Appendix A. Data Verification: United States Geological Survey National Water Quality Laboratory

CONTENTS

TABLE OF TABLES

DATA VERIFICATION OVERVIEW

A total of 32 environmental samples were analyzed by the United State Geological Survey National Water Quality Laboratory (USGS NWQL) for the Delta Regional Monitoring Program (DRMP) Current-Use Pesticides (CUP) project constituents specified in **Table A.1**.

Table A.1. Analytical scope.

Matrix	Analyte/Parameter
Samplewater (<0.45 µm)	Dissolved Copper
Samplewater (<0.7 µm)	Dissolved Organic Carbon (DOC)
Samplewater, Particulate (>0.70 µm)	Particulate Organic Carbon (POC)
Samplewater, Particulate (>0.70 µm)	Total Carbon (TC)
Samplewater, Particulate (>0.70 µm)	Total Inorganic Carbon (TIC)
Samplewater, Particulate (>0.70 µm)	Total Nitrogen (TN)

Associated results were unavailable during the preparation of this report's main body. To ensure a complete and consistent record of WY 2021, verification of USGS NWQL CUP project results (see **Table A.2**) is detailed in this appendix.

Table A.2. Verified datasets associated with WY 2021 monitoring.

Lab	Analyte	Matrix	Datasets Produced	Datasets Reviewed	Reviewed Dataset (Batch) IDs
USGS NWQL	Dissolved Copper	Samplewater (<0.45 µm)	7	7	NWQL_DRMP_CUP_241234_W_CU; NWQL_DRMP_CUP_242083_W_CU; NWQL_DRMP_CUP_243653_W_CU; NWQL_DRMP_CUP_241502_W_CU; NWQL_DRMP_CUP_242116_W_CU; NWQL_DRMP_CUP_243628_W_CU; NWQL_DRMP_CUP_244291_W_CU
	DOC	Samplewater (<0.7 µm)	4	4	NWQL_DRMP_CUP_240552_W_DOC; NWQL_DRMP_CUP_242572_W_DOC; NWQL_DRMP_CUP_243525_W_DOC; NWQL_DRMP_CUP_241629_W_DOC
	POC, TC, TIC, TN	Samplewater, Particulate (>0.70 µm)	6	6	NWQL_DRMP_CUP_241536_W_ANCIL; NWQL_DRMP_CUP_242788_W_ANCIL; NWQL_DRMP_CUP_244117_W_ANCIL; NWQL_DRMP_CUP_244574_W_ANCIL; NWQL_DRMP_CUP_244792_W_ANCIL; NWQL_DRMP_CUP_244945_W_ANCIL

DATA VERIFICATION: SAMPLE HANDLING

During data verification, storage and holding times of DRMP CUP project samples were evaluated to ensure the integrity of the target analyte(s) in each matrix. For consistency with the State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP) and the Code of Federal Regulations, Title 40 *Protection of the Environment*, Section 136 *Guidelines Establishing Test Procedures for the Analysis of Pollutants*, DRMP holding times are defined as follows:

- *Pre-Preservation/Extraction*: Required holding times for sample preservation or extraction begin at the time of sample collection and conclude when the sample is preserved or extracted, respectively.
- *Pre-Analysis*: Required holding times for sample analysis begin either at the time of sample collection, filtration or extraction and conclude when sample analysis is completed.

In WY 2021, 32 USGS NWQL samples were verified against the sample handling requirements in **Table A.3**.

Table A.3. Sample handling requirements defined in the DRMP QAPP.

Analyte	Pre-Preservation/Extraction		Pre-Analysis	
	Storage	Holding Time	Holding Time	Storage
Dissolved Copper	0–6 °C in dark	Filter in the field as soon as possible after collection	180 days	0–6 °C in dark
DOC	0–6 °C in dark	Filtration within 24 hours of collection	30 days	0–6 °C in dark
POC	0–6 °C in dark	Filtration within 24 hours of collection	100 days	0–6 °C in dark
TC, TIC, TN	NA	NA	100 days[1]	NA

[1] Per Environmental Protection Agency (EPA) Method 440; No requirements specified in DRMP QAPP

91% of verified samples met these DRMP CUP project requirements. Analyses resulting in qualification appear in **Table A.4**.

Table A.4. Sample handling qualification.

Dataset ID	Sample ID	Sample Date	Matrix	Analyte	Project Qualifier
NWQL_DRMP_CUP_244792_W_ANCIL	511ULCABR	9/13/2021	Samplewater, Particulate (>0.70 µm)	POC, TC, TIC, TN	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	544LSAC13	9/14/2021	Samplewater, Particulate (>0.70 µm)	POC, TC, TIC, TN	Qualified
NWQL_DRMP_CUP_244792_W_ANCIL	Nort-021	9/14/2021	Samplewater, Particulate (>0.70 µm)	POC, TC, TIC, TN	Qualified
NWQL_DRMP_CUP_244792_W_ANCIL	Nort-022	9/13/2021	Samplewater, Particulate (>0.70 µm)	POC, TC, TIC, TN	Qualified
NWQL_DRMP_CUP_244792_W_ANCIL	Nort-023	9/14/2021	Samplewater, Particulate (>0.70 µm)	POC, TC, TIC, TN	Qualified
NWQL_DRMP_CUP_244792_W_ANCIL	Nort-024	9/14/2021	Samplewater, Particulate (>0.70 µm)	POC, TC, TIC, TN	Qualified
NWQL_DRMP_CUP_244792_W_ANCIL	Sacr-023	9/13/2021	Samplewater, Particulate (>0.70 µm)	POC, TC, TIC, TN	Qualified
NWQL_DRMP_CUP_244792_W_ANCIL	Sacr-024	9/13/2021	Samplewater, Particulate (>0.70 µm)	POC, TC, TIC, TN	Qualified
NWQL_DRMP_CUP_244574_W_ANCIL	FilterBlank	8/12/2021	Samplewater, Particulate (>0.70 µm)	POC, TC, TIC, TN	Qualified

DATA VERIFICATION: LABORATORY ANALYSES

DRMP CUP project chemistry data verification assesses quality control (QC) samples associated with contamination, precision, and accuracy. For consistency with SWAMP, QC sample definitions are based on the January 2022 *Surface Water Ambient Monitoring Program Quality Assurance Program Plan* (SWAMP QAPrP).

Contamination

For USGS NWQL's analyses, contamination is assessed with the analysis of field blanks, laboratory blanks, and filter blanks. Associated data verification results are detailed below.

Field Blanks

A field blank is a sample of analyte-free media that is carried to the sampling site, exposed to the sampling conditions, returned to the laboratory, and treated as a routine environmental sample. Preservatives, if any, are added to the sample container in the same manner as the environmental sample. The field blank matrix should be comparable to the sample of interest. This blank is used to provide information about contaminants that may be introduced during sample collection, storage, and transport.

For WY 2021 DRMP CUP project monitoring, field blanks were collected for all USGS NWQL analyses (i.e., two for dissolved copper and DOC, three for POC, TC, TIC, and TN, **Table A.22**). 81% (**Table A.5**) of these results met the DRMP measurement quality objective (MQO) by being below the method detection limit (MDL). Analyses resulting in qualification appear in **Table A.6**.

Table A.5. Field blank (FB) acceptability.

Method	Lab	Matrix	Fractions	Analyte	Criteria	Total FB Samples	FB Samples Within Limits	Acceptability Met (%)
USGS I-2020-05	NWQL	Water	Dissolved	Copper	< MDL	2	2	100
METH011.00	NWQL	Water	Dissolved	DOC	< MDL	2	1	50
EPA 440	NWQL	Water	Particulate	TC	< MDL	3	2	66.7
EPA 440	NWQL	Water	Particulate	TN	< MDL	3	3	100
EPA 440	NWQL	Water	Particulate	POC	< MDL	3	2	66.7
EPA 440	NWQL	Water	Particulate	TIC	< MDL	3	3	100
Total						**16**	**13**	**81.3**

Table A.6. Field blank qualification.

Field Blank ID	Sample Date	Analyte	Sample Result (mg/L)	MDL	Project Qualifier
Nort-016	6/15/2021	DOC	0.23	0.23	Qualified
Nort-016	6/15/2021	TC	0.08	0.05	Qualified
Nort-016	6/15/2021	POC	0.08	0.05	Qualified

Laboratory Blanks

A laboratory blank is free from the target analyte(s) and is used to represent the environmental sample matrix as closely as possible. The laboratory blank is processed simultaneously with and under the same conditions and steps of the analytical procedures (e.g., including exposure to all glassware, equipment, solvents, reagents, labeled compounds, internal standards, and surrogates that are used with samples) as all samples in the analytical batch (including other QC samples). The laboratory blank is used to determine if target analytes or interferences are present in the laboratory environment, reagents, or instruments. Laboratory blank results provide a measurement of bias introduced by the analytical procedure.

For WY 2021 DRMP CUP project monitoring, laboratory blanks were prepared and analyzed for all USGS NWQL batches at the required frequency of one per 20 samples or per batch (whichever is more frequent) with the exception of those batches identified in **Table A.7**.

Table A.7. Laboratory blank omission.

Dataset ID	Analyte	Project Qualifier
NWQL_DRMP_CUP_241502_W_CU	Dissolved Copper	Qualified
NWQL_DRMP_CUP_242116_W_CU	Dissolved Copper	Qualified

Dataset ID	Analyte	Project Qualifier
NWQL_DRMP_CUP_243628_W_CU	Dissolved Copper	Qualified
NWQL_DRMP_CUP_244291_W_CU	Dissolved Copper	Qualified

98.8% of these results met the DRMP MQO by being below the MDL (**Table A.8**). Qualified laboratory blanks and associated environmental samples with detectable results above the MDL appear in **Table A.9** and **Table A.10**, respectively.

Table A.8. Laboratory blank (LB) acceptability.

Method	Lab	Matrix	Fractions	Analyte	Criteria	Total LB Samples	LB Samples Within Limits	Acceptability Met (%)
USGS I-2020-05	NWQL	Water	Dissolved	Copper	< MDL	37	37	100
METH01 1.00	NWQL	Water	Dissolved	DOC	< MDL	15	15	100
EPA 440	NWQL	Water	Particulate	TC	< MDL	30	29	96.7
EPA 440	NWQL	Water	Particulate	TN	< MDL	30	30	100
EPA 440	NWQL	Water	Particulate	POC	< MDL	28	27	96.4
EPA 440	NWQL	Water	Particulate	TIC	< MDL	28	28	100
Total						**168**	**166**	**98.8**

Table A.9. Laboratory blank qualification.

Dataset ID	Lab Blank ID	Analyte	blank Result (mg/L)	MDL (mg/L)	Project Qualifier
NWQL_DRMP_CUP_241536_W_ANCIL	QC2102352-006	TC	0.05	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	QC2102352-006	POC	0.05	0.05	Qualified

Table A.10. Laboratory blank qualification: associated environmental samples.

Dataset ID	Sample ID	Sample Date	Analyte	Sample Result (mg/L)	MDL (mg/L)	Project Qualifier
NWQL_DRMP_CUP_241536_W_ANCIL	511ULCABR	4/28/2021	TC	1.88	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	544LSAC13	4/29/2021	TC	0.34	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	Nort-009	4/29/2021	TC	0.37	0.05	Qualified

Dataset ID	Sample ID	Sample Date	Analyte	Sample Result (mg/L)	MDL (mg/L)	Project Qualifier
NWQL_DRMP_CUP_241536_W_ANCIL	Nort-009	4/29/2021	TC	0.39	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	Nort-010	4/28/2021	TC	0.58	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	Nort-011	4/29/2021	TC	0.17	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	Nort-012	4/29/2021	TC	0.51	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	Sacr-017	4/28/2021	TC	0.17	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	Sacr-018	4/28/2021	TC	0.12	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	511ULCABR	4/28/2021	POC	1.88	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	544LSAC13	4/29/2021	POC	0.34	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	Nort-009	4/29/2021	POC	0.37	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	Nort-009	4/29/2021	POC	0.39	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	Nort-010	4/28/2021	POC	0.58	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	Nort-011	4/29/2021	POC	0.17	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	Nort-012	4/29/2021	POC	0.51	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	Sacr-017	4/28/2021	POC	0.17	0.05	Qualified
NWQL_DRMP_CUP_241536_W_ANCIL	Sacr-018	4/28/2021	POC	0.12	0.05	Qualified

Filter Blanks

Filter blanks are samples of analyte-free media that have been used to rinse the sampling equipment. They are collected after completion of decontamination and prior to sampling through clean equipment. This blank is useful in documenting adequate decontamination

of sampling equipment. It is used to provide information about contaminants/bias that may be introduced during sample collection when using filtration equipment or equipment that must be decontaminated between uses.

For DRMP CUP project monitoring, USGS NWQL filter blanks are performed with POC, TC, TIC, and TN analyses. In WY 2021, one filter blank was analyzed. 100% of these results met the DRMP MQO by being below the MDL (**Table A.11**).

Table A.11. Filter blank acceptability.

Method	Lab	Matrix	Fractions	Analyte	Criteria	Total Filter Blank Samples	Filter Blank Samples Within Limits	Acceptability Met (%)
EPA 440	NWQL	Water	Particulate	TC	< MDL	1	1	100
EPA 440	NWQL	Water	Particulate	TN	< MDL	1	1	100
EPA 440	NWQL	Water	Particulate	POC	< MDL	1	1	100
EPA 440	NWQL	Water	Particulate	TIC	< MDL	1	1	100
Total						**4**	**4**	**100**

Precision

For USGS NWQL's DRMP CUP project analyses, precision is studied with the analysis of field duplicates, laboratory duplicates, and matrix spike (MS) duplicates (MSDs). Associated data verification results are detailed below.

Field Duplicates

A field duplicate is an independent sample that is collected as closely as possible to the same point in space, time, and collection methodology as the field sample.

For WY 2021 DRMP CUP project monitoring, field duplicates collected and analyzed for USGS NWQL analyses appear in **Table A.12**.

Table A.12. Field duplicates.

Duplicate ID	Sample Date	Analyte
511ULCABR	6/15/2021	DOC, POC, TC, TIC, TN
511ULCABR	8/10/2021	Dissolved Copper
511ULCABR	9/13/2021	DOC, POC, TC, TIC, TN
544LSAC13	4/29/2021	Dissolved Copper

For WY 2021 DRMP CUP project monitoring, two field duplicates were analyzed at the required frequency of one per 20 samples. 100% of these results met the DRMP MQO by having a relative percent difference (RPD) <25% for TIC and dissolved copper, and an

RPD <25% (n/a if concentration of either sample < MDL) for DOC (**Table A.13**). POC, TC, and TN do not have a DRMP CUP project field duplicate MQO.

Table A.13. Field duplicate acceptability.

Method	Lab	Matrix	Fractions	Analyte	Criteria	Total Field Dup Samples	Field Dup Samples Within Limits	Acceptability Met (%)
USGS I-2020-05	NWQL	Water	Dissolved	Copper	RPD ≤ 25	2	2	100
METH011.00	NWQL	Water	Dissolved	DOC	RPD ≤ 25 [1]	2	2	100
EPA 440	NWQL	Water	Particulate	TC	NA	2	2	100
EPA 440	NWQL	Water	Particulate	TN	NA	2	2	100
EPA 440	NWQL	Water	Particulate	POC	NA	2	2	100
EPA 440	NWQL	Water	Particulate	TIC	RPD ≤ 25	2	2	100
Total						**12**	**12**	**100**

[1] n/a if concentration of either sample < MDL

Laboratory Duplicates

A laboratory duplicate is an analysis or measurement of the target analyte(s) performed identically on two sub-samples of the same sample, usually taken from the same container. The results from laboratory duplicate analyses are used to evaluate analytical or measurement precision, and include variability associated with sub-sampling and the matrix (not the precision of field sampling, preservation, or storage internal to the laboratory).

For WY 2021 DRMP CUP project monitoring, USGS NWQL laboratory duplicates were analyzed at the required frequency of one per 20 samples or per batch (whichever is more frequent) with the exception of those batches identified in **Table A.14**.

Table A.14. Laboratory duplicate omission.

Dataset ID	Analyte	Project Qualifier
NWQL_DRMP_CUP_241234_W_CU; NWQL_DRMP_CUP_241502_W_CU; NWQL_DRMP_CUP_242083_W_CU; NWQL_DRMP_CUP_242116_W_CU; NWQL_DRMP_CUP_243628_W_CU; NWQL_DRMP_CUP_243653_W_CU; NWQL_DRMP_CUP_244291_W_CU	Dissolved Copper	Qualified

Dataset ID	Analyte	Project Qualifier
NWQL_DRMP_CUP_241629_W_DOC; NWQL_DRMP_CUP_240552_W_DOC; NWQL_DRMP_CUP_242572_W_DOC; NWQL_DRMP_CUP_243525_W_DOC	DOC	Qualified
NWQL_DRMP_CUP_244574_W_ANCIL; NWQL_DRMP_CUP_244945_W_ANCIL	POC, TC, TIC, TN	Qualified

98% of these results met the DRMP MQO by having an RPD <10% for POC; an RPD <25% for TC, TN, TIC, and dissolved copper; and an RPD <25% (n/a if concentration of either sample < MDL) for DOC (**Table A.15**). Laboratory duplicate analyses resulting in qualification appear in **Table A.16**.

Table A.15. Laboratory duplicate (LD) acceptability.

Method	Lab	Matrix	Fractions	Analyte	Criteria	Total Lab Dup Samples	Lab Dup Samples Within Limits	Acceptability Met (%)
USGS I-2020-05	NWQL	Water	Dissolved	Copper	RPD ≤ 25	3	3	100
METH011.00	NWQL	Water	Dissolved	DOC	RPD ≤ 25 [1]	15	15	100
EPA 440	NWQL	Water	Particulate	TC	RPD ≤ 25	52	51	98.1
EPA 440	NWQL	Water	Particulate	TN	RPD ≤ 25	52	51	98.1
EPA 440	NWQL	Water	Particulate	POC	RPD ≤ 10	26	24	92.3
EPA 440	NWQL	Water	Particulate	TIC	RPD ≤ 25	50	50	100
Total						**198**	**194**	**98.0**

[1] n/a if concentration of either sample < MDL

Table A.16. Laboratory duplicate qualification.

Dataset ID	Duplicate ID	Analyte	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD	Project Qualifier
NWQL_DRMP_CUP_244117_W_ANCIL	Nort-020	POC	0.26	0.23	11.3	Qualified
NWQL_DRMP_CUP_244792_W_ANCIL	Nort-023	TC	0.14	0.09	45	Qualified
NWQL_DRMP_CUP_244792_W_ANCIL	Nort-023	TN	0.031	ND	200	Qualified

Dataset ID	Duplicate ID	Analyte	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD	Project Qualifier
NWQL_DRMP_CUP_244792_W_ANCIL	Nort-023	POC	0.14	0.09	45	Qualified

Matrix Spike Duplicates

An MSD is prepared with an MS. Both the MS and MSD samples are analyzed exactly like environmental samples within the lab batch. The purpose of analyzing the MS and MSD samples is to determine whether the sample matrix contributes bias to the analytical results, and to measure precision of the duplicate analysis.

For WY 2021 DRMP CUP project monitoring, three USGS NWQL matrix spike duplicate pairs were prepared and analyzed for dissolved copper and DOC at the required frequency of one per 20 samples or per batch (whichever is more frequent). 100% of these results met the DRMP MQO by having an RPD <25% (**Table A.17**).

Table A.17. Matrix spike duplicate (MSD) acceptability.

Method	Lab	Matrix	Fractions	Analyte	Criteria	Total MSD Samples	MSD Samples Within Limits	Acceptability Met (%)
USGS I-2020-05	NWQL	Water	Dissolved	Copper	RPD ≤ 25	3	3	100
METH011.00	NWQL	Water	Dissolved	DOC	RPD ≤ 25 [1]	4	4	100
Total						**7**	**7**	**100**

[1] n/a if concentration of either sample < MDL

Accuracy

For USGS NWQL's DRMP CUP project analyses, accuracy is studied with the analysis of MSs, laboratory control samples (LCSs), and certified reference materials (CRMs). Associated data verification results are detailed below.

Matrix Spikes

An MS is a sample prepared by adding a known amount of the target analyte to an environmental sample in order to increase the concentration of the target analyte. The MS is used to determine the effect of the matrix on a method's recovery efficiency and is a measure of accuracy. The MS is analyzed exactly like an environmental sample within the

lab batch. The purpose of analyzing the MS is to determine whether the sample matrix contributes bias to the analytical results.

For WY 2021 DRMP CUP project monitoring, nine dissolved copper and 10 DOC matrix spikes were prepared and analyzed at the required frequency of 1 per 20 USGS NWQL samples. 100% of these results met the DRMP recovery MQO of ±20% for DOC and ±25% for dissolved copper (**Table A.18**).

Table A.18. Matrix spike (MS) recovery acceptability.

Method	Lab	Matrix	Fractions	Analyte	Criteria	Total MS Samples	MS Samples Within Limits	Acceptability Met (%)
USGS I-2020-05	NWQL	Water	Dissolved	Copper	PR 75-125	9	9	100
METH011.00	NWQL	Water	Dissolved	DOC	PR 80-120	11	11	100
Total						**20**	**20**	**100**

Laboratory Control Samples

An LCS is a sample matrix representative of the environmental sample (e.g., water, sand) that is prepared in the laboratory and is free from the analytes of interest. The LCS is spiked with verified amounts of analytes or a material containing known and verified amounts of analytes. It is either used to establish intra-laboratory or analyst-specific precision and bias, or to assess the performance of a portion of the measurement system.

For DRMP CUP project monitoring in WY 2021, LCSs were prepared and analyzed for all USGS NWQL POC, TC, TIC, and TN batches at the required frequency of one per 20 samples or per batch (whichever is more frequent). 100% of these results met the ±10% DRMP recovery MQO (**Table A.19**).

Table A.19. Laboratory control spike (LCS) recovery acceptability.

Method	Lab	Matrix	Fractions	Analyte	Criteria	Total LCS Samples	LCS Samples Within Limits	Acceptability Met (%)
EPA 440	NWQL	Water	Particulate	TC	PR 90-110	30	30	100
EPA 440	NWQL	Water	Particulate	TN	PR 90-110	30	30	100
EPA 440	NWQL	Water	Particulate	TIC	PR 90-110	30	30	100
Total						**90**	**90**	**100**

Certified Reference Materials

A CRM or substance has one or more properties that are characterized by a metrologically valid procedure, accompanied by a certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability (typically from EPA or the National Institute of Science and Technology). CRMs are used for calibrating an apparatus, assessing a measurement method, or assigning values to materials (FEM Glossary, 2017). CRMs are used to measure the accuracy of analytical processes, either quantitatively to calibrate or determine concentration accuracy, or qualitatively to identify a substance or species.

For DRMP CUP project monitoring in WY 2021, CRMs were prepared and analyzed for USGS NWQL dissolved copper batches at the required frequency of one per 20 samples or per batch (whichever is more frequent). 100% of these results met the ±25% DRMP recovery MQO (**Table A.20**).

Table A.20. Certified reference material (CRM) recovery acceptability.

Method	Lab	Matrix	Fractions	Analyte	Criteria	Total CRM Samples	CRM Samples Within Limits	Acceptability Met (%)
USGS I-2020-05	NWQL	Water	Dissolved	Copper	PR 75-125	42	42	100
Total						**42**	**42**	**100**

SUMMARY

During WY 2021, the USGS NWQL analyzed a total of 32 environmental samples (not including field duplicates) for dissolved copper, DOC, POC, TC, TIC, and TN. All scheduled samples were successfully collected, transported, and analyzed by the laboratory (**Table A.21**). Additionally, field QC were successfully collected at a minimum rate of 5% of the total environmental samples (**Table A.22**).

All 127 environmental and QC sample results for dissolved copper presented in Tables **Table A.7** and **Table A.14** were outside the MQOs specified in the DRMP QAPP and are considered "Qualified".

All 66 environmental and QC sample results for DOC presented in Tables **Table A.6** and **Table A.14** were outside the MQOs specified in the DRMP QAPP and are considered "Qualified".

228 out of a total of 374 environmental and QC sample results for POC, TC, TIC, and TN met the MQOs specified in the DRMP QAPP and are considered "Compliant". The remaining 146 environmental and QC sample results presented in Tables **Table A.4**, **Table A.6**, **Table A.9**, **Table A.10**, **Table A.14**, and **Table A.16** were outside the MQOs specified in the DRMP QAPP and are considered "Qualified".

SUMMARY OF COMPLETENESS

Sample Completeness

Table A.21. Field and transport and analytical completeness for WY 2021 data from the USGS NWQL.
Samples are counted as individual results, i.e., separate endpoints for toxicity results and separate sample fractions analyzed for chemistry results.

Method	Matrix	Analyte	Env. Samples Scheduled	Env. Samples Collected	Field and Transport Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS I-2020-05	Water	Copper	32	32	100	32	100
METH011.00	Water	DOC	32	32	100	32	100
EPA 440	Water	TC	32	32	100	32	100
EPA 440	Water	TN	32	32	100	32	100
EPA 440	Water	POC	32	32	100	32	100
EPA 440	Water	TIC	32	32	100	32	100
Total			**192**	**192**	**100**	**192**	**100**

Field Quality Control Frequency

Table A.22. Field quality control sample completeness for sample analyzed by the USGS NWQL.
Samples are counted as individual results, i.e., separate endpoints for toxicity results and separate sample fractions analyzed for chemistry results.

Method	Matrix	Analyte	Env. Samples	Field Duplicates	Field Blanks	Total Samples	Field Duplicate Completeness (%)	Field Blank Completeness (%)
USGS I-2020-05	Water	Copper	32	2	2	36	5.6	5.6
METH011.00	Water	DOC	32	2	2	36	5.6	5.6
EPA 440	Water	TC	32	2	3	37	5.4	8.1
EPA 440	Water	TN	32	2	3	37	5.4	8.1
EPA 440	Water	POC	32	2	3	37	5.4	8.1
EPA 440	Water	TIC	32	2	3	37	5.4	8.1
Total			**192**	**12**	**16**	**220**	**6.3**	**8.3**