

Manchester Environmental Laboratory
7411 Beach Drive E, Port Orchard, Washington 98366

Case Narrative - Metals

July 16, 2024

Project: CMR Characterization Study

Work Order: 2406047

Project
Manager: Daiber, Eric

By: Heidi Chuhran

Summary

The laboratory analyzed the samples for trace metals. The analyses requested were evaluated by established regulatory quality assurance guidelines.

All results were reported without qualifications except for those noted in the exception report.

Sample Information

The samples were received at the Manchester Laboratory on 6/12/2024. The samples were received in good condition. The samples were received properly preserved. Eight samples were received and assigned laboratory identification numbers 02 to 05 and 07 to 10.

Holding Times

The laboratory performed the analyses within their hold times.

Other Quality Issues

NA

Exception Report

Analysis issues

The method blank associated with samples 02, 04, 05 and 09 for total mercury and dissolved mercury was greater than the acceptance limit. The results were qualified as estimates.

Quality control issues

Matrix spikes (MS/MSD) for dissolve manganate are outside control limits due to insufficient spike.

U - The analyte was not detected at or above the reported result.

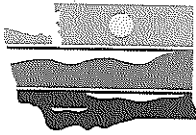
J - The analyte was positively identified. The associated numerical result is an estimate.

UJ - The analyte was not detected at or above the reported estimated result.

bold - The analyte was present in the sample. (Visual Aid to locate detected compounds on report sheet.)

Please call Heidi Chuhuran at (360) 871-8826 to further discuss this project.

cc: Project File



Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Arsenic

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method: EPA200.2

Analysis Method: EPA200.8

Work Order: 2406047

Prepared: 06/18/24

Matrix: Water

Analyte: Arsenic

Batch ID: B24F052

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	0.19		0.10	0.01	06/11/24	06/25/24
2406047-03	WAG501203-2	0.75		0.10	0.01	06/11/24	06/25/24
2406047-04	WAG501203-3	0.36		0.10	0.01	06/11/24	06/25/24
2406047-05	WAG501203-4	1.58		0.10	0.01	06/11/24	06/25/24
2406047-07	WAG501203-6	9.14		0.10	0.01	06/11/24	06/25/24
2406047-08	WAG501203-7	0.55		0.10	0.01	06/11/24	06/25/24
2406047-09	WAGDDMS1	0.37		0.10	0.01	06/11/24	06/25/24
2406047-10	WAGDBBMS2	0.10	U	0.10	0.01	06/11/24	06/25/24

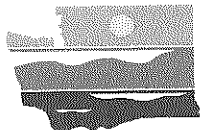
QC Results for Batch ID: B24F052

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F052-BLK1	Blank	0.10	U	0.10	0.01

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F052-BS1	LCS	24.9	25.0			100	85-115		
B24F052-BSD1	LCS Dup	25.8	25.0			103	85-115	3	20
B24F052-MS1	Matrix Spike	26.1	25.0	2406047-03	0.747	101	75-125		
B24F052-MSD1	Matrix Spike Dup	26.2	25.0	2406047-03	0.747	102	75-125	0.5	20

Authorized by: Heidi Chuhran

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Arsenic, Dissolved

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric
Work Order: 2406047
Analyte: Arsenic

Prep Method:
Prepared: 06/14/24
Batch ID: B24F051

Analysis Method: EPA200.8
Matrix: Water
Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	0.17		0.10	0.004	06/11/24	06/17/24
2406047-03	WAG501203-2	0.21		0.10	0.004	06/11/24	06/17/24
2406047-04	WAG501203-3	0.34		0.10	0.004	06/11/24	06/17/24
2406047-05	WAG501203-4	0.17		0.10	0.004	06/11/24	06/17/24
2406047-07	WAG501203-6	0.11		0.10	0.004	06/11/24	06/17/24
2406047-08	WAG501203-7	0.13		0.10	0.004	06/11/24	06/17/24
2406047-09	WAGDDDMS1	0.33		0.10	0.004	06/11/24	06/17/24
2406047-10	WAGDBBMS2	0.10	U	0.10	0.004	06/11/24	06/17/24

QC Results for Batch ID: B24F051

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F051-BLK1	Blank	0.10	U	0.10	0.004

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F051-BS1	LCS	20.0	20.0			100	85-115		
B24F051-BSD1	LCS Dup	20.1	20.0			101	85-115	0.8	20
B24F051-MS1	Matrix Spike	21.2	20.0	2406047-02	0.167	105	75-125		
B24F051-MSD1	Matrix Spike Dup	21.1	20.0	2406047-02	0.167	105	75-125	0.5	20

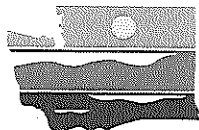
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Heidi Chuhran

Release Date:

7/16/2024

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Barium

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method: EPA200.2

Analysis Method: EPA200.8

Work Order: 2406047

Prepared: 06/18/24

Matrix: Water

Analyte: Barium

Batch ID: B24F052

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	4.21		0.10	0.02	06/11/24	06/25/24
2406047-03	WAG501203-2	158		0.10	0.02	06/11/24	06/25/24
2406047-04	WAG501203-3	74.4		0.10	0.02	06/11/24	06/25/24
2406047-05	WAG501203-4	76.2		0.10	0.02	06/11/24	06/25/24
2406047-07	WAG501203-6	3700		1.00	0.15	06/11/24	06/25/24
2406047-08	WAG501203-7	27.4		0.10	0.02	06/11/24	06/25/24
2406047-09	WAGDDDMs1	75.1		0.10	0.02	06/11/24	06/25/24
2406047-10	WAGDBBBMS2	0.10	U	0.10	0.02	06/11/24	06/25/24

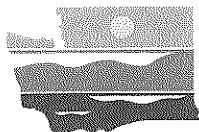
QC Results for Batch ID: B24F052

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F052-BLK1	Blank	0.10	U	0.10	0.02

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F052-BS1	LCS	25.0	25.0			100	85-115		
B24F052-BSD1	LCS Dup	25.9	25.0			104	85-115	4	20
B24F052-MS1	Matrix Spike	180	25.0	2406047-03	158	88	75-125		
B24F052-MSD1	Matrix Spike Dup	182	25.0	2406047-03	158	96	75-125	1	20

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Barium, Dissolved

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Work Order: 2406047

Analyte: Barium

Prep Method:

Prepared: 06/14/24

Batch ID: B24F051

Analysis Method: EPA200.8

Matrix: Water

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	4.03		0.10	0.008	06/11/24	06/17/24
2406047-03	WAG501203-2	150		0.10	0.008	06/11/24	06/17/24
2406047-04	WAG501203-3	70.7		0.10	0.008	06/11/24	06/17/24
2406047-05	WAG501203-4	3.99		0.10	0.008	06/11/24	06/17/24
2406047-07	WAG501203-6	4.79		0.10	0.008	06/11/24	06/17/24
2406047-08	WAG501203-7	4.67		0.10	0.008	06/11/24	06/17/24
2406047-09	WAGDDDM1	70.3		0.10	0.008	06/11/24	06/17/24
2406047-10	WAGDBBMS2	0.10	U	0.10	0.008	06/11/24	06/17/24

QC Results for Batch ID: B24F051

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F051-BLK1	Blank	0.10	U	0.10	0.008

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F051-BS1	LCS	19.7	20.0			99	85-115		
B24F051-BSD1	LCS Dup	19.7	20.0			98	85-115	0.2	20
B24F051-MS1	Matrix Spike	23.6	20.0	2406047-02	4.03	98	75-125		
B24F051-MSD1	Matrix Spike Dup	23.4	20.0	2406047-02	4.03	97	75-125	0.9	20

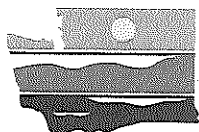
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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Chromium

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method: EPA200.2

Analysis Method: EPA200.8

Work Order: 2406047

Prepared: 06/18/24

Matrix: Water

Analyte: Chromium

Batch ID: B24F052

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	1.41		0.20	0.05	06/11/24	06/25/24
2406047-03	WAG501203-2	144		0.20	0.05	06/11/24	06/25/24
2406047-04	WAG501203-3	78.8		0.20	0.05	06/11/24	06/25/24
2406047-05	WAG501203-4	20.1		0.20	0.05	06/11/24	06/25/24
2406047-07	WAG501203-6	840		2.00	0.45	06/11/24	06/25/24
2406047-08	WAG501203-7	6.68		0.20	0.05	06/11/24	06/25/24
2406047-09	WAGDDDM1	80.1		0.20	0.05	06/11/24	06/25/24
2406047-10	WAGDBBMS2	0.21		0.20	0.05	06/11/24	06/25/24

QC Results for Batch ID: B24F052

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F052-BLK1	Blank	0.20	U	0.20	0.05

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F052-BS1	LCS	25.1	25.0			100	85-115		
B24F052-BSD1	LCS Dup	26.1	25.0			104	85-115	4	20
B24F052-MS1	Matrix Spike	166	25.0	2406047-03	144	86	75-125		
B24F052-MSD1	Matrix Spike Dup	168	25.0	2406047-03	144	95	75-125	1	20

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Chromium, Dissolved

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method:

Analysis Method: EPA200.8

Work Order: 2406047

Prepared: 06/14/24

Matrix: Water

Analyte: Chromium

Batch ID: B24F051

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	0.99		0.10	0.009	06/11/24	06/17/24
2406047-03	WAG501203-2	146		0.10	0.009	06/11/24	06/17/24
2406047-04	WAG501203-3	78.0		0.10	0.009	06/11/24	06/17/24
2406047-05	WAG501203-4	0.60		0.10	0.009	06/11/24	06/17/24
2406047-07	WAG501203-6	0.20		0.10	0.009	06/11/24	06/17/24
2406047-08	WAG501203-7	0.94		0.10	0.009	06/11/24	06/17/24
2406047-09	WAGDDMS1	78.2		0.10	0.009	06/11/24	06/17/24
2406047-10	WAGDBBMS2	0.16		0.10	0.009	06/11/24	06/17/24

QC Results for Batch ID: B24F051

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F051-BLK1	Blank	0.10	U	0.10	0.009

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F051-BS1	LCS	19.8	20.0			99	85-115		
B24F051-BSD1	LCS Dup	19.8	20.0			99	85-115	0.3	20
B24F051-MS1	Matrix Spike	20.8	20.0	2406047-02	0.986	99	75-125		
B24F051-MSD1	Matrix Spike, Dup	20.7	20.0	2406047-02	0.986	98	75-125	0.8	20

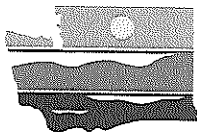
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Release Date:

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Copper

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method: EPA200.2

Analysis Method: EPA200.8

Work Order: 2406047

Prepared: 06/18/24

Matrix: Water

Analyte: Copper

Batch ID: B24F052

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	3.45		0.40	0.04	06/11/24	06/25/24
2406047-03	WAG501203-2	34.1		0.40	0.04	06/11/24	06/25/24
2406047-04	WAG501203-3	20.3		0.40	0.04	06/11/24	06/25/24
2406047-05	WAG501203-4	31.4		0.40	0.04	06/11/24	06/25/24
2406047-07	WAG501203-6	1520		4.00	0.37	06/11/24	06/25/24
2406047-08	WAG501203-7	7.90		0.40	0.04	06/11/24	06/25/24
2406047-09	WAGDDMS1	20.6		0.40	0.04	06/11/24	06/25/24
2406047-10	WAGDBBMS2	0.40	U	0.40	0.04	06/11/24	06/25/24

QC Results for Batch ID: B24F052

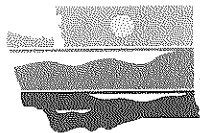
Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F052-BLK1	Blank	0.40	U	0.40	0.04

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F052-BS1	LCS	25.3	25.0			101	85-115		
B24F052-BSD1	LCS Dup	26.2	25.0			105	85-115	3	20
B24F052-MS1	Matrix Spike	57.7	25.0	2406047-03	34.1	94	75-125		
B24F052-MSD1	Matrix Spike Dup	58.6	25.0	2406047-03	34.1	98	75-125	1	20

Authorized by: Heidi Chuhran

Release Date: 7/16/2024

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Copper, Dissolved

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric
Work Order: 2406047
Analyte: Copper

Prep Method:
Prepared: 06/14/24
Batch ID: B24F051

Analysis Method: EPA200.8
Matrix: Water
Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	2.42		0.10	0.06	06/11/24	06/17/24
2406047-03	WAG501203-2	30.4		0.10	0.06	06/11/24	06/17/24
2406047-04	WAG501203-3	13.0		0.10	0.06	06/11/24	06/17/24
2406047-05	WAG501203-4	1.11		0.10	0.06	06/11/24	06/17/24
2406047-07	WAG501203-6	0.66		0.10	0.06	06/11/24	07/15/24
2406047-08	WAG501203-7	0.85		0.10	0.06	06/11/24	06/17/24
2406047-09	WAGDDDM1	14.4		0.10	0.06	06/11/24	06/17/24
2406047-10	WAGDBBMS2	0.10	U	0.10	0.06	06/11/24	07/15/24

QC Results for Batch ID: B24F051

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F051-BLK1	Blank	0.10	U	0.10	0.06

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F051-BS1	LCS	20.6	20.0			103	85-115		
B24F051-BSD1	LCS Dup	20.7	20.0			103	85-115	0.3	20
B24F051-MS1	Matrix Spike	22.1	20.0	2406047-02	2.42	98	75-125		
B24F051-MSD1	Matrix Spike Dup	21.8	20.0	2406047-02	2.42	97	75-125	1	20

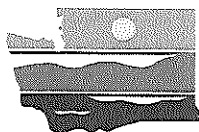
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Heidi Chuhran

Release Date:

7/16/2024

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Mercury

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method: EPA245.1

Analysis Method: EPA245.1

Work Order: 2406047

Prepared: 06/20/24

Matrix: Water

Analyte: Mercury

Batch ID: B24F086

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	0.098	J	0.050	0.007	06/11/24	06/25/24
2406047-03	WAG501203-2	0.050	U	0.050	0.007	06/11/24	06/25/24
2406047-04	WAG501203-3	0.051	J	0.050	0.007	06/11/24	06/25/24
2406047-05	WAG501203-4	0.082	J	0.050	0.007	06/11/24	06/25/24
2406047-07	WAG501203-6	0.722		0.050	0.007	06/11/24	06/25/24
2406047-08	WAG501203-7	0.050	U	0.050	0.007	06/11/24	06/25/24
2406047-09	WAGDDMS1	0.051	J	0.050	0.007	06/11/24	06/25/24
2406047-10	WAGDBBMS2	0.050	U	0.050	0.007	06/11/24	06/25/24

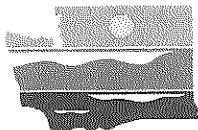
QC Results for Batch ID: B24F086

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F086-BLK1	Blank	0.050	U	0.050	0.007

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F086-BS1	LCS	1.07	1.00			107	80-115		
B24F086-BSD1	LCS Dup	1.06	1.00			106	80-115	0.9	20
B24F086-MS1	Matrix Spike	1.04	1.00	2406047-03	0.050	100	75-125		
B24F086-MSD1	Matrix Spike Dup	1.04	1.00	2406047-03	0.050	99	75-125	0.5	20

Authorized by: Heidi Chufran

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Mercury, Dissolved

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric
Work Order: 2406047
Analyte: Mercury

Prep Method: EPA245.1
Prepared: 06/20/24
Batch ID: B24F092

Analysis Method: EPA245.1
Matrix: Water
Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	0.078	J	0.050	0.014	06/11/24	06/25/24
2406047-03	WAG501203-2	0.050	U	0.050	0.014	06/11/24	06/25/24
2406047-04	WAG501203-3	0.050	U	0.050	0.014	06/11/24	06/25/24
2406047-05	WAG501203-4	0.050	J	0.050	0.014	06/11/24	06/25/24
2406047-07	WAG501203-6	0.050	U	0.050	0.014	06/11/24	06/25/24
2406047-08	WAG501203-7	0.050	U	0.050	0.014	06/11/24	06/25/24
2406047-09	WAGDDDMS1	0.050	U	0.050	0.014	06/11/24	06/25/24
2406047-10	WAGDBBMS2	0.050	U	0.050	0.014	06/11/24	06/25/24

QC Results for Batch ID: B24F092

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F092-BLK1	Blank	0.050	U	0.050	0.014

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F092-BS1	LCS	1.07	1.00			107	80-120		
B24F092-BSD1	LCS Dup	1.06	1.00			106	80-120	0.9	20
B24F092-MS1	Matrix Spike	1.08	1.00	2406047-03	0.050	104	75-115		
B24F092-MSD1	Matrix Spike Dup	1.07	1.00	2406047-03	0.050	102	75-115	1	20

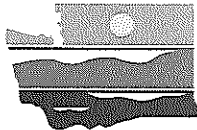
Authorized by:

Heidi Chuhran

Release Date:

7/16/2024

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Manganese

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method: EPA200.2

Analysis Method: EPA200.8

Work Order: 2406047

Prepared: 06/18/24

Matrix: Water

Analyte: Manganese

Batch ID: B24F052

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	2350		0.800	0.091	06/11/24	06/26/24
2406047-03	WAG501203-2	29.8		0.100	0.009	06/11/24	06/25/24
2406047-04	WAG501203-3	282		0.100	0.009	06/11/24	06/25/24
2406047-05	WAG501203-4	749		0.800	0.091	06/11/24	06/25/24
2406047-07	WAG501203-6	37300		8.00	0.910	06/11/24	06/25/24
2406047-08	WAG501203-7	722		0.800	0.091	06/11/24	06/25/24
2406047-09	WAGDDMS1	290		0.100	0.009	06/11/24	06/25/24
2406047-10	WAGDBBMS2	0.100	U	0.100	0.009	06/11/24	06/25/24

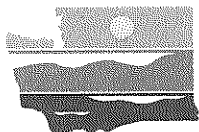
QC Results for Batch ID: B24F052

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F052-BLK1	Blank	0.100	U	0.100	0.009

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F052-BS1	LCS	24.9	25.0			99	85-115		
B24F052-BSD1	LCS Dup	25.8	25.0			103	85-115	4	20
B24F052-MS1	Matrix Spike	53.4	25.0	2406047-03	29.8	95	75-125		
B24F052-MSD1	Matrix Spike Dup	54.2	25.0	2406047-03	29.8	98	75-125	2	20

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Release Date: 7/16/2024 Page 11 of 22



Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Manganese, Dissolved

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Work Order: 2406047

Analyte: Manganese

Prep Method:

Prepared: 06/14/24

Batch ID: B24F051

Analysis Method: EPA200.8

Matrix: Water

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	2320		1.00	0.190	06/11/24	06/17/24
2406047-03	WAG501203-2	0.100	U	0.100	0.019	06/11/24	06/17/24
2406047-04	WAG501203-3	252		0.100	0.019	06/11/24	06/17/24
2406047-05	WAG501203-4	117		0.100	0.019	06/11/24	06/17/24
2406047-07	WAG501203-6	530		1.00	0.190	06/11/24	06/17/24
2406047-08	WAG501203-7	594		1.00	0.190	06/11/24	06/17/24
2406047-09	WAGDDMS1	254		0.100	0.019	06/11/24	06/17/24
2406047-10	WAGDBBMS2	0.100	U	0.100	0.019	06/11/24	06/17/24

QC Results for Batch ID: B24F051

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F051-BLK1	Blank	0.100	U	0.100	0.019

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F051-BS1	LCS	19.8	20.0			99	85-115		
B24F051-BSD1	LCS Dup	19.9	20.0			100	85-115	0.6	20
B24F051-MS1	Matrix Spike	2240	20.0	2406047-02	2320	0	75-125		
B24F051-MSD1	Matrix Spike Dup	2240	20.0	2406047-02	2320	0	75-125	0.06	20

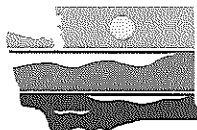
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Release Date:

7/16/2024

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Nickel

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method: EPA200.2

Analysis Method: EPA200.8

Work Order: 2406047

Prepared: 06/18/24

Matrix: Water

Analyte: Nickel

Batch ID: B24F052

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	0.99		0.10	0.03	06/11/24	06/25/24
2406047-03	WAG501203-2	1.75		0.10	0.03	06/11/24	06/25/24
2406047-04	WAG501203-3	1.08		0.10	0.03	06/11/24	06/25/24
2406047-05	WAG501203-4	27.8		0.10	0.03	06/11/24	06/25/24
2406047-07	WAG501203-6	1540		1.00	0.31	06/11/24	06/25/24
2406047-08	WAG501203-7	8.98		0.10	0.03	06/11/24	06/25/24
2406047-09	WAGDDDMS1	1.09		0.10	0.03	06/11/24	06/25/24
2406047-10	WAGDBBMS2	0.20		0.10	0.03	06/11/24	06/25/24

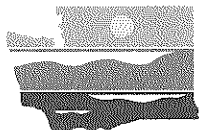
QC Results for Batch ID: B24F052

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F052-BLK1	Blank	0.10	U	0.10	0.03

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F052-BS1	LCS	25.2	25.0			101	85-115		
B24F052-BSD1	LCS Dup	26.3	25.0			105	85-115	4	20
B24F052-MS1	Matrix Spike	25.6	25.0	2406047-03	1.75	95	75-125		
B24F052-MSD1	Matrix Spike Dup	26.0	25.0	2406047-03	1.75	97	75-125	2	20

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Nickel, Dissolved

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method:

Analysis Method: EPA200.8

Work Order: 2406047

Prepared: 06/14/24

Matrix: Water

Analyte: Nickel

Batch ID: B24F051

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	0.89		0.10	0.006	06/11/24	06/17/24
2406047-03	WAG501203-2	0.95		0.10	0.006	06/11/24	06/17/24
2406047-04	WAG501203-3	0.88		0.10	0.006	06/11/24	06/17/24
2406047-05	WAG501203-4	0.22		0.10	0.006	06/11/24	06/17/24
2406047-07	WAG501203-6	0.73		0.10	0.006	06/11/24	06/17/24
2406047-08	WAG501203-7	0.45		0.10	0.006	06/11/24	06/17/24
2406047-09	WAGDDMS1	0.88		0.10	0.006	06/11/24	06/17/24
2406047-10	WAGDBBMS2	0.10	U	0.10	0.006	06/11/24	06/17/24

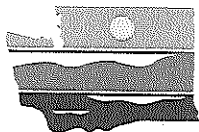
QC Results for Batch ID: B24F051

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F051-BLK1	Blank	0.10	U	0.10	0.006

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F051-BS1	LCS	20.1	20.0			101	85-115		
B24F051-BSD1	LCS Dup	20.1	20.0			101	85-115	0.06	20
B24F051-MS1	Matrix Spike	20.2	20.0	2406047-02	0.891	97	75-125		
B24F051-MSD1	Matrix Spike Dup	19.7	20.0	2406047-02	0.891	94	75-125	2	20

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Lead

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method: EPA200.2

Analysis Method: EPA200.8

Work Order: 2406047

Prepared: 06/18/24

Matrix: Water

Analyte: Lead

Batch ID: B24F052

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	0.22		0.10	0.02	06/11/24	06/25/24
2406047-03	WAG501203-2	0.84		0.10	0.02	06/11/24	06/25/24
2406047-04	WAG501203-3	0.19		0.10	0.02	06/11/24	06/25/24
2406047-05	WAG501203-4	1.49		0.10	0.02	06/11/24	06/25/24
2406047-07	WAG501203-6	87.7		0.10	0.02	06/11/24	06/25/24
2406047-08	WAG501203-7	0.42		0.10	0.02	06/11/24	06/25/24
2406047-09	WAGDDMS1	0.19		0.10	0.02	06/11/24	06/25/24
2406047-10	WAGDBBMS2	0.10	U	0.10	0.02	06/11/24	06/25/24

QC Results for Batch ID: B24F052

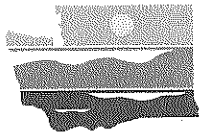
Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F052-BLK1	Blank	0.10	U	0.10	0.02

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F052-BS1	LCS	24.7	25.0			99	85-115		
B24F052-BSD1	LCS Dup	25.7	25.0			103	85-115	4	20
B24F052-MS1	Matrix Spike	25.6	25.0	2406047-03	0.836	99	75-125		
B24F052-MSD1	Matrix Spike Dup	25.9	25.0	2406047-03	0.836	100	75-125	1	20

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Release Date: 7/16/2024

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Lead, Dissolved

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric
Work Order: 2406047
Analyte: Lead

Prep Method:
Prepared: 06/14/24
Batch ID: B24F051

Analysis Method: EPA200.8
Matrix: Water
Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	0.140		0.020	0.005	06/11/24	06/17/24
2406047-03	WAG501203-2	0.243		0.020	0.005	06/11/24	06/17/24
2406047-04	WAG501203-3	0.030		0.020	0.005	06/11/24	06/17/24
2406047-05	WAG501203-4	0.020	U	0.020	0.005	06/11/24	06/17/24
2406047-07	WAG501203-6	0.020	U	0.020	0.005	06/11/24	06/17/24
2406047-08	WAG501203-7	0.020	U	0.020	0.005	06/11/24	06/17/24
2406047-09	WAGDDDM1	0.022		0.020	0.005	06/11/24	06/17/24
2406047-10	WAGDBBMS2	0.020	U	0.020	0.005	06/11/24	06/17/24

QC Results for Batch ID: B24F051

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F051-BLK1	Blank	0.020	U	0.020	0.005

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F051-BS1	LCS	20.2	20.0			101	85-115		
B24F051-BSD1	LCS Dup	20.3	20.0			102	85-115	0.6	20
B24F051-MS1	Matrix Spike	20.4	20.0	2406047-02	0.140	101	75-125		
B24F051-MSD1	Matrix Spike Dup	20.2	20.0	2406047-02	0.140	100	75-125	1	20

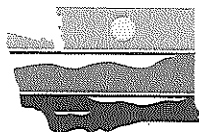
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Release Date:

7/16/2024

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Antimony

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method: EPA200.2

Analysis Method: EPA200.8

Work Order: 2406047

Prepared: 06/18/24

Matrix: Water

Analyte: Antimony

Batch ID: B24F052

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	0.30	U	0.30	0.08	06/11/24	06/25/24
2406047-03	WAG501203-2	0.47		0.30	0.08	06/11/24	06/25/24
2406047-04	WAG501203-3	0.33		0.30	0.08	06/11/24	06/25/24
2406047-05	WAG501203-4	0.30	U	0.30	0.08	06/11/24	06/25/24
2406047-07	WAG501203-6	0.30	U	0.30	0.08	06/11/24	06/25/24
2406047-08	WAG501203-7	0.30	U	0.30	0.08	06/11/24	06/25/24
2406047-09	WAGDDDMS1	0.36		0.30	0.08	06/11/24	06/25/24
2406047-10	WAGDBBBMS2	0.30	U	0.30	0.08	06/11/24	06/25/24

QC Results for Batch ID: B24F052

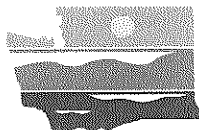
Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F052-BLK1	Blank	0.30	U	0.30	0.08

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F052-BS1	LCS	25.1	25.0			101	85-115		
B24F052-BSD1	LCS Dup	26.2	25.0			105	85-115	4	20
B24F052-MS1	Matrix Spike	25.8	25.0	2406047-03	0.474	101	75-125		
B24F052-MSD1	Matrix Spike Dup	26.2	25.0	2406047-03	0.474	103	75-125	1	20

Authorized by: Heidi Chuhran

Release Date: 7/16/2024

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Antimony, Dissolved

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Work Order: 2406047

Analyte: Antimony

Prep Method:

Prepared: 06/14/24

Batch ID: B24F051

Analysis Method: EPA200.8

Matrix: Water

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	0.20	U	0.20	0.004	06/11/24	07/15/24
2406047-03	WAG501203-2	0.32		0.20	0.004	06/11/24	07/15/24
2406047-04	WAG501203-3	0.30		0.20	0.004	06/11/24	07/15/24
2406047-05	WAG501203-4	0.20	U	0.20	0.004	06/11/24	06/17/24
2406047-07	WAG501203-6	0.20	U	0.20	0.004	06/11/24	06/17/24
2406047-08	WAG501203-7	0.20	U	0.20	0.004	06/11/24	06/17/24
2406047-09	WAGDDMS1	0.29		0.20	0.004	06/11/24	07/15/24
2406047-10	WAGDBBMS2	0.20	U	0.20	0.004	06/11/24	06/17/24

QC Results for Batch ID: B24F051

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F051-BLK1	Blank	0.20	U	0.20	0.004

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F051-BS1	LCS	18.4	20.0			92	85-115		
B24F051-BSD1	LCS Dup	18.7	20.0			93	85-115	1	20
B24F051-MS1	Matrix Spike	19.2	20.0	2406047-02	0.200	96	75-125		
B24F051-MSD1	Matrix Spike Dup	19.1	20.0	2406047-02	0.200	95	75-125	0.7	20

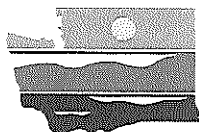
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Heidi Chuhran

Release Date:

7/16/2024

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Selenium

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method: EPA200.2

Analysis Method: EPA200.8

Work Order: 2406047

Prepared: 06/18/24

Matrix: Water

Analyte: Selenium

Batch ID: B24F052

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	0.10	U	0.10	0.01	06/11/24	06/25/24
2406047-03	WAG501203-2	1.21		0.10	0.01	06/11/24	06/25/24
2406047-04	WAG501203-3	0.74		0.10	0.01	06/11/24	06/25/24
2406047-05	WAG501203-4	0.10	U	0.10	0.01	06/11/24	06/25/24
2406047-07	WAG501203-6	0.16		0.10	0.01	06/11/24	06/25/24
2406047-08	WAG501203-7	0.10	U	0.10	0.01	06/11/24	06/25/24
2406047-09	WAGDDMS1	0.77		0.10	0.01	06/11/24	06/25/24
2406047-10	WAGDBBMS2	0.10	U	0.10	0.01	06/11/24	06/25/24

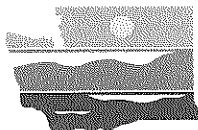
QC Results for Batch ID: B24F052

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F052-BLK1	Blank	0.10	U	0.10	0.01

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F052-BS1	LCS	24.6	25.0			98	85-115		
B24F052-BSD1	LCS Dup	25.6	25.0			102	85-115	4	20
B24F052-MS1	Matrix Spike	26.1	25.0	2406047-03	1.21	99	75-125		
B24F052-MSD1	Matrix Spike Dup	26.2	25.0	2406047-03	1.21	100	75-125	0.5	20

Authorized by: Heidi Chuhran

Release Date: 7/16/2024 Page 19 of 22



Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Selenium, Dissolved

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method:

Analysis Method: EPA200.8

Work Order: 2406047

Prepared: 06/14/24

Matrix: Water

Analyte: Selenium

Batch ID: B24F051

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	0.10	U	0.10	0.009	06/11/24	06/17/24
2406047-03	WAG501203-2	1.20		0.10	0.009	06/11/24	06/17/24
2406047-04	WAG501203-3	0.80		0.10	0.009	06/11/24	06/17/24
2406047-05	WAG501203-4	0.10	U	0.10	0.009	06/11/24	06/17/24
2406047-07	WAG501203-6	0.10	U	0.10	0.009	06/11/24	06/17/24
2406047-08	WAG501203-7	0.10	U	0.10	0.009	06/11/24	06/17/24
2406047-09	WAGDDDM1	0.78		0.10	0.009	06/11/24	06/17/24
2406047-10	WAGDBBMS2	0.10	U	0.10	0.009	06/11/24	06/17/24

QC Results for Batch ID: B24F051

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F051-BLK1	Blank	0.10	U	0.10	0.009

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F051-BS1	LCS	19.5	20.0			98	85-115		
B24F051-BSD1	LCS Dup	19.6	20.0			98	85-115	0.5	20
B24F051-MS1	Matrix Spike	21.4	20.0	2406047-02	0.100	107	75-125		
B24F051-MSD1	Matrix Spike Dup	21.0	20.0	2406047-02	0.100	105	75-125	2	20

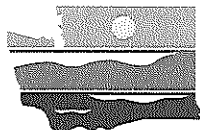
Authorized by:

Heidi Chuhran

Release Date:

7/16/2024

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Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Zinc

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric

Prep Method: EPA200.2

Analysis Method: EPA200.8

Work Order: 2406047

Prepared: 06/18/24

Matrix: Water

Analyte: Zinc

Batch ID: B24F052

Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	5.0	U	5.0	0.4	06/11/24	06/25/24
2406047-03	WAG501203-2	5.7		5.0	0.4	06/11/24	06/25/24
2406047-04	WAG501203-3	10.0		5.0	0.4	06/11/24	06/25/24
2406047-05	WAG501203-4	21.0		5.0	0.4	06/11/24	06/25/24
2406047-07	WAG501203-6	1060		40.0	4.2	06/11/24	06/25/24
2406047-08	WAG501203-7	5.2		5.0	0.4	06/11/24	06/25/24
2406047-09	WAGDDMS1	11.3		5.0	0.4	06/11/24	06/25/24
2406047-10	WAGDBBMS2	5.0	U	5.0	0.4	06/11/24	06/25/24

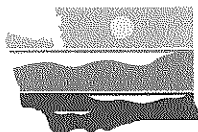
QC Results for Batch ID: B24F052

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F052-BLK1	Blank	5.0	U	5.0	0.4

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F052-BS1	LCS	25.5	25.0			102	85-115		
B24F052-BSD1	LCS Dup	26.5	25.0			106	85-115	4	20
B24F052-MS1	Matrix Spike	29.2	25.0	2406047-03	5.70	94	75-125		
B24F052-MSD1	Matrix Spike Dup	29.4	25.0	2406047-03	5.70	95	75-125	0.8	20

Authorized by: Heidi Chuhran

Release Date: 7/16/2024 Page 21 of 22



Washington State Department of Ecology
Manchester Environmental Laboratory
Final Analysis Report for
Zinc, Dissolved

Project Name: CMR Characterization Study

Project Officer: Daiber, Eric
Work Order: 2406047
Analyte: Zinc

Prep Method:
Prepared: 06/14/24
Batch ID: B24F051

Analysis Method: EPA200.8
Matrix: Water
Units: ug/L

Sample #	Sample ID	Result	Qualifier	RL	MDL	Collected	Analyzed
2406047-02	WAG501203-1	3.1		1.0	0.08	06/11/24	06/17/24
2406047-03	WAG501203-2	1.0	U	1.0	0.08	06/11/24	06/17/24
2406047-04	WAG501203-3	7.7		1.0	0.08	06/11/24	06/17/24
2406047-05	WAG501203-4	1.0	U	1.0	0.08	06/11/24	06/17/24
2406047-07	WAG501203-6	1.0	U	1.0	0.08	06/11/24	06/17/24
2406047-08	WAG501203-7	1.0	U	1.0	0.08	06/11/24	06/17/24
2406047-09	WAGDDMS1	7.7		1.0	0.08	06/11/24	06/17/24
2406047-10	WAGDBBMS2	1.0	U	1.0	0.08	06/11/24	06/17/24

QC Results for Batch ID: B24F051

Method Blank	Sample ID	Result	Qualifier	RL	MDL
B24F051-BLK1	Blank	1.0	U	1.0	0.08

Sample #	QC Sample	Result	Spike Level	Source Sample	Source Result	%Rec	%Rec Limits	RPD	RPD Limit
B24F051-BS1	LCS	20.3	20.0			101	85-115		
B24F051-BSD1	LCS Dup	20.5	20.0			103	85-115	1	20
B24F051-MS1	Matrix Spike	23.0	20.0	2406047-02	3.11	100	75-125		
B24F051-MSD1	Matrix Spike Dup	22.6	20.0	2406047-02	3.11	98	75-125	2	20

Authorized by:

Heidi Chuhran

Release Date:

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