

Appendix B: Laboratory QA/QC Results and Discussion

QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance and quality control (QA/QC) measures are built into the CCWTMP to assure that collected data are credible. Two types of quality controls were conducted. Field quality controls (to test for field contamination and precision) were conducted by the field crews and include: equipment blanks, field blanks, and field duplicates and laboratory quality controls (to test for laboratory contamination and precision) were conducted by the labs and include: method blanks, blank spikes, blank spike duplicates, lab duplicates, matrix spikes, matrix spike duplicates, laboratory control samples, and surrogates (organics only). Equipment blanks only apply to the shovels used in sediment sample collection. All field protocols for the collection of clean samples were followed according to the QAPP. The following section lists the quality control failures that occurred during the 2011-2012 monitoring year and any associated qualifiers and comments.

Blank Contamination

Overall there was very little blank contamination detected during this fourth year of monitoring. A large majority of the field blank hits were found in the metals, the rest were split between the nutrients and pesticides. Of the equipment blanks, there was one hit for TOC and the rest were all metals. The lab blank hits were in the metals and pesticides. Details of all the blank hits are reported in Table 1. The following lists a basic summary of the blank contamination results:

- Field Blanks – 1897 analyzed – 81 detections above the RL (4.3%) (does not include surrogates)
- Equipment Blanks – 291 analyzed – 15 detections above RL (5.2%) (does not include lab dups or surrogates)
- Laboratory Blanks – 5799 analyzed – 5 detections above RL (0.09%) (does not include surrogates)

Precision

The purpose of analyzing duplicates is to demonstrate precision of sample collection, preparation, and analytical methods. The relative percent difference (RPD) is reported for field duplicates, lab duplicates, blank spike duplicates, laboratory control spike (LCS) duplicates, and matrix spike duplicates. QA failures for precision are noted when the RPD between a sample and its duplicate are greater than the acceptance value. The following list summarizes the precision analysis results:

- Field Duplicates – 3418 analyzed – 97 failed RPD (2.8%) (does not include surrogates)
- Laboratory Duplicates – 1584 analyzed – 55 failed RPD (3.5%) (includes surrogates)
- Blank Spike/LCS Duplicates – 4818 analyzed – 29 failed RPD (0.6%) (includes surrogates)
- Matrix Spike Duplicates – 866 analyzed – 18 failed RPD (2.1%) (includes surrogates)

Accuracy

Percent recoveries of blank spike samples (BS), laboratory control spike samples (LCS), and matrix spike samples (MS) check the accuracy of lab reported sample concentrations. For the BS and LCS, all of the percent recoveries that fell outside the acceptable range occurred with the pesticides, with almost half occurring in the August sediment event. For the rest of the failed

BS, they were scattered across the full year. For the matrix spike samples that fell outside the acceptable range, almost half of them were from the first event of the year in our sediment, tissue, and water samples. About half the samples that fell outside the range were from metals the remaining ones are from nutrients and pesticides. Table 3 summarizes the QA/QC sample results for accuracy that did not meet percent recovery objectives. The following lists the results of the accuracy analysis results:

- Blank Spike/LCS Samples – 9383 Analyzed – 34 fell outside the range (0.4%) (does not include surrogates)
- Matrix Spike Samples – 1696 Analyzed – 54 fell outside the range (3.2%) (does not include surrogates)

Table 1. Blank Contamination Observed

Constituent	Matrix	Event	Lab Batch	Field Blank	Method Blank	Equipment Blank	Program Qualifier	Comments
General Water Quality								
Dissolved Organic Carbon (mg/L)	Water	28	_1082412_W_DOC	1.7			U	Associated environmental samples less than 10 times the blank concentration are qualified
Dissolved Organic Carbon (mg/L)	Water	29	_1112107_W_DOC	0.7			U	Associated environmental samples less than 10 times the blank concentration are qualified
Dissolved Organic Carbon (mg/L)	Water	33	_2050718_W_DOC	0.74			U	Associated environmental samples less than 10 times the blank concentration are qualified
Total Organic Carbon (mg/L)	Water	28	_1081914_W_TOC			5.2		
Nutrients								
Nitrate as N (mg/L)	Water	32	Physis C-6007 W	0.05				
Total Kjeldahl Nitrogen (mg/L)	Water	28	OCA_IR0809111_T_TKN	0.29			U	Associated environmental samples less than 10 times the blank concentration are qualified
Total Kjeldahl Nitrogen (mg/L)	Water	28	OCA_IR0809111_T_TKN	0.6			U	Associated environmental samples less than 10 times the blank concentration are qualified
OC Pesticieds								
DDE(p,p') (ug/L)	Water	33	Physis O-3049 W	0.011 5			U	Associated environmental samples less than 10 times the blank concentration are qualified

Constituent	Matrix	Event	Lab Batch	Field Blank	Method Blank	Equipment Blank	Program Qualifier	Comments
DDE(p,p') (ug/L)	Water	33	Physis O-3049 W	0.012 9			U	Associated environmental samples less than 10 times the blank concentration are qualified
DDT(p,p') (ug/L)	Water	31	Physis O-2136 W	0.013 7			U	Associated environmental samples less than 10 times the blank concentration are qualified
PCBs								
None								
OP Pesticides								
Malathion (ug/L)	Water	33	Physis O-3049 W	0.009 9			U	Associated environmental samples less than 10 times the blank concentration are qualified
Pyrethroid Pesticides								
Bifenthrin (ug/L)	Water	28	W1H0671		0.00315			
Danitol (ug/L)	Water	32	Physis O-3005 W	0.002 4			U,FD RPD	Associated environmental samples less than 10 times the blank concentration are qualified. Detected environmental samples were qualified due to field duplicate RPD not met.
Metals & Selenium								
Total Aluminum (ug/L)	Water	28	Physis E-2142 W			87.79		
Total Barium (ug/L)	Water	28	Physis E-2142 W			3.4		
Total Chromium (ug/L)	Water	31	Physis E-3108 W	0.137			U,FD RPD	Associated environmental samples less than 5 times the blank concentration are qualified. Detected environmental samples were qualified due to field duplicate RPD not met.

Constituent	Matrix	Event	Lab Batch	Field Blank	Method Blank	Equipment Blank	Program Qualifier	Comments
Dissolved Chromium (ug/L)	Water	31	Physis E-3108 W	0.209			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Chromium (ug/L)	Water	29	Physis E-3043 W	0.072				
Dissolved Chromium (ug/L)	Water	29	Physis E-3043 W	0.37				
Dissolved Chromium (ug/L)	Water	28	Physis E-2137 W	0.118				
Total Chromium (ug/L)	Water	28	Physis E-2137 W	0.166				
Dissolved Chromium (ug/L)	Water	33	Physis E-4019 W	0.13			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Chromium (ug/L)	Water	33	Physis E-4019 W	0.05				
Total Chromium (ug/L)	Water	33	Physis E-4006 W	0.08			FD RPD	Detected environmental samples were qualified due to field duplicate RPD not met.
Dissolved Chromium (ug/L)	Water	33	Physis E-4006 W	0.08			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Cobalt (ug/L)	Water	28	Physis E-2142 W			0.1		
Dissolved Copper (ug/L)	Water	31	Physis E-3108 W	0.6			U,FD RPD	Associated environmental samples less than 5 times the blank concentration are qualified. Detected environmental samples were qualified due to field duplicate RPD not met.

Constituent	Matrix	Event	Lab Batch	Field Blank	Method Blank	Equipment Blank	Program Qualifier	Comments
Total Copper (ug/L)	Water	31	Physis E-3108 W	0.56			U,FD RPD	Associated environmental samples less than 5 times the blank concentration are qualified. Detected environmental samples were qualified due to field duplicate RPD not met.
Total Copper (ug/L)	Water	29	Physis E-3029 W	0.4				
Total Copper (ug/L)	Water	28	Physis E-2142 W			1.39		
Dissolved Copper (ug/L)	Water	28	Physis E-2137 W	0.05				
Total Copper (ug/L)	Water	28	Physis E-2137 W	0.05				
Dissolved Copper (ug/L)	Water	33	Physis E-4019 W	1.74			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Iron (ug/L)	Water	28	Physis E-2142 W			263.83		
Total Lead (ug/L)	Water	31	Physis E-3108 W	0.016			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Lead (ug/L)	Water	28	Physis E-2142 W			16.47		
Dissolved Lead (ug/L)	Water	28	Physis E-2128 W	0.06				
Total Lead (ug/L)	Water	28	Physis E-2137 W	0.013				
Dissolved Manganese (ug/L)	Water	31	Physis E-3108 W	0.17			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Manganese (ug/L)	Water	31	Physis E-3108 W	0.12			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Manganese (ug/L)	Water	28	Physis E-2142 W			6.2		

Constituent	Matrix	Event	Lab Batch	Field Blank	Method Blank	Equipment Blank	Program Qualifier	Comments
Total Manganese (ug/L)	Water	28	Physis E-2137 W	0.08				
Dissolved Manganese (ug/L)	Water	28	Physis E-2137 W	0.05			LD RPD	Detected environmental samples were qualified due to lab duplicate RPD not met.
Total Mercury (ug/L)	Water	33	Physis M-1124 W	0.001 3			U	Associated environmental samples less than 5 times the blank concentration are qualified
Dissolved Molybdenum (ug/L)	Water	31	Physis E-3108 W	0.033			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Molybdenum (ug/L)	Water	31	Physis E-3108 W	0.016			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Molybdenum (ug/L)	Water	29	Physis E-3029 W		0.1			
Dissolved Molybdenum (ug/L)	Water	29	Physis E-3029 W		0.2			
Total Molybdenum (ug/L)	Water	29	Physis E-3029 W	0.2				
Dissolved Molybdenum (ug/L)	Water	29	Physis E-3029 W	0.3				
Dissolved Molybdenum (ug/L)	Water	29	Physis E-3043 W	0.014				
Total Molybdenum (ug/L)	Water	29	Physis E-3043 W	0.057				
Total Molybdenum (ug/L)	Water	28	Physis E-2142 W			0.12		
Dissolved Molybdenum (ug/L)	Water	28	Physis E-2128 W	0.38				

Constituent	Matrix	Event	Lab Batch	Field Blank	Method Blank	Equipment Blank	Program Qualifier	Comments
Total Molybdenum (ug/L)	Water	28	Physis E-2128 W	0.23				
Total Molybdenum (ug/L)	Water	28	Physis E-2137 W	0.014				
Dissolved Molybdenum (ug/L)	Water	28	Physis E-2137 W	0.019				
Dissolved Molybdenum (ug/L)	Water	31	Physis E-3091 W	0.55			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Molybdenum (ug/L)	Water	31	Physis E-3091 W	0.31			U	Associated environmental samples less than 5 times the blank concentration are qualified
Dissolved Molybdenum (ug/L)	Water	33	Physis E-4019 W	0.25				
Total Molybdenum (ug/L)	Water	33	Physis E-4019 W	0.15				
Total Molybdenum (ug/L)	Water	30	Physis E-3083 W	0.1				
Dissolved Molybdenum (ug/L)	Water	30	Physis E-3083 W	0.12				
Total Nickel (ug/L)	Water	31	Physis E-3108 W	0.03			U	Associated environmental samples less than 5 times the blank concentration are qualified
Dissolved Nickel (ug/L)	Water	31	Physis E-3108 W	0.027			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Nickel (ug/L)	Water	29	Physis E-3029 W	0.3				
Total Nickel (ug/L)	Water	29	Physis E-3043 W	0.076				
Total Nickel (ug/L)	Water	28	Physis E-2142 W			0.62		
Total Nickel (ug/L)	Water	28	Physis E-2128 W	0.12				

Constituent	Matrix	Event	Lab Batch	Field Blank	Method Blank	Equipment Blank	Program Qualifier	Comments
Dissolved Nickel (ug/L)	Water	28	Physis E-2137 W	0.055				
Total Nickel (ug/L)	Water	28	Physis E-2137 W	0.055				
Total Selenium (ug/L)	Water	29	Physis E-3029 W		0.4			
Dissolved Selenium (ug/L)	Water	29	Physis E-3029 W		0.4			
Dissolved Selenium (ug/L)	Water	29	Physis E-3029 W	2.7				
Total Selenium (ug/L)	Water	29	Physis E-3029 W	2.6				
Dissolved Silver (ug/L)	Water	31	Physis E-3108 W	0.04			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Silver (ug/L)	Water	31	Physis E-3108 W	0.04			U	Associated environmental samples less than 5 times the blank concentration are qualified
Dissolved Silver (ug/L)	Water	28	Physis E-2137 W	0.25				
Total Silver (ug/L)	Water	28	Physis E-2137 W	0.23				
Total Strontium (ug/L)	Water	28	Physis E-2142 W			5.5		
Total Strontium (ug/L)	Water	28	Physis E-2128 W	0.28				
Dissolved Strontium (ug/L)	Water	28	Physis E-2128 W	0.51			MS >UL	Upper limit due to Mitrix Spike failure
Total Strontium (ug/L)	Water	30	Physis E-3083 W	1.1				
Total Thallium (ug/L)	Water	28	Physis E-2142 W			0.13		
Total Titanium (ug/L)	Water	28	Physis E-2142 W			2.65		
Total Vanadium (ug/L)	Water	28	Physis E-2142 W			0.35		

Constituent	Matrix	Event	Lab Batch	Field Blank	Method Blank	Equipment Blank	Program Qualifier	Comments
Dissolved Zinc (ug/L)	Water	31	Physis E-3108 W	1.278			U,FD RPD	Associated environmental samples less than 5 times the blank concentration are qualified. Detected environmental samples were qualified due to field duplicate RPD not met.
Total Zinc (ug/L)	Water	31	Physis E-3108 W	0.81			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Zinc (ug/L)	Water	29	Physis E-3029 W	0.7				
Total Zinc (ug/L)	Water	29	Physis E-3043 W	0.54				
Dissolved Zinc (ug/L)	Water	29	Physis E-3043 W	0.629				
Total Zinc (ug/L)	Water	28	Physis E-2142 W			2712.55		
Dissolved Zinc (ug/L)	Water	28	Physis E-2128 W	0.88				
Total Zinc (ug/L)	Water	28	Physis E-2137 W	1.129				
Dissolved Zinc (ug/L)	Water	28	Physis E-2137 W	1.2				
Total Zinc (ug/L)	Water	33	Physis E-4019 W	0.75			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Zinc (ug/L)	Water	32	Physis E-3128 W	142.0 5			U	Associated environmental samples less than 5 times the blank concentration are qualified
Dissolved Zinc (ug/L)	Water	32	Physis E-3128 W	61.49			U	Associated environmental samples less than 5 times the blank concentration are qualified
Total Zinc (ug/L)	Water	30	Physis E-3083 W	0.85				

Constituent	Matrix	Event	Lab Batch	Field Blank	Method Blank	Equipment Blank	Program Qualifier	Comments
Total Zinc (ug/L)	Water	33	Physis E-4006 W	1.34			U,FD RPD	Associated environmental samples less than 5 times the blank concentration are qualified. Detected environmental samples were qualified due to field duplicate RPD not met.
Dissolved Zinc (ug/L)	Water	33	Physis E-4006 W	0.32			U,FD RPD	Associated environmental samples less than 5 times the blank concentration are qualified. Detected environmental samples were qualified due to field duplicate RPD not met.

Table 2. Precision QA/QC Issues

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
General Water/Sediment Quality										
Silt 0.0039 to <0.0625 mm (%)	Sediment	28	IIRMES_GC-01-095_S_GS	01_BPT_14	63				FD RPD	FieldDup RPD Failed
Total Suspended Solids (mg/L)	Samplewater	31	Physis C-5111 W	10_GATE	51					
Total Organic Carbon (% dw)	Sediment	28	IIRMES_GC-01-096_S_TOC	02_PCH	47				FD RPD	FieldDup RPD Failed
Clay <0.0039 mm (%)	Sediment	28	IIRMES_GC-01-095_S_GS	01_BPT_14	61				LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Total Suspended Solids (mg/L)	Samplewater	28	Physis C-4017 W	04_WOOD	86				FD RPD	FieldDup RPD Failed
Total Suspended Solids (mg/L)	Samplewater	28	Physis C-4017 W	06_SOMIS	49				FD RPD	FieldDup RPD Failed
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	13_SB_HILL	34					
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	13_SB_HILL	43					
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	13_SB_HILL	32					
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	13_SB_HILL	119					
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	03_UNIV	107					
Clay <0.0039 mm (%)	Sediment	28	IIRMES_GC-01-095_S_GS	01_BPT_6		40			LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
Total Suspended Solids (mg/L)	Samplewater	29	Physis C-5024 W	07T_DC_H		71			LD RPD	LabDuplicate RPD Failed
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	07D_CTP		94				
Clay (%)	Samplewater	30	GS_ABC GRN0112.031_W	07D_CTP		94				
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	01_RR_BR		200				
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	01_RR_BR		200				
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	01_RR_BR		95				
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	01_RR_BR		51				
Sand (%)	Samplewater	30	GS_ABC GRN0112.031_W	01_RR_BR		36				
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	04_WOOD		200				
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	04_WOOD		83				
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	04_WOOD		44				
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	04_WOOD		148				
Particle Size (%)	Samplewater	30	GS_ABC GRN0112.031_W	13_SB_HILL		127				
Nutrients										
Phosphorus, Total as P (mg/L)	Samplewater	28	Physis C-4111 W	06_SOMIS		34			FD RPD	FieldDup RPD Failed
Ammonia as N (mg/L)	Samplewater	31	Physis C-5138 W	04_WOOD		35				

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
Total Kjeldahl Nitrogen (mg/L)	samplewater	33	_2053121_W_TKN	04_WOOD	105				U	Upper Limit due to analyte found in blank
Ammonia as N (mg/L)	Samplewater	32	Physis C-6034 W	01_RR_BR		36			MS <LL	MS failed lower limit
Ammonia as N (mg/dry kg)	Sediment	28	Physis C-4113 W	9B_ADOLF				100	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Ammonia as N (mg/dry kg)	Sediment	28	Physis C-4113 W	04_WOOD				40	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
OC Pesticides										
DDT(o,p') (µg/L)	Samplewater	31	Physis O-2136 W	04_WOOD	52					
DDT(p,p') (µg/L)	Samplewater	31	Physis O-2136 W	04_WOOD	68				U	Upper Limit due to analyte found in blank
DDE(p,p') (ng/dry g)	Sediment	28	Physis O-2064 W	02_PCH	39					
DDT(o,p') (ng/wet g)	Tissue	28	Physis O-2052 W	01_Western_Arm	96				FD RPD	FieldDup RPD Failed
DDE(o,p') (ng/wet g)	Tissue	28	Physis O-2052 W	04_WOOD	130					
DDE(p,p') (ng/wet g)	Tissue	28	Physis O-2052 W	04_WOOD	32				FD RPD	FieldDup RPD Failed
DDT(o,p') (ng/wet g)	Tissue	28	Physis O-2052 W	04_WOOD	34				FD RPD	FieldDup RPD Failed
DDE(p,p') (µg/L)	Samplewater	28	Physis O-2030 W	04_WOOD	32					

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
DDD(p,p') (µg/L)	Samplewater	33	Physis O-3049 W	04_WOOD	113					
DDE(o,p') (µg/L)	Samplewater	33	Physis O-3049 W	04_WOOD	95					
DDD(p,p') (µg/L)	Samplewater	32	Physis O-3005 W	01T_ODD2_DCH	35				FD RPD	FieldDup RPD Failed
DDT(p,p') (µg/L)	samplewater, particulate, 63 um to 2 mm	30	Physis O-2135 W	13_SB_HILL	42					
Chlordane, alpha- (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	13_SB_HILL	46					
Chlordane, gamma- (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	13_SB_HILL	46					
DDE(p,p') (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	13_SB_HILL	130					
DDD(p,p') (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	03_UNIV	40					
DDT(p,p') (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	03_UNIV	161				FD RPD	FieldDup RPD Failed
DDE(p,p') (µg/L)	Samplewater	30	Physis O-2126 W	03_UNIV	58					
Chlordane, gamma- (µg/L)	Samplewater	32	Physis O-3005 W	13_BELT	97					
DDT(o,p') (µg/L)	Samplewater	33	Physis O-3049 W	07_HITCH	43					
Toxaphene (ng/dry g)	sediment, <63 µm	28	Physis O-2045 W	02_PCH	47					
Toxaphene (µg/L)	Samplewater	29	Physis O-2093 W	01T_ODD2_DCH	60					

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
Nonachlor, trans (ng/wet g)	Tissue	28	Physis O-2052 W	01_Western_Arm	46					
Toxaphene (µg/L)	Samplewater	28	Physis O-2030 W	04_WOOD	59				FD RPD	FieldDup RPD Failed
Toxaphene (µg/L)	Samplewater	28	Physis O-2030 W	06_SOMIS	32				FD RPD	FieldDup RPD Failed
Nonachlor, trans (µg/L)	Samplewater	32	Physis O-3005 W	13_BELT	75					
DDE(p,p') (ng/dry g)	Sediment	28	Physis O-2064 W	02_PCH		38			H	Holdtime exceeded
Toxaphene (ng/wet g)	Tissue	28	Physis O-2052 W	9B_ADOLF		54				
Endosulfan I (ng/dry g)	Water	28	Physis O-2064 W	LABQA			72			
Endosulfan I (ng/dry g)	Water	28	Physis O-2064 W	LABQA			72			
Endrin Aldehyde (ng/wet g)	Water	28	Physis O-2052 W	LABQA			100			
Endrin Aldehyde (ng/wet g)	Water	28	Physis O-2052 W	LABQA			100			
Perthane (µg/L)	Water	32	Physis O-3005 W	LABQA			34			
Methoxychlor (ng/dry g)	Sediment	28	Physis O-2065 W	01_BPT_6				37	MS <LL	MS failed lower limit
PCBs										
PCB 112 (Surrogate) (%)	Samplewater	30	Physis O-2126 W	13_SB_HILL		32				
PCB 169 (µg/L)	Water	31	Physis O-2146 W	LABQA			31		EST BS/BSD	Estimate due to BS/BSD RPD failed
PCB 037 (µg/L)	Water	29	Physis O-2091 W	LABQA			37			
PCB 037 (µg/L)	Water	29	Physis O-2091 W	LABQA			37			
PCB 037 (µg/L)	Water	29	Physis O-2091 W	LABQA			37			
PCB 087 (µg/L)	Water	32	Physis O-3006 W	LABQA			66			
PCB 087 (µg/L)	Water	32	Physis O-3006 W	LABQA			66			

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
PAHs										
Anthracene (ng/dry g)	Sediment	28	Physis O-2065 W	01_BPT_6		40				
Benzo (b) fluoranthene (ng/dry g)	Sediment	28	Physis O-2065 W	01_BPT_6		82				
Benzo (k) fluoranthene (ng/dry g)	Sediment	28	Physis O-2065 W	01_BPT_6		79				
Chrysene (ng/dry g)	Sediment	28	Physis O-2065 W	01_BPT_6		154			LD RPD	LabDuplicate RPD Failed
Fluoranthene (ng/dry g)	Sediment	28	Physis O-2065 W	01_BPT_6		168			LD RPD	LabDuplicate RPD Failed
Fluorene (ng/dry g)	Sediment	28	Physis O-2065 W	01_BPT_6		102				
Methylnaphthalene, 1- (ng/dry g)	Sediment	28	Physis O-2065 W	01_BPT_6		40				
Methylphenanthrene, 1- (ng/dry g)	Sediment	28	Physis O-2065 W	01_BPT_6		111				
Naphthalene (ng/dry g)	Sediment	28	Physis O-2065 W	01_BPT_6		41				
Pyrene (ng/dry g)	Sediment	28	Physis O-2065 W	01_BPT_6		158			LD RPD	LabDuplicate RPD Failed
OP Pesticides										
Chlorpyrifos (ng/dry g)	Sediment	28	Physis O-2064 W	02_PCH	157				FD RPD	FieldDup RPD Failed
Diazinon (µg/L)	Samplewater	28	Physis O-2030 W	06_SOMIS	38					
Chlorpyrifos (µg/L)	Samplewater	32	Physis O-3005 W	01T_ODD2_DCH	40				FD RPD	FieldDup RPD Failed
Malathion (µg/L)	Samplewater	32	Physis O-3005 W	01T_ODD2_DCH	54				FD RPD	FieldDup RPD Failed
Disulfoton (µg/L)	Samplewater	33	Physis O-3049 W	07_HITCH	120				FD RPD	FieldDup RPD Failed

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
Malathion (µg/L)	Samplewater	33	Physis O-3049 W	07_HITCH	44				U	Upper Limit due to analyte found in blank
Mevinphos (µg/L)	Water	28	Physis O-2030 W	LABQA			55			
Tetrachlorvinphos (µg/L)	Water	33	Physis O-3036 W	LABQA			31		EST BS/BSD	Estimate due to BS/BSD RPD failed
Parathion, Methyl (µg/L)	Water	30	Physis O-2137 W	LABQA			33		BS <LL, EST BS/BSD	BS failed lower limit, Estimate due to BS/BSD RPD failed
Parathion, Methyl (µg/L)	Water	30	Physis O-2137 W	LABQA			33		BS <LL, EST BS/BSD	BS failed lower limit, Estimate due to BS/BSD RPD failed
Diazinon (µg/L)	Water	28	W1H0375	LABQA			39		EST BS/BSD	Estimate due to BS/BSD RPD failed
Dichlorvos (µg/L)	Water	29	W1K0572	LABQA			38			
Naled (µg/L)	Water	28	W1H0358	LABQA			59			
Naled (µg/L)	Water	29	W1K0572	LABQA			55			
Bromacil (µg/L)	Water	28	W1H0375	LABQA			33			
Fensulfothion (ng/dry g)	Sediment	28	Physis O-2064 W	02_PCH				35		
Coumaphos (µg/L)	SampleWater	33	W2E0632	LABQA				35		
Pyrethroid Pesticides										
Cyfluthrin, total (µg/L)	Samplewater	31	Physis O-2136 W	10_GATE	113					

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
Cypermethrin, total (µg/L)	Samplewater	31	Physis O-2136 W	10_GATE	117					
Permethrin, cis- (µg/L)	Samplewater	31	Physis O-2136 W	10_GATE	61				U	Upper Limit due to analyte found in blank
Permethrin, trans- (µg/L)	Samplewater	31	Physis O-2136 W	10_GATE	51					
Cyfluthrin, total (µg/L)	Samplewater	32	Physis O-3005 W	01T_ODD2_DCH	191				FD RPD	FieldDup RPD Failed
Danitol (µg/L)	Samplewater	32	Physis O-3005 W	01T_ODD2_DCH	48				FD RPD	FieldDup RPD Failed
Fenvalerate (µg/L)	Samplewater	32	Physis O-3005 W	01T_ODD2_DCH	43					
Prallethrin (µg/L)	samplewater, particulate, 63 um to 2 mm	30	Physis O-2135 W	13_SB_HILL	46					
Allethrin (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	13_SB_HILL	109					
Cyfluthrin, total (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	13_SB_HILL	33					
Cypermethrin, total (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	13_SB_HILL	82				FD RPD	FieldDup RPD Failed
Danitol (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	13_SB_HILL	86				FD RPD	FieldDup RPD Failed
L-Cyhalothrin (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	13_SB_HILL	66				FD RPD	FieldDup RPD Failed

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
Bifenthrin (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	03_UNIV	60				FD RPD	FieldDup RPD Failed
Danitol (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	03_UNIV	51				FD RPD	FieldDup RPD Failed
Permethrin, cis- (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	13_SB_HILL	74				FD RPD	FieldDup RPD Failed
Permethrin, trans- (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	13_SB_HILL	63					
Prallethrin (µg/L)	samplewater, particulate, <63 um	30	Physis O-2137 W	13_SB_HILL	34					
Bifenthrin (µg/L)	Samplewater	30	Physis O-2126 W	13_SB_HILL	105				LD RPD	LabDuplicate RPD Failed
Permethrin, trans- (µg/L)	Samplewater	32	Physis O-3005 W	13_BELT	42				FD RPD	FieldDup RPD Failed
Bifenthrin (µg/L)	Samplewater	30	Physis O-2126 W	13_SB_HILL		84			LD RPD	LabDuplicate RPD Failed
Allethrin (ng/dry g)	Water	28	Physis O-2064 W	LABQA			33			
Allethrin (ng/dry g)	Water	28	Physis O-2064 W	LABQA			33			
Permethrin, trans- (µg/L)	Water	31	Physis O-2142 W	LABQA			54		EST BS/BS	Estimate due to BS/BS RPD failed
Fluvalinate (µg/L)	Water	29	Physis O-2098 W	LABQA			32			
Prallethrin (µg/L)	Water	28	Physis O-2041 W	LABQA			46			
Prallethrin (µg/L)	Water	28	Physis O-2041 W	LABQA			46			

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
Deltamethrin (µg/L)	Water	33	Physis O-3031 W	LABQA			34		BS <LL, EST BS/BSD	BS failed lower limit, Estimate due to BS/BSD RPD failed
Deltamethrin (µg/L)	Water	33	Physis O-3031 W	LABQA			34		BS <LL	BS failed lower limit
Fluvalinate (µg/L)	Water	31	Physis O-2136 W	LABQA			73		BS <LL, EST BS/BSD	BS failed lower limit, Estimate due to BS/BSD RPD failed
Cyfluthrin (µg/L)	SampleWater	28	W1H0671	10D_HILL				51		
Cypermethrin (µg/L)	SampleWater	28	W1H0671	10D_HILL				48		
Fenvalerate (µg/L)	SampleWater	28	W1H0671	10D_HILL				62	EST MS/MSD	Estimate due to MS/MSD RPD failed
Esfenvalerate (µg/L)	SampleWater	28	W1H0671	10D_HILL				62	EST MS/MSD	Estimate due to MS/MSD RPD failed
Deltamethrin/Tralomethrin (µg/L)	SampleWater	28	W1H0671	10D_HILL				63		
Permethrin (µg/L)	SampleWater	28	W1H0671	10D_HILL				36	EST MS/MSD	Estimate due to MS/MSD RPD failed
Dichloran (µg/L)	SampleWater	28	W1H0671	10D_HILL				50		
Pendimethalin (µg/L)	SampleWater	28	W1H0671	10D_HILL				35		
Metals and Selenium										
Total Chromium (µg/L)	Samplewater	31	Physis E-3108 W	01_BPT_14	44				FD RPD	FieldDup RPD Failed

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
Dissolved Copper (µg/L)	Samplewater	31	Physis E-3108 W	01_BPT_14	40				FD RPD, U	FieldDuplicate RPD Failed, Upper limit due to analyte found in blank
Total Copper (µg/L)	Samplewater	31	Physis E-3108 W	01_BPT_14	68				FD RPD, U	FieldDuplicate RPD Failed, Upper limit due to analyte found in blank
Dissolved Lead (µg/L)	Samplewater	31	Physis E-3108 W	01_BPT_14	75				LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Dissolved Selenium (µg/L)	Samplewater	31	Physis E-3108 W	01_BPT_14	67					
Dissolved Zinc (µg/L)	Samplewater	31	Physis E-3108 W	01_BPT_14	44				FD RPD, U	FieldDuplicate RPD Failed, Upper limit due to analyte found in blank
Dissolved Mercury (µg/L)	Samplewater	29	Physis M-1094 W	01T_ODD2_DCH	70					
Dissolved Lead (µg/L)	Samplewater	29	Physis E-3029 W	01T_ODD2_DCH	67					
Total Mercury (µg/L)	Samplewater	29	Physis M-1098 W	01_BPT_3	82				LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Total Chromium (µg/L)	Samplewater	29	Physis E-3043 W	01_BPT_3	142				FD RPD	FieldDup RPD Failed

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
Dissolved Chromium (µg/L)	Samplewater	29	Physis E-3043 W	01_BPT_3	54				FD RPD, U	FieldDuplicate RPD Failed, Upper limit due to analyte found in blank
Total Nickel (µg/L)	Samplewater	29	Physis E-3043 W	01_BPT_3	51				FD RPD	FieldDup RPD Failed
Dissolved Selenium (µg/L)	Samplewater	29	Physis E-3043 W	01_BPT_3	67				LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Silver (µg/dry g)	Sediment	28	Physis E-2156 W	01_BPT_14	45					
Dissolved Aluminum (µg/L)	Samplewater	28	Physis E-2128 W	04_WOOD	106					
Dissolved Lead (µg/L)	Samplewater	28	Physis E-2128 W	04_WOOD	40					
Total Thallium (µg/L)	Samplewater	28	Physis E-2128 W	04_WOOD	67					
Total Zinc (µg/L)	Samplewater	28	Physis E-2137 W	01_BPT_15	31				FD RPD	FieldDup RPD Failed
Total Lead (µg/L)	Samplewater	28	Physis E-2137 W	01_BPT_15	100				FD RPD	FieldDup RPD Failed
Dissolved Lead (µg/L)	Samplewater	28	Physis E-2137 W	01_BPT_15	124				FD RPD, U	FieldDuplicate RPD Failed, Upper limit due to analyte found in blank
Total Mercury (µg/L)	Samplewater	33	Physis M-1124 W	04_WOOD	95					
Dissolved Aluminum (µg/L)	Samplewater	33	Physis E-4019 W	04_WOOD	39					
Dissolved Zinc (µg/L)	Samplewater	33	Physis E-4019 W	04_WOOD	41				FD RPD	FieldDup RPD Failed
Dissolved Thallium (µg/L)	Samplewater	32	Physis E-3128 W	01T_ODD2_DCH	67					

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
Total Tin (µg/L)	Samplewater	30	Physis E-3083 W	03_UNIV	194				FD RPD	FieldDup RPD Failed
Total Mercury (µg/L)	Samplewater	33	Physis M-1115 W	01_BPT_6	42					
Total Chromium (µg/L)	Samplewater	33	Physis E-4006 W	01_BPT_6	45				FD RPD	FieldDup RPD Failed
Dissolved Lead (µg/L)	Samplewater	33	Physis E-4006 W	01_BPT_6	42					
Dissolved Selenium (µg/L)	Samplewater	33	Physis E-4006 W	01_BPT_6	40					
Dissolved Zinc (µg/L)	Samplewater	33	Physis E-4006 W	01_BPT_6	141				FD RPD, U	FieldDuplicate RPD Failed, Upper limit due to analyte found in blank
Total Zinc (µg/L)	Samplewater	33	Physis E-4006 W	01_BPT_6	97				FD RPD, U	FieldDuplicate RPD Failed, Upper limit due to analyte found in blank
Dissolved Mercury (µg/L)	Samplewater	31	Physis M-1102 W	07D_SIMI		66			LD RPD	LabDuplicate RPD Failed
Total Mercury (µg/L)	Samplewater	31	Physis M-1102 W	07D_SIMI		61			LD RPD	LabDuplicate RPD Failed
Dissolved Lead (µg/L)	Samplewater	31	Physis E-3108 W	01_BPT_15		66			LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Dissolved Aluminum (µg/L)	Samplewater	29	Physis E-3029 W	01T_ODD2_DCH		40				
Total Cadmium (µg/L)	Samplewater	29	Physis E-3029 W	9AD_CAMA		133				
Total Mercury (µg/L)	Samplewater	29	Physis M-1094 W	01T_ODD2_DCH		65			LD RPD	LabDuplicate RPD Failed

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
Total Mercury (µg/L)	Samplewater	29	Physis M-1098 W	01_BPT_14		75			LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Dissolved Copper (µg/L)	Samplewater	29	Physis E-3043 W	01_BPT_14		74			LD RPD	LabDuplicate RPD Failed
Dissolved Selenium (µg/L)	Samplewater	29	Physis E-3043 W	01_BPT_14		91			LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Mercury (µg/wet g)	Tissue	28	Physis M-1089 W	01_Central_Lagoon		56				
Mercury (µg/wet g)	Tissue	28	Physis M-1089 W	04_WOOD		33				
Dissolved Aluminum (µg/L)	Samplewater	28	Physis E-2128 W	9AD_CAMA		36				
Total Aluminum (µg/L)	Samplewater	28	Physis E-2128 W	9AD_CAMA		34				
Total Cadmium (µg/L)	Samplewater	28	Physis E-2128 W	9AD_CAMA		49				
Dissolved Selenium (µg/L)	Samplewater	28	Physis E-2128 W	9AD_CAMA		100			LD RPD, U	LabDuplicate RPD Failed, Upper limit due to analyte found in blank
Total Selenium (µg/L)	Samplewater	28	Physis E-2128 W	9AD_CAMA		68			LD RPD, U	LabDuplicate RPD Failed, Upper limit due to analyte found in blank
Dissolved Tin (µg/L)	Samplewater	28	Physis E-2128 W	9AD_CAMA		42				
Dissolved Manganese (µg/L)	Samplewater	28	Physis E-2137 W	01_BPT_14		77			LD RPD	LabDuplicate RPD Failed
Total Selenium (µg/L)	Samplewater	28	Physis E-2137 W	01_BPT_14		39			LD RPD	LabDuplicate RPD Failed

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
Dissolved Mercury (µg/L)	Samplewater	33	Physis M-1115 W	9AD_CAMA		53			LD RPD	LabDuplicate RPD Failed
Dissolved Mercury (µg/L)	Samplewater	33	Physis M-1115 W	07D_SIMI		39			LD RPD	LabDuplicate RPD Failed
Dissolved Mercury (µg/L)	Samplewater	33	Physis M-1124 W	01T_ODD2_DCH		31				
Dissolved Aluminum (µg/L)	Samplewater	33	Physis E-4019 W	01T_ODD2_DCH		31				
Total Mercury (µg/L)	Samplewater	32	Physis M-1107 W	01T_ODD2_DCH		32			LD RPD	LabDuplicate RPD Failed
Dissolved Aluminum (µg/L)	Samplewater	30	Physis E-3083 W	01_RR_BR		52				
Dissolved Lead (µg/L)	Samplewater	33	Physis E-4006 W	01_BPT_14		48				
Dissolved Strontium (µg/L)	Samplewater	29	Physis E-3029 W	01T_ODD2_DCH			417		EST MS/MSD	Estimate due to MS/MSD RPD failed
Dissolved Strontium (µg/L)	Samplewater	33	Physis E-4019 W	01T_ODD2_DCH			32		MS >UL, EST MS/MSD	MS failed upper limit, Estimate due to RPD failure between MS/MSD
Dissolved Strontium (µg/L)	Samplewater	32	Physis E-3128 W	01T_ODD2_DCH			37		MS >UL, EST MS/MSD	MS failed upper limit, Estimate due to RPD failure between MS/MSD

Constituent	Matrix	Event	Lab Batch	Site	Field Dup RPD	Lab Dup RPD	BS/ BSD RPD	MS/ MSD RPD	Program Qualifier	Comments
Dissolved Mercury ($\mu\text{g/L}$)	Samplewater	30	Physis M-1100 W	01_RR_BR				35	MS >UL, EST MS/MSD	MS failed upper limit, Estimate due to RPD failure between MS/MSD
Dissolved Strontium ($\mu\text{g/L}$)	Samplewater	30	Physis E-3083 W	01_RR_BR				75	MS <LL, MS >UL, EST MS/MSD	MS failed lower limit, MS failed upper limit, Estimate due to RPD failure between MS/MSD

BS/BSD = Blank Spike/Blank Spike Duplicate
MS/MSD = Matrix Spike/Matrix Spike Duplicate
RPD = Relative Percent Difference

Table 3. Accuracy QA/QC Issues

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS % Rec.	LCSD % Rec.	MS % Rec.	MSD % Rec.	Program Qualifier	Comments
Nutrients											
Ammonia as N (mg/dry kg)	Sediment	28	Physis C-4113 W	80	120	x	x	19	57	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to MS/MSD RPD Failed
Ammonia as N (mg/L)	Water	32	Physis C-6034 W	70	130	112	100	56	52	MS <LL	MS failed lower limit
Nitrate as N (mg/L)	Water	31	Physis C-5152 W	70	130	100	100	55	64		
Nitrite as N (mg/L)	Water	33	Physis C-7027 W	70	130	93	87	27	27	MS <LL	MS failed lower limit
Phosphorus, Total as P (mg/L)	Water	33	Physis C-7110 W	70	130	107	109	26	22	MS <LL	MS failed lower limit
OC Pesticides											
Endosulfan I (ng/dry g)	Sediment	28	Physis O-2064 W	50	150	33	70	86	84		
Endrin Aldehyde (ng/dry g)	Sediment	28	Physis O-2045 W	25	125	144	145	x	x		
Endrin Aldehyde (ng/dry g)	Sediment	28	Physis O-2049 W	25	125	144	145	x	x		
Methoxychlor (ng/dry g)	Sediment	28	Physis O-2065 W	50	150	58	55	58	40	MS <LL	MS failed lower limit
OP Pesticides											
Bolstar (ng/dry g)	Sediment	28	Physis O-2064 W	75	125	x	x	125	127	MS >UL	MS failed upper limit
Bolstar (ng/dry g)	Sediment	28	Physis O-2065 W	75	125		x	68	55	MS <LL	MS failed lower limit
Demeton-s (µg/L)	Water	31	Physis O-2139 W	50	150	49	51	x	x	BS <LL	BS failed lower limit

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS % Rec.	LCSD % Rec.	MS % Rec.	MSD % Rec.	Program Qualifier	Comments
Demeton-s (µg/L)	Water	31	Physis O-2142 W	50	150	49	50	x	x	BS <LL	BS failed lower limit
Demeton-s (µg/L)	Water	32	Physis O-3006 W	50	150	56	48	x	x	BS <LL	BS failed lower limit
Disulfoton (µg/L)	Water	28	W1H0375	71	122	158	156	x	x		
Disulfoton (µg/L)	Water	33	W2E0632	56	133	x	x	109	134	MS >UL	MS failed upper limit
Fensulfothion (µg/L)	Water	31	Physis O-2136 W	50	150	50	42	x	x	BS <LL	BS failed lower limit
Fensulfothion (µg/L)	Water	31	Physis O-2139 W	50	150	56	48	x	x	BS <LL	BS failed lower limit
Mevinphos (µg/L)	Water	28	Physis O-2030 W	50	150	96	168	x	x		
Parathion, Methyl (µg/L)	Water	30	Physis O-2127 W	50	150	44	56	x	x	BS <LL	BS failed lower limit
Parathion, Methyl (µg/L)	Water	30	Physis O-2137 W	50	150	43	60	x	x	BS <LL, EST BS/BSD	BS failed lower limit, Estimate due to RPD failure between BS/BSD
Parathion, Methyl (µg/L)	Water	31	Physis O-2146 W	50	150	140	158	x	x	BS >UL	BS failed upper limit
Phorate (µg/L)	Water	30	Physis O-2135 W	50	150	51	48	x	x	BS <LL	BS failed lower limit
Phorate (ng/dry g)	Sediment	28	Physis O-2065 W	50	150	79	74	8	6	MS <LL	MS failed lower limit
Pyrethroid Pesticides											
Deltamethrin (ng/dry g)	Sediment	28	Physis O-2065 W	50	150	112	122	32	25	MS <LL	MS failed lower limit
Deltamethrin (µg/L)	Water	31	Physis O-2146 W	50	150	51	43	x	x	BS <LL	BS failed lower limit
Deltamethrin (µg/L)	Water	33	Physis O-3031 W	50	150	68	48	x	x	BS <LL	BS failed lower limit

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS % Rec.	LCSD % Rec.	MS % Rec.	MSD % Rec.	Program Qualifier	Comments
Deltamethrin (µg/L)	Water	33	Physis O-3031 W	50	150	68	48	x	x	BS <LL, EST BS/BSD	BS failed lower limit, Estimate due to RPD failure between BS/BSD
Deltamethrin/Tralomethrin (µg/L)	Water	29	W1K0976	50	150	147	171	x	x		
Fluvalinate (µg/L)	Water	31	Physis O-2136 W	50	150	82	38	x	x	BS <LL, EST BS/BSD	BS failed lower limit, Estimate due to RPD failure between BS/BSD
Resmethrin (µg/L)	Water	30	Physis O-2135 W	50	150	56	46	x	x	BS <LL	BS failed lower limit
Metals and Selenium											
Dissolved Mercury (µg/L)	Water	33	Physis M- 1115 W	75	125	123	125	131	151	MS >UL	MS failed upper limit
Selenium (µg/wet g)	Tissue	28	Physis E-2148 W	75	125	x	x	56	57	MS <LL	MS failed lower limit
Dissolved Silver (µg/L)	Water	28	Physis E-2128 W	75	125	x	x	65	62		
Dissolved Strontium (µg/L)	Water	28	Physis E-2128 W	75	125	x	x	99	130	MS >UL	MS failed upper limit
Dissolved Strontium (µg/L)	Water	29	Physis E-3029 W	75	125	x	x	-32	x	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to MS/MSD RPD Failed
Dissolved Strontium (µg/L)	Water	31	Physis E-3091 W	75	125	x	x	137	143	MS >UL	MS failed upper limit
Dissolved Strontium (µg/L)	Water	32	Physis E-3128 W	75	125	x	x	183	126	MS >UL, EST MS/MSD	MS failed upper limit, Estimate due to MS/MSD RPD Failed
Dissolved Strontium (µg/L)	Water	33	Physis E-4019 W	75	125	x	x	421	306	MS >UL, EST MS/MSD	MS failed upper limit, Estimate due to MS/MSD RPD Failed

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS % Rec.	LCSD % Rec.	MS % Rec.	MSD % Rec.	Program Qualifier	Comments
Total Strontium (µg/L)	Water	31	Physis E-3091 W	75	125	101	101	143	135	MS >UL	MS failed upper limit
Dissolved Titanium (µg/L)	Water	33	Physis E-4019 W	75	125	x	x	138	116	MS >UL	MS failed upper limit

MS = Matrix Spike

MSD = Matrix Spike Duplicate

LCS = Lab Control Spike

LCSD = Lab Control Spike Duplicate

Rec. = Recovery