00030	0.00300	0.00020	mg/L	09/24/10 13:52	E4	1
Lead	7439-92-1	0.00770	0.01000	0.00200	mg/L	09/24/10 13:52	E4	1
Nickel	7440-02-0	0.00910	0.01000	0.00070	mg/L	09/24/10 13:52	E4	1
Silver	7440-22-4	<0.00080	0.00500	0.00080	mg/L	09/24/10 13:52	E8	1
Zinc	7440-66-6	0.05010	0.05000	0.00200	mg/L	09/24/10 13:52		1

Analytical Method: <b>Metals, Dissolved, by EPA 200.7</b>	Prep Method: E200.7P
Analyst: MDD	Date Prep: Sep-14-10 08:30
Seq Number: 824506	Tech: SGO

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Aluminum	7429-90-5	0.03280	0.10000	0.03000	mg/L	09/14/10 18:58	E4	1
Boron	7440-42-8	0.09730	0.10000	0.02000	mg/L	09/14/10 18:58	E4	1
Cadmium	7440-43-9	<0.00020	0.00300	0.00020	mg/L	09/14/10 18:58	E8	1
Calcium	7440-70-2	152.10	1.0000	0.02000	mg/L	09/14/10 18:58		1
Cobalt	7440-48-4	0.00550	0.01000	0.00050	mg/L	09/14/10 18:58	E4	1
Lead	7439-92-1	<0.00200	0.01000	0.00200	mg/L	09/14/10 18:58	E8	1
Magnesium	7439-95-4	67.210	1.0000	0.04000	mg/L	09/14/10 18:58		1
Molybdenum	7439-98-7	0.00220	0.01000	0.00060	mg/L	09/14/10 18:58	E4	1
Nickel	7440-02-0	0.00190	0.01000	0.00070	mg/L	09/14/10 18:58	E4	1
Potassium	7440-09-7	4.3780	2.0000	0.30000	mg/L	09/14/10 18:58		1
Silver	7440-22-4	<0.00080	0.00500	0.00080	mg/L	09/14/10 18:58	E8	1
Sodium	7440-23-5	62.130	2.0000	0.05000	mg/L	09/14/10 18:58		1
Vanadium	7440-62-2	0.00580	0.01000	0.00400	mg/L	09/14/10 18:58	E4	1
Zinc	7440-66-6	0.01590	0.05000	0.00200	mg/L	09/14/10 18:58	E4	1



# Certificate of Analytical Results 387297

## Navajo Nation EPA, Shiprock, NM McElmo Creek 305(b)

Sample Id: <b>04-01_100826</b>	Matrix: <b>Water</b>	% Moisture:
Lab Sample Id: <b>387297-001</b>	Date Collected: <b>Aug-26-10 11:00</b>	
	Date Received: <b>Aug-27-10 10:25</b>	

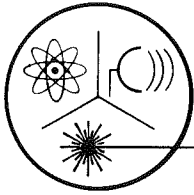
Analytical Method: <b>Metals, Total, by EPA 200.8</b>	Prep Method: E200.8P
Analyst: BJK	Date Prep: Sep-22-10 09:30
Seq Number: 824426	Tech: SGO

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Antimony	7440-36-0	0.00031	0.00200	0.00020	mg/L	09/22/10 19:06	E4	1
Arsenic	7440-38-2	0.00433	0.00300	0.00060	mg/L	09/22/10 19:06		1
Chromium	7440-47-3	0.00512	0.00500	0.00040	mg/L	09/22/10 19:06		1
Copper	7440-50-8	0.00905	0.00200	0.00020	mg/L	09/22/10 19:06		1
Selenium	7782-49-2	<0.00020	0.00200	0.00020	mg/L	09/22/10 19:06	E8	1
Thallium	7440-28-0	0.00021	0.00050	0.00007	mg/L	09/22/10 19:06	E4	1
Uranium	7440-61-1	0.00346	0.00050	0.00002	mg/L	09/22/10 19:06		1

Analytical Method: <b>Metals, Dissolved, by EPA 200.8</b>	Prep Method: E200.8P
Analyst: BJK	Date Prep: Sep-14-10 07:30
Seq Number: 823709	Tech: SGO

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Antimony	7440-36-0	<0.00020	0.00200	0.00020	mg/L	09/17/10 14:09	E8	1
Arsenic	7440-38-2	<0.00060	0.00300	0.00060	mg/L	09/17/10 14:09	E8	1
Chromium	7440-47-3	<0.00040	0.00500	0.00040	mg/L	09/17/10 14:09	E8	1
Cobalt	7440-48-4	0.0051	0.0005	0.00002	mg/L	09/17/10 14:09		1
Copper	7440-50-8	<0.00020	0.00200	0.00020	mg/L	09/17/10 14:09	E8	1
Thallium	7440-28-0	<0.00007	0.00050	0.00007	mg/L	09/17/10 14:09	E8	1





## Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121  
Website: [www.radsafe.com](http://www.radsafe.com)

(480) 897-9459  
FAX (480) 892-5446

### Radiochemical Activity in Water (pCi/L)

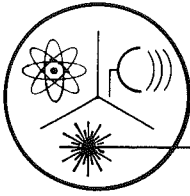
Xenco Laboratories  
3725 E. Atlanta Avenue  
Phoenix, AZ 85040

Sampling Date: August 26, 2010  
Sample Received: August 27, 2010  
Analysis Completed: September 21, 2010

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method 00-07 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Radium 226 Activity Method 903.1 (pCi/L)	Radium 228 Activity Method 904 (pCi/L)	Total Radium (pCi/L)
04_01-100826	17.0 ± 5.0	14.1 ± 0.9	2.9 ± 5.1	<0.3	<0.5	<0.5
Date of Analysis	8/31/2010	9/14/2010	9/14/2010	9/2/2010	9/2/2010	9/2/2010

Robert L. Metzger, Ph.D., C.H.P.





# Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121  
Website: www.radsafe.com

(480) 897-9459  
FAX (480) 892-5446

## Isotopic Uranium Analysis

Xenco Laboratories  
3725 E. Atlanta Avenue  
Phoenix, AZ 85040

Sampling Date: August 26, 2010

Sample Received: August 27, 2010

Uranium Analysis Date: September 14, 2010

Sample No.	$^{238}\text{U}$	$^{235}\text{U}$	$^{234}\text{U}$	Total	
04_01-100826	$6.4 \pm 0.6$	$0.297 \pm 0.004$	$7.5 \pm 0.7$	$14.1 \pm 0.9$	Activity (pCi/L)
	$19.0 \pm 1.8$	$0.139 \pm 0.002$	$0.00120 \pm 0.00011$	$19.1 \pm 1.8$	Content (ug/L)
	Comments:				

Robert L. Metzger, Ph.D., C.H.P.

Arizona Department of Environmental Quality  
**Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report**  
 \*\*\*Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only\*\*\*

PWS ID#: AZ04 \_\_\_\_\_ PWS Name: \_\_\_\_\_

August 26, 2010 11:00 (24 hour clock) \_\_\_\_\_  
 Sample Date Sample Time Owner/Contact Person

Owner/Contact Fax Number \_\_\_\_\_ Owner/Contact Phone Number \_\_\_\_\_

Sample Collection Point  
 EPDS # \_\_\_\_\_

**Compliance Sample Type:**

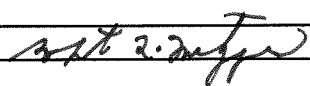
- |  |                          |
|--|--------------------------|
| <input type="checkbox"/> Reduced Monitoring                  | Date Q1 collected: _____ |
| <input type="checkbox"/> Quarterly                           | Date Q2 collected: _____ |
| <input type="checkbox"/> Composite of four quarterly samples | Date Q3 collected: _____ |
|  | Date Q4 collected: _____ |

**\*\*\*RADIOCHEMICAL ANALYSIS\*\*\***  
 >>>To be filled out by laboratory personnel<<<

**\*\*\*Combined Uranium must be reported in micrograms per liter\*\*\***

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
	15 pCi/L		Adjusted Gross Alpha	4000	9/14/2010	2.9 ± 5.1	
600/00-02		3 pCi/L	Gross Alpha	4002	8/31/2010	17.0 ± 5.0	
7500 - Rn			Radon	4004			
00-07	30 µg/L	1 µg/L	Combined Uranium	4006	9/14/2010	19.1 ± 1.8 µg/L	
			Uranium 234	4007	9/14/2010	0.00120 ± 0.00011	
			Uranium 235	4008	9/14/2010	0.139 ± 0.002	
			Uranium 238	4009	9/14/2010	19.0 ± 1.8	
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	9/2/2010	<0.5	
903.1		1 pCi/L	Radium 226	4020	9/2/2010	<0.3	
904		1 pCi/L	Radium 228	4030	9/2/2010	<0.5	

**\*\*\*LABORATORY INFORMATION\*\*\***  
 >>>To be filled out by laboratory personnel<<<

Specimen Number: RSE39779  
 Lab ID Number: AZ0462  
 Lab Name: Radiation Safety Engineering, Inc.  
 Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459  
 Comments: 04\_01-100826  
 Authorized Signature:   
 Date Public Water System Notified: \_\_\_\_\_

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client:** Xenco Laboratories  
**Project:** 04-01-100826/McElmo Creek 305 (b)/387297  
**Sample Matrix:** Water

**Service Request:** K1009334  
**Date Collected:** 08/26/10  
**Date Received:** 08/31/10

Mercury, Total

Prep Method: METHOD  
Analysis Method: 1631E  
Test Notes:

Units: ng/L  
Basis: NA

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
04-01-100826	K1009334-001	1.0	1	09/07/10	09/14/10	9.8	
Method Blank1	K1009334-MB1	1.0	1	09/07/10	09/14/10	ND	
Method Blank2	K1009334-MB2	1.0	1	09/07/10	09/14/10	ND	
Method Blank3	K1009334-MB3	1.0	1	09/07/10	09/14/10	ND	

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Xenco Laboratories  
**Project:** 04-01-100826/McElmo Creek 305 (b)/387297  
**Sample Matrix:** Water  
**Sample Name:** 04-01-100826  
**Lab Code:** K1009334-001

**Service Request:** K1009334  
**Date Collected:** 8/26/10 1100  
**Date Received:** 8/31/10  
**Units:** ng/L  
**Basis:** NA

**Steroids and Endocrine Disrupting Compounds**

**Analytical Method:** 1694M  
**Prep Method:** Method

**Analysis Lot:** 220867  
**Extraction Lot:** 118625

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Androstenedione	ND	U	100	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Atrazine	ND	U	10	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Bisphenol A	ND	U	100	10	9/ 2/10	10/10/10 10:22	118625	220867	*
Caffeine	ND	U	50	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Carbamazepine	ND	U	10	10	9/ 2/10	10/10/10 22:44	118625	220867	*
DEET	ND	U	50	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Diazepam	ND	U	10	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Diethylstilbestrol	ND	U	20	10	9/ 2/10	10/10/10 10:22	118625	220867	*
Estradiol	ND	U	50	10	9/ 2/10	10/10/10 10:22	118625	220867	*
Estriol	ND	U	20	10	9/ 2/10	10/10/10 10:22	118625	220867	*
Estrone	ND	U	100	10	9/ 2/10	10/10/10 10:22	118625	220867	*
Ethinyl Estradiol	ND	U	20	10	9/ 2/10	10/10/10 10:22	118625	220867	*
Fluoxetine	ND	U	20	10	9/ 2/10	10/11/10 11:17	118625	220867	*
Hydrocodone	ND	U	200	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Iopromide	ND	U	100	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Meprobamate	ND	U	50	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Oxybenzone	ND	U	20	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Progesterone	ND	U	100	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Sulfamethoxazole	<b>21</b>		10	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Testosterone	ND	U	100	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Trimethoprim	ND	U	50	10	9/ 2/10	10/10/10 10:22	118625	220867	*
alpha-Estradiol	ND	U	20	10	9/ 2/10	10/10/10 10:22	118625	220867	*
Pentoxifylline	ND	U	10	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Methadone	<b>230</b>		50	10	9/ 2/10	10/10/10 22:44	118625	220867	*
Acetaminophen	<b>400</b>		100	10	9/ 2/10	10/10/10 22:44	118625	220867	*